



Federal Register

**Wednesday,
December 11, 2002**

Part II

Department of Labor

**Occupational Safety and Health
Administration**

**29 CFR Part 1915
Fire Protection in Shipyard Employment;
Proposed Rule**

DEPARTMENT OF LABOR**Occupational Safety and Health Administration****29 CFR Part 1915**

[Docket S-051]

RIN 1218-AB51

Fire Protection in Shipyard Employment

AGENCY: Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

ACTION: Proposed rule.

SUMMARY: The Occupational Safety and Health Administration (OSHA) is proposing fire protection standards for shipyard employment that were developed through a negotiated rulemaking process. This proposed standard is based on the recommendations of the Fire Protection in Shipyard Employment Negotiated Rulemaking Advisory Committee and is a comprehensive standard for the protection of shipyard employment workers from the hazards of fire on land side and on board vessels. The proposed standard reflects new technologies and current national consensus standards. The proposal collects all fire-related safety practices into a single subpart, which will make them more accessible and more easily understood by employers and employees. The standard will provide increased protection of shipyard employment workers from fire hazards.

DATES: Comments must be submitted by the following dates:

Hard Copy: Your comments must be submitted (postmarked or sent) by March 11, 2003.

Facsimile and electronic transmission: Your comments must be sent by March 11, 2003. (Please see the **SUPPLEMENTARY INFORMATION** provided below for additional information on submitting comments.)

ADDRESSES: Regular mail, express delivery, hand-delivery, and messenger service: You must submit three copies of your comments and attachments to the OSHA Docket Office, Docket No. H-011G, Room N-2625, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC, 20210. OSHA Docket Office and Department of Labor hours of operation are 8:15 a.m. to 4:45 p.m., e.s.t.

Facsimile: If your comments, including any attachments, are 10 pages or fewer, you may fax them to the OSHA Docket Office at (202) 693-1648. You must include the docket number of this

notice, Docket No. H-011G, in your comments.

Electronic: You may submit comments through the Internet at <http://ecomments.osha.gov>.

FOR FURTHER INFORMATION CONTACT: For general information and press inquiries, contact Ms. Bonnie Friedman, OSHA, Office of Information and Consumer Affairs, N-3647, 200 Constitution Avenue, NW., Washington, DC 20210; telephone: (202) 693-1999. For additional copies of this **Federal Register** notice, contact OSHA, Office of Publications, U.S. Department of Labor, Room N-3101, 200 Constitution Avenue, NW., Washington, DC, 20210; telephone (202) 693-1888. Electronic copies of this **Federal Register** notice, as well as news releases and other relevant documents, are available at OSHA's web page on the Internet at <http://www.osha.gov>.

SUPPLEMENTARY INFORMATION:**Submission of Comments on This Notice and Internet Access to Comments and Submissions**

You may submit comments in response to this notice by (1) hard copy, or (2) FAX transmission (facsimile), or (3) electronically through the OSHA Webpage. Please note that you cannot attach materials, such as studies or journal articles, to electronic comments. If you have additional materials, you must submit three copies of them to the OSHA Docket Office at the address above. The additional materials must clearly identify your electronic comments by name, date, subject and docket number so we can attach them to your comments. Because of security-related problems there may be a significant delay in the receipt of comments by regular mail. Please contact the OSHA Docket Office at (202)-693-2350 for information about security procedures concerning the delivery of materials by express delivery, hand delivery and messenger service. All comments and submissions will be available for inspection and copying at the OSHA Docket Office at the address above. Comments and submissions posted on OSHA's Webpage are available at <http://www.osha.gov>. OSHA cautions you about submitting personal information such as social security numbers and birth dates. Contact the OSHA Docket Office at (202)-693-2350 for information about materials not available through the OSHA Webpage and for assistance in using the Webpage to locate docket submissions.

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I. Background

Employees in shipyard employment are subject to a high risk of injury and death from fires and explosions during ship repair, shipbuilding, shipbreaking, and related work activities as well as firefighting activities. Many of the basic tasks involved in shipyard employment (also referred to as just "shipyards" hereafter), such as welding, grinding, and cutting metal with torches, provide an ignition source for fires. There are also many combustible sources on vessels and in shipyards, including flammable fuels and cargo on vessels, wood structures, building materials, and litter. When cutting torches are used in enclosed or confined spaces, accidental oxygen-enriched atmospheres can cause normally fire resistant materials to readily burn. When fires do occur, employees are often working in confined or enclosed spaces that may make escape difficult or impossible, and result in atmospheres of combustible gases, toxic fumes, or oxygen-depleted air.

Shipyard employees are therefore at risk from fires that can result in burns, death, explosions, toxic gases and fumes, and asphyxiation from a lack of oxygen. Based on data collected by the Bureau of Labor Statistics, there is an annual average of one fatality, 110 lost-workday "heat/burn" injuries, and more than three times that many total injuries (Ex. 15).

In addition, employees are also at special risk when fighting fires in shipyards. Fighting fires at shoreside facilities in shipyards can be similar to structural firefighting at typical industrial manufacturing facilities. The usual firefighting hazards encountered include compressed gas cylinders, flammable liquid processes and storage, high-voltage electric switches and transformers, and high-density combustible materials storage.

Structures at shipyards can range from single-story office buildings to warehouses to massive fabrication shops. Fires can also be encountered in tunnel sections, rail cars, vessel components, and similar units under construction, repair, or demolition at the shipyard site.

However, firefighting on board vessels can be considerably different from structural firefighting. When traditional structural firefighting techniques are used on vessel fires, the result can be catastrophic. The potential is much greater for serious injury to firefighting personnel when tactics do not reflect the unique nature of ship firefighting. For example, there may be little or no ability to ventilate the heat, smoke, and gases produced by a fire. Typically, in structural firefighting, immediate steps are taken to open up the structure, vertically and horizontally, to remove smoke and heat. Hose lines are then used to attack the fire. When fighting a ship fire, one of the first steps that may be taken is to shut down ventilation systems to close off the fire's progression and starve it of oxygen. Hose lines are used to cool down surrounding metal decks and bulkheads. A defensive fire-fighting option for large or intense structural fires is to "surround and drown"; that is, position hose lines outside the structure and apply voluminous amounts of water until the fire goes out. Strategic options for vessel fires are very limited and nearly always require an aggressive interior attack. Small shipyards have outside fire responders. These municipal or other fire departments may not have much experience in fighting fires in shipyards or, especially, on vessels. Proper coordination, familiarization, and training is necessary to ensure the safety of outside firefighters who respond to shipyard fires.

Vessel fires are also more complicated because, in most cases, outside firefighters seldom have the opportunity to learn the layout of the vessel. Vessels under construction or modification have constantly changing structures. Firefighters, operating under adverse conditions caused by heat and smoke, can easily become disoriented or confused. Access to the vessel may be restricted by its location, such as within a dry dock, meaning that firefighters boarding the ship will have to converge on one or two access locations. This can lead to congestion of personnel and delays in locating and extinguishing the fire. Access can also be restricted by equipment, tools, vessel components, and structures. Staging platforms, scaffolding or rigging, cranes, and even

mooring lines can hamper deploying hose lines and positioning apparatus, again causing delays and confusion. Even with unrestricted access to the vessel, deploying hose lines can be time-consuming and labor intensive. To attack a fire deep within a ship, firefighting hoses may have to be stretched hundreds of feet, a task that requires time and a lot of people.

Maintaining an adequate supply of air is another tactical problem for firefighting operations on ships. Firefighters will usually be equipped with self-contained breathing apparatus (SCBA) that optimally provide a 30-minute supply, after which the compressed air bottle will have to be refilled or replaced. Ship fire-fighting operations can last many hours; firefighters have to be rotated frequently to resupply their SCBA and counteract fatigue.

Ships' fires also present a problem firefighters do not often have to think about—introducing a large amount of water into the vessel, so much so that the vessel can become unstable and possibly capsize or sink. This potential problem requires consultation with experts (such as naval architects or U.S. Coast Guard engineers) to assure vessel stability.

Radio communication is another complicating factor common to fighting ship fires. Steel bulkheads and many compartments in ships effectively block and limit radio signal transmissions. To compensate, firefighters have to relay messages from within the ship by stationing personnel with radios close enough that transmissions can be sent and received. Other alternatives include using runners or deploying hard-wire communications systems. All possible solutions to this problem involve additional personnel, delays in establishing command and control, and increase the potential for mishaps.

Fires in shipyard employment present significant, serious hazards to those who work to control them. These hazards can be found in shipbuilding, as well as in shipbreaking and ship repair. Because firefighters must function on both land side and on board vessels, they need a single set of standards and training to do so safely. Likewise, other shipyard employees move from ship to shore frequently and need a single standard and training on alarms, evacuation, and the many other response actions.

OSHA's general industry standards for fire protection are in subpart L, CFR 1910.155 through 1910.165. The application of subpart L, CFR 1910.155(b), exempts maritime employments from coverage. Subpart L addresses typical land-side fire

prevention and firefighting conditions (fire extinguishers, fixed extinguishing systems, *etc.*). OSHA compliance policy, set out in OSHA Instruction STD-2 addresses typical land-side fire hazards in shipyards. Since the Agency has no specific standards that address the risks of fire on board vessels and vessel sections, OSHA has used the General Duty Clause section 5 (a)(1) of the Occupational Safety and Health Act to cite fire safety hazards on both land-side facilities and on board vessels and vessel sections (also referred to as just "vessels" hereafter). To enforce the General Duty Clause, OSHA must show the existence of a hazard, that the hazard is recognized, that the hazard is causing, or is likely to cause serious physical harm to employees, and that a feasible means exists to abate the hazard. To demonstrate industry recognition and feasible abatement measures, OSHA has relied upon standards published by the Coast Guard and other branches of the Federal Government to identify hazards and abatement steps as well as guidelines developed by professional associations such as the National Fire Protection Association and the Marine Chemists Association.

The lack of a clear OSHA standard for fire protection on vessels, and the multiplicity of guidelines and standards from other sources that potentially apply to shipyards can result in uncertainty about, and gaps in, the safety requirements for employers in the shipyard industry. The Agency has preliminarily concluded that codifying relevant issues for fire protection in shipyards into a single subpart in CFR part 1915 will substantially clarify an employer's responsibilities in protecting shipyard employees from fire hazards. The Agency believes that this, in turn, will lead to better protection for these employees.

Simply extending application of the current general industry standards to shipyards would not be appropriate. First, most of the provisions in the general industry standards have been in effect since 1980. They would need revision to take into account technological advances that could improve fire protection in shipyard employment. These advances are recognized in the proposed new subpart P. Secondly, shipyard employment encompasses many tasks and worksites that are unique to the maritime industry. Employers, labor representatives and professional and trade associations have repeatedly asked OSHA to allow all shipyard employment to be covered by a single set of standards. They point out that the

work situations found within shipyard employment have more in common with each other than with those in general industry, and that the hazards and methods of controlling the hazards are similar throughout the shipyard. Finally, they point out that the work on land and aboard the vessels is located within the same area and performed by the same workforce. Fire protection services are usually provided by the same in-yard plant or out-of-yard fire crews to all areas of shipyard employment. OSHA's Negotiated Rulemaking Advisory Committee for subpart P (hereafter "the Committee") concluded that when fire response crews find shipyard employment sites following the same standard, the crews are more effective in their fire response activities. OSHA agrees and has preliminarily concluded that a single new standard addressing fire hazards for all shipyard employment, on land and on board vessels, is reasonably necessary and appropriate to protect shipyard employees.

The Agency has also preliminarily concluded that there is a significant risk to employees of material impairment from fires, explosions, and fire-related accidents causing death, burns, and injuries related to fire and fighting fires. OSHA further concludes that the proposal's requirements for inspections before beginning hot work, fire watches, fire planning, training, and other provisions will help save lives and prevent injuries. Proposed subpart P will substantially reduce this risk of fire by recognizing and, in some cases, requiring new technology.

OSHA established the Shipyard Employment Standards Advisory Committee (SESAC) in 1990. SESAC was formed to guide OSHA in revising, consolidating, and modernizing the varying sets of rules that were being applied in the shipyard employment industry into what would ultimately become a single comprehensive set of standards for all shipyard employment. The new shipyard employment standards would apply to all shipyard employment, regardless of geographic location. In 1991 SESAC began work on standards on fire protection for all shipyard employment. The SESAC Subcommittee on Fire Protection, after reviewing pertinent federal regulations and guidelines issued by professional associations, drafted a shipyard employment fire protection standard (SESAC, Ex. 9). However, not all of its provisions were written in regulatory language and the provisions did not address all of the issues that need to be considered in an OSHA rulemaking.

The shipyard employment workgroup of the Maritime Advisory Committee on Occupational Safety and Health (MACOSH) briefly discussed fire protection and negotiated rulemaking at its September 1995 meeting in New Orleans, Louisiana. Members urged OSHA to proceed with a fire protection standard, although some members suggested the MACOSH shipyard employment workgroup take up the fire protection issues if OSHA was unable to do a fire protection negotiated rulemaking.

On June 6, 1996, OSHA announced its intent to establish a Fire Protection in Shipyard Employment Negotiated Rulemaking Advisory Committee under the Federal Advisory Committee Act (FACA) and the Negotiated Rulemaking Act (NRA) (61 FR 28824). The Committee would negotiate issues associated with developing a notice of proposed rulemaking to regulate fire hazards in shipyard employment. The Committee would be made up of representatives of the parties interested in, or affected by, the outcome of the proposed rule. OSHA asked interested parties to submit their nominations for membership or request representation on the Committee. The Agency planned public meetings for the Committee along the United States coastlines in an effort to provide small employers with the access they needed to participate in this rulemaking effort.

II. The Fire Protection in Shipyard Employment Negotiated Rulemaking Advisory Committee

Negotiated rulemaking is a process by which a proposed rule is developed through negotiation among a committee composed of representatives of all the interests that will be significantly affected by the rule. Negotiation allows interested parties to discuss possible approaches to various issues and arrive at jointly agreed or acceptable provisions for a standard. The negotiation process involves a mutual education of the parties on the reasons for different positions on the issues as well as on the concerns about the practical impact of various approaches.

The process is started by the Agency's identification of all interests potentially affected by the rulemaking under consideration. To help in this identification process, the Agency publishes a notice in the **Federal Register**, called "an intent to negotiate," which identifies a preliminary list of interests and requests public comment. Also included in this notice is a statement that the Agency intends to negotiate and develop a proposed rule; a description of the subject and scope of

the rule to be developed and the issues to be considered; a proposed agenda and schedule for completing the work of the committee; and even a possible list of persons who may be nominated.

After receiving comment, the Agency chooses an advisory committee of those nominated to represent these various interests. Representation on the committee may be direct, that is, each member represents a specific interest, or indirect, through coalitions of parties formed for this purpose. An Agency representative is a member of the committee, representing the Federal government's own set of interests. The negotiated rulemaking advisory committee is chaired by a mediator, who facilitates the negotiation process.

Once a negotiated rulemaking committee reaches consensus on the provisions of a proposed rule, the Agency, consistent with its legal obligations, uses this as the basis of its proposed standard, which is published in the **Federal Register**. This provides the required public notice and allows for a public comment period. Other participants and other interested parties retain their rights to comment, participate in an informal hearing (if requested), and seek judicial review. OSHA anticipates, however, that the pre-proposal consensus reached by the Committee will effectively narrow the number of controversial issues in the subsequent rulemaking.

The Negotiated Rulemaking Act of 1990 (5 U.S.C. 561 *et seq.*) (NRA) allows OSHA to establish a negotiated rulemaking committee if it is determined that using the negotiated rulemaking procedure is in the public interest. As noted above, OSHA has made this determination for this rulemaking activity. Each committee member participates in resolving the interests and concerns of other members instead of leaving it up to OSHA to bridge different points of view. A key principle of negotiated rulemaking is that agreement is reached by consensus of all the interests. The NRA defines consensus as unanimous concurrence among the interests represented on a negotiated rulemaking committee, unless the committee itself unanimously agrees to use a different definition of consensus.

The Agency determined that the selection criteria listed in the NRA were met, and that there was a need to issue fire protection requirements that would apply to all shipyard employment. Finally, parties representing significant interests requested that OSHA use the negotiated rulemaking process on subpart P and acknowledged the need for a new standard.

The members of the Committee are: Chris Myskowski, U.S. Coast Guard; Paul Jensen, NIOSH; Joseph V. Daddura, Office of Maritime Standards, Occupational Safety and Health Administration; G. F. Hurley, Norfolk Naval Shipyard; Richard Duffy, International Association of Firefighters (AFL-CIO, CLC); E.P. Kaiser, South Tidewater Association of Ship Repairs, Inc.; Guy Colonna, National Fire Protection Association; Russ Sill, Portland Fire Bureau; Alton Glass, United Steel Workers of America (AFL-CIO, CLC), who was later replaced by John Molovich; George Broussard, Bollinger's Shipbuilding and Ship Repair, who was later replaced by Mark Duley, Walker Boat Yard, Inc.; Glenn Harris, Ingalls Shipbuilding; Donald Mozick, Atlantic Marine, who was later replaced by Terry Guidry, Bollinger's Shipbuilding and Ship Repair; Michael Buchet, United Brotherhood of Carpenters and Joiners of America, who was later replaced by Joseph Durst; J.D. Paulson, National Steel & Shipbuilding Co., Peter Schmidt, Office of Specialty Compliance Programs, Washington State Department of Labor and Industry.

The first meeting of the Committee was held in Portland, Oregon, on October 15, 16, and 17, 1996, and was open to the public, as were all subsequent meetings. (All minutes and documents from the Committee meetings can be found in Exs. 5-1 through 5-. Minutes were recorded by OSHA staff for the Committee.) During this organizational meeting, the members were charged with their duties and procedural matters were addressed. The members adopted ground rules for the Committee and set forth substantive issues that needed to be resolved. The rulemaking process was explained in depth to the Committee members, so that they would understand their role in the process. SESAC's proposal on fire protection in shipyards was given to the Committee.

Several examples of firefighting were given by members of the Committee and discussions were held after each example, including how small businesses contact outside fire departments for assistance with firefighting. Workgroups were established for the following areas: Fire Watch, Safe Work Practices, Fire Response, and Fire Protection. These workgroups were charged with producing a draft regulatory text and rationale for their parts of the safety standard. These drafts were to include definitions and several options in areas where the members of the workgroup did not agree. The Committee agreed to include sea trials in the scope of this

regulation. Also at this meeting, an overview and history of the SESAC Draft Proposed Standard for Fire Protection was presented by a member of SESAC's workgroup. The draft, text, and rationale of SESAC's recommendations were reviewed. As was to become routine at meetings, the Committee and other participants toured nearby shipyards. They were MarCom Inc., Vancouver, Washington (small shipyard); Diversified Marine Incorporated, Portland, Oregon (small shipyard); and Cascade General, Portland, Oregon (large shipyard).

The second Committee meeting was held in Jacksonville, Florida on February 4, 5, and 6, 1997. The Committee discussed several key issues: Should subpart P—Fire Protection for Shipyard Employment—apply to all shipyard employment? How will the standard affect out-of-yard/plant firefighters such as those employed by a municipal fire department? What controls and work practices will provide adequate protection for workers? Should OSHA require hot work permits? Should OSHA require training for all firefighters? Should OSHA incorporate U.S. Coast Guard regulations in this standard? Is there any difference in controls and work practices on land-side versus on board vessels and vessel sections? Should OSHA require the employer to secure (deactivate) all firefighting systems on board vessels when they arrive in the yard? Should OSHA require each shipyard to have an in-yard/plant fire brigade? Should OSHA require written fire plans for land side and on board vessels? If so, what provisions need to be included in the plans? Should OSHA include a requirement for de-watering (removal of firefighting water from the vessel) of vessels when fighting a fire on board a vessel? What advances in fire technology have occurred since OSHA's general industry standards were published that should be incorporated into the shipyard employment standard? Should OSHA include technical information in an appendix or appendices? If so, should appendices be mandatory?

The Committee had a lengthy discussion about OSHA's jurisdiction. OSHA has no jurisdiction over municipal firefighters, but states and territories with OSHA-approved State Plans are required to have standards for state, county, and local government entities that are at least as protective as Federal OSHA's.

Small employer representatives included: T.L. James & Company, Houma, Louisiana; Halter Marine, New Orleans, Louisiana; and Alabama

Shipyards/Atlantic Marine, Mobile Alabama. A Chicago municipal firefighter also attended. Committee members and the public participants at this meeting took a tour of Atlantic Marine (small shipyard).

A Fire Watch section workgroup met at Charleston, South Carolina, on March 18, 1997. The workgroup was tasked with developing proposals to be presented to the full Committee. Discussions included the Navy's NAVSEA 00907 Fire Prevention and Housekeeping standard of September 13, 1996. The workgroup agreed that NAVSEA 00907 was not applicable to the safety of workers because its focus was on the protection of property. The workgroup also agreed on two proposals to present to the full Committee: That an employee performing hot work should never be his or her own fire watch, and that training requirements should be performance oriented. For example, for training employers could use stand-up tool-box safety meetings or written training documents as a basis for appropriate training sessions. Suggestions for identifying a fire watch included: Stickers on hats, arm bands, and vests. The topic of live-fire training was raised as an issue for the full Committee to consider.

The third public meeting of the Committee was held in Lockport, Louisiana, on April 8, 9, and 10, 1997 (Ex. 5-3). The Committee's workgroups continued working on the issues of scope and application, controls and work practices, fire brigades, written fire plans, technological advances in fire protection, costs of fire protection, and appendices. There were discussions about small employer difficulties and on Coast Guard jurisdiction over vessels during sea trials. Preliminary drafts of proposed changes and preamble language were circulated among committee members for review and comment. At this meeting the Committee decided that issues upon which general agreement could not be reached would be raised for public comment in the proposal's preamble. By doing so, an issue, such as live fire training, would be considered by the public and OSHA and could become part of a final rule. Small employer representatives in attendance were: Walker Boat Yard; Halter Marine; Leevac Shipyard; Boland Marine; and Bollinger Shipyard. The Committee members and other participants toured the Bollinger Lockport facility and two other Bollinger facilities in the area (small shipyards).

The fourth public meeting of the Committee was held in Baltimore, Maryland on July 15, 16, and 17, 1997

(Ex. 5–6). During this meeting the Committee broke out into its workgroups and continued to develop proposed preamble and regulatory text on the issues that were identified in previous meetings. OSHA staff explained the economic feasibility issues that are brought into rulemaking and gave a briefing on “plain language.” Carryover discussion items from the previous meeting were OSHA’s lack of jurisdiction over civilian guests on board vessels during sea trials, municipal fire departments, and volunteers. The discussions produced several examples of current practices from members of the Committee.

There was a discussion about the hazards of fixed extinguishing systems and members gave examples of current practices. A large West Coast shipyard disconnects the vessel’s system because they do not want it to be accidentally activated. A representative from small shipyard on the inland waterways noted that he prefers not to deactivate a vessel’s fixed extinguishing system, especially for a short-term repair job. For this type of short-term repair job, the Committee agreed that there are two options: Disconnect the entire system or train employees. Some members indicated that on some manned Navy vessels, deactivating the fixed extinguishing system is not an option. It was also noted that, on U.S. flag vessels the U.S. Coast Guard requires a time delay on fixed systems to allow employees to evacuate before the extinguishing agent is released or automatic locking doors are activated. There was an incident in Spain where a small fire on board a vessel was under control locally when another employee pulled the fixed fire system, causing fatalities. A presentation was given on a fire aboard the *Melvin H. Baker II*, which occurred during a hot work operation and caused a fatality.

There was also a discussion of how a fire watch can alert others before he or she exits the dangerous areas, which fire watch duties should be included in safe work practices, and the important role of the fire watch in preventing fires and loss of life. A workgroup was established to work on the definitions section of the standard. Small employers were represented by: Bollingers Shipyard, Lockport, Louisiana, and the National Shipbuilders Association, Arlington, Virginia.

The fifth meeting of the Committee was held in Paducah, Kentucky, on October 7, 8, and 9, 1997 (Ex. 5–4). At the request of the Shipbuilders Council of America (SCA), OSHA staff held a preliminary meeting on October 6. This

meeting was open to the public and SCA invited small employers to be present. OSHA staff made presentations on the negotiated rulemaking process, OSHA’s standards writing process, and the intent of the proposed Fire Protection standard. The OSHA Project Attorney reviewed the ground rules for negotiated rulemaking procedures, and answered more specific questions that the Committee had raised, such as regulating small businesses. Some workgroups presented their draft documents for discussion and approval by the full Committee. Those documents that were approved by the Committee were delivered to OSHA for further action. Some of the other topics of discussion were: Sliding/rolling fire doors, inadvertent activation of a ship’s CO₂ system, and live fire training. Small employer representatives in attendance were: Bollinger’s Shipyard, Lockport, Louisiana; James Marine, Inc., Paducah, Kentucky; Cascade General, Inc., Portland, Oregon; Newport Shipbuilding & Repair, Houston, Texas; Missouri Dry Dock, Cape Girardeau, Missouri; Mid South Towing, Metropolis, Illinois; Sea River Maritime; and American Commercial Marine Service Co. Unions representatives were present from Firefighter Local 168, Paducah, Kentucky and IBEW Local 733, Pascagoula, Mississippi. Committee members and the public participants toured two small shipyards, Walker Boatyard and James Marine, Inc., Paducah, Kentucky.

The sixth public meeting of the Committee was held in San Diego, California, on February 24, 25, and 26, 1998 (Ex. 5–5). Discussions at this meeting included the Small Business Regulatory Enforcement Fairness Act (SBREFA), the general industry (29 CFR part 1910) regulations that apply to landside operations, and live fire training for fire watches. During this meeting, the Committee approved the regulatory text on hot work. Small employer representatives at this meeting included: Bollinger’s Shipyard, Louisiana; Walker Boat Yard, Kentucky; Sea River Maritime; and South Tidewater Association of Ship Repairers (STASR), Hampton Roads, Virginia. The Committee member representing STASR noted that the negotiated rulemaking issues and products are shared by the member with 121 STASR members, who are mostly small employers. Committee members and the public participants at this meeting took a tour of the NASSCO and the NAVAL shipyards.

The seventh meeting of the Committee was held in Linthicum, Maryland on June 15, 16, and 17, 1998 (Ex. 5–9). The Committee decided that

since MACOSH has supported the Committee and intends to review its products, the Committee’s recommendation for a proposed standard will be made available to them. A lengthy discussion was held on shipboard fixed fire protection systems, during which the Committee members learned that only CO₂ systems have caused fatalities. This led to further discussion about whether or not an employer would rely on a vessel’s fixed system as the primary source of fire protection., and prompted a page-by-page review of the fire response section. Topics discussed included the term “qualified instructor,” personal protective equipment, hose testing, and how long records must be kept.

During the second day of this meeting, the Acting Director of OSHA’s Office of Regulatory Analysis presented an overview of what requirements OSHA’s economic analysis must meet. A representative from the Small Business Administration (SBA), Office of Advocacy also answered questions from the Committee and public on issues related to small businesses. After a review, the Committee voted to accept the preamble of shipboard fixed systems. The Committee further agreed to not bring sections of 29 CFR part 1910 over into 29 CFR part 1915 for land-side fixed systems, because members prefer that fire extinguishers, stand pipes, or sprinklers conform to NFPA 10, Standard for Portable fire Extinguishers, 1998 Edition (Ex. 20–1) rather than the older OSHA general industry standards for this type of equipment.

The issue of records retention was reviewed. It was agreed that the proposal will state that records must be kept and made available for one year; however, an issue will be raised on one year versus three years retention. Large shipyards typically keep their records indefinitely, but in the opinion of several of their representatives, they would rather not be told how long records must be kept.

Small employer representatives at this meeting included: Bollinger’s Shipyard, Louisiana; Walker Boat Yard, Kentucky; and South Tidewater Association of Ship Repairers, Hampton Roads, Virginia. A representative from National Shipbuilders Association, Arlington, Virginia, also attended.

The eighth meeting of the Committee was held in Biloxi, Mississippi, on September 9, 10, and 11, 1998 (Ex. 5–7). Topics of discussion included the progress that the definitions workgroup was making and the outreach programs previously completed. The public was polled about their expectations from

this negotiated rulemaking on fire protection. Other discussions were held on what to do with burning torches, what the extent of the standard was, where fire watches are not needed, and how to ensure that the 29 CFR part 1910 requirements are updated and that they cover the same work as subpart P.

The following list of issues was distributed and discussed by the Committee: Can a fire response count as a drill? Is the inspection required in the proposal's section 504(a) and (b) already covered in 1915.14, or does the proposal mandate that all areas—other than those that require a Marine Chemist or Shipyard Competent Person's inspection—be inspected before hot work? In section 505, Fire Response, should OSHA require proximity firefighting protective clothing for all yards and fire departments? Should an employee have the right to stop work if the employee felt he or she was placed in a dangerous situation? Does the committee want to require the employer to instruct on-site contractors on their fire plans? What is an "authorized area?" Is a welding shop, sheet metal shop, fabricating shop, or subassembly area to be considered an authorized area? If so, does the Committee want the employer to post signs to notify employees? How does the employer determine the authorized area? Is it the Committee's understanding that the employer is to survey his shipyard to determine and label all working areas? How is the issue of municipal fire departments' response to shipyard fires to be explained in the preamble? How can the Committee ensure that the public understands that this standard does not apply to state, county, or municipal fire departments?

Other issues discussed included: Proximity suits; a model training program for fire watches; employee participation; fire watch training; the requirements of subpart B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment, that could apply in the hot work section; training requirements for all shipyard employees versus training only fire watches; liaisons between shipyards and outside fire responders; and the proposed requirement that all fire hoses used by the employer being labeled, tested, and maintained in accordance with NFPA 1962–1998 Standard for the Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles, 1998 Edition (Ex. 20–2). The Committee agreed on the regulatory text of proposed §§ 1915.505 and 1915.506.

A small shipyard representative requested that OSHA have an extended compliance date for employers with 250

or fewer employees. Shipyards with more than 250 employees typically have a full-time designated safety and health professional, based on the experience of the National Shipbuilders Association. A labor representative opposed the request for a delay in implementation for small employers. It was suggested that OSHA review the issue for its proposal.

Small employers were represented at this meeting by Bollinger Machine Shop & Shipyard, Inc., Louisiana; Walker Boat Yard, Kentucky, South Tidewater Association of Ship Repairers, Hampton Roads, Virginia; National Shipbuilders Association, Arlington, Virginia; First Wave Marine, Houston, Texas; Bender Shipbuilding, Mobile, AL; and Omega Shipyard, Moss Point, Mississippi.

The ninth meeting of the Committee was held in Houston, Texas, on February 5–7, 2002 (Ex. 5–8). OSHA staff incorporated the agreed upon changes made during this meeting into the Committee's working document. A motion was made for a full Committee vote on the document. The Committee unanimously approved, agreeing on all the issues and topics. A reworked package of the regulatory text including section number changes with training in its own section was mailed to the Committee March 2002.

Small employers were represented at this meeting by Bollinger Machine Shop & Shipyard, Inc., Louisiana and Texas; Walker Boat Yard, Kentucky; South Tidewater Association of Ship Repairers, Hampton Roads, Virginia; National Shipbuilders Council, Washington, D.C.; First Wave Marine, Houston, Texas; Trinity Marine Products; Moon Engineering, Co., Portsmouth, Virginia; and Atlantic Marine/Alabama Shipyard.

Informal meeting minutes were provided by OSHA staff for all meetings. These minutes were approved by the Committee and included in OSHA's Docket S–051 (Ex. 5). The Agency has taken the Committee's recommendations for a proposal for fire protection in shipyard employment and editorially revised them into the proposed standard that follows this preamble.

III. Pertinent Legal Authority

The purpose of the Occupational Safety and Health Act, 29 U.S.C. 651 *et seq.* ("the Act") is to "assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 U.S.C. 651(b)). To achieve this goal, Congress authorized the Secretary of Labor to issue and enforce occupational safety and health

standards. (See 29 U.S.C. 655(a) (authorizing summary adoption of existing consensus and federal standards within two years of the Act's enactment), 655(b) (authorizing promulgation of standards pursuant to notice and comment), 654(b) (requiring employers to comply with OSHA standards).) A safety or health standard is a standard "which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment or places of employment." 29 U.S.C. 652(8).

A standard is reasonably necessary or appropriate within the meaning of section 652(8) if it substantially reduces or eliminates significant risk; is economically feasible; is technologically feasible; is cost effective; is consistent with prior Agency action or is a justified departure; is supported by substantial evidence; and is better able to effectuate the Act's purposes than any national consensus standard it supersedes. See 58 FR 16612–16616 (March 30, 1993).

A standard is technologically feasible if the protective measures it requires already exist, can be brought into existence with available technology, or can be created with technology that can reasonably be expected to be developed. *American Textile Mfrs. Institute v. OSHA* 452 U.S. 490, 513 (1981) ("ATMI"), *American Iron and Steel Institute v. OSHA*, 939 F.2d 975, 980 (D.C. Cir 1991) ("AISI").

A standard is economically feasible if industry can absorb or pass on the cost of compliance without threatening its long term profitability or competitive structure. See *ATMI*, 452 U.S. at 530 n. 55; *AISI*, 939 F.2d at 980. A standard is cost effective if the protective measures it requires are the least costly of the available alternatives that achieve the same level of protection. *ATMI*, 453 U.S. at 514 n. 32; *International Union, UAW v. OSHA*, 37 F.3d 665, 668 (D.C. Cir. 1994) ("LOTO II").

Section 6(b)(7) authorizes OSHA to include among a standard's requirements labeling, monitoring, medical testing and other information gathering and transmittal provisions. 29 U.S.C. 655(b)(7).

All standards must be highly protective. See 58 FR 16614–16615; *LOTO II*, 37 F.3d at 668. Finally, whenever practical, standards shall "be expressed in terms of objective criteria and of the performance desired." *Id.*

IV. Summary and Explanation of Proposal Rule

Section 1915.501 General Provisions

In paragraph (a), OSHA states that the purpose of this standard is to require employers to protect all employees from fire hazards in shipyard employment, including employees engaged in fire response activities.

Paragraph (b) describes the scope of the proposal, which is all shipyard employment work, including work on vessels and vessel sections and land-side operations, regardless of geographic location. The scope of this subpart is consistent with that in the maritime standards' subpart B Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment and subpart I Personal Protective Equipment for Shipyard Employment. Fire response provided by the employer's workers, whether they be part of a fire brigade, shipyard fire department, or simply designated by the employer, is within the scope of this standard. There are several reasons for including all shipyard employment in the scope of this standard: (1) The requirements are tailored to the unique risks in shipyard employment; (2) subpart P will provide a single source of standards for fire protection that will be easier for training and to understand than multiple sources or sets of rules; (3) a comprehensive standard, referencing part 1910 where necessary, will be applicable throughout shipyard employment addressing hazards associated with fire watch situations, ship fire suppression systems, fire response procedures and landside fire operations.

OSHA has preliminarily concluded, and the Committee agrees, that a comprehensive standard applying to all shipyard employment operations will be highly protective of shipyard employment workers working on vessels, vessel sections, or landside operations and offer the best protection against fire hazards.

Shipyard employment can consist of shipbuilding, ship conversion, ship repairing or shipbreaking, and related employments. Shipyards may be dedicated to one type of work, such as new ship construction, or a shipyard may perform any or all types of shipyard work. The construction of a new vessel may be a single project or may involve separate fabrication of key components which are then joined together. Vessel sections may be fabricated on land within the shipyard, or may be built in specialty facilities inland of the shipyard and then transported to the yard. The scope must

have broad coverage because shipyard employers increasingly engage in non-traditional shipyard employment such as steel fabrication of products not directly related to ships. This could include work such as construction of railroad cars, bridges, tunnel sections, smoke stacks, and boilers. It could also include operations performed during the final outfitting of vessels under construction or repair. Examples of such operations include technical support from the providers of shipboard electronic equipment as well as suppliers of internal furnishings. It does not include shoreside support services, such as those provided by vending equipment and mail delivery companies. The Agency is also proposing that any fire brigade, shipyard fire department, contracted outside fire response organization, or federal fire response organization be covered by this subpart if the responder is located at or responds to shipyard employment facilities. OSHA recognizes that a number of small employers perform vessel repair in non-traditional shipyards and intends to cover them.

Ship repair work could involve replacing damaged hull sections, outdated systems or components, or modifying a vessel to increase its capacity or change its designed purpose.

Shipbreaking could consist of the partial removal of vessel components or it could be the complete dismantling of a vessel (also known as "scrapping") for the salvage value of its parts.

Shipyard employment can also consist of support operations necessary for vessel construction and repair. Metal fabrication, machine shops, electrical and paint shops are typical facilities that can be found within a shipyard. Many vessel sections and vessel components are built in these shops more easily than they can be built on board a vessel. The materials are the same and often the hazards encountered are similar.

Shipyard employment also occurs on vessels and vessel sections within the navigable waters of the United States. The provisions of the Longshore and Harbor Workers' Compensation Act (LHWCA), 33 U.S.C. 901 *et seq.*, only applied to shipyards. Under the OSH Act, jurisdiction was extended to include workers wherever they were working.¹

¹ See 29 CFR 1910.11(b). The LHWCA limitations on coverage that appear in the maritime standards were not adopted under section 6(a) of the OSH Act, 29 U.S.C. 655(a). See also the preamble for the rulemaking in which the shipyard employment standards were consolidated, 47 FR 16986 (April 20, 1982). This OSHA policy was accepted by the Occupational Safety and Health Review

OSHA has included the phrase "regardless of geographic location" in the scope so that protection is afforded employees wherever they work: On vessels, vessel sections, land side, or any other location they are sent to by their employers. This has been Agency policy on shipyard employment and is in the scope of both subparts B and I.

The Committee also urged OSHA to cover work in the traditional shipyard and dock as well as on vessels during sea trials or at anchor. At the Portland, Oregon, meeting, the Committee noted that most ships on sea trials are still under construction with shipyard workers on board. At the Baltimore, Maryland, meeting, Committee members reviewed OSHA Instruction CPL 2-1.20, "OSHA/U.S. Coast Guard Authority Over Vessels," dated November 8, 1996. Particular attention was given to paragraph I which delineated geographical considerations for enforcement over all vessels. The CPL states that "OSHA only has authority over vessels when they are operating within the limits of State territorial waters." It goes on to define those waters as extending three nautical miles seaward from the coast line of coastal States, "except for the Gulf Coast of Florida, Texas and Puerto Rico where the territorial waters extend for 3 marine leagues (approximately 9 nautical miles)."

The Committee concluded that the fire hazard exposure to workers is significant, whether a vessel or part is being constructed, repaired, or broken up and whether it is in the shipyard or dockside, at anchor, or underway for testing. Therefore, the requirements proposed in this subpart would apply broadly, including vessels underway within OSHA's jurisdictional boundaries, or at anchor, dockside, in dry dock, or on land.

In paragraph (c) of § 1915.501, OSHA seeks to encourage employee participation in shipyard safety and health program activities. OSHA proposes that the employer must provide ways for employees and employee representatives to participate in developing and periodically reviewing programs and policies adopted to comply with this standard. At the September 10, 1998, meeting held in Biloxi, Mississippi, the Committee recommended regulatory text regarding employee participation and involvement. The Committee saw this as a crucial component of the

Commission in *Dravo Corporation*, 10 BNA OSHC 1655 (No. 14818, 1982.) *Contra Dravo Corporation v. OSHRC & Marshall*, 613 F.2d 1227 (3rd Cir. 1980).

proposed standard and OSHA agrees. This proposal is consistent with the Department of Labor's policy to involve employees in decision-making processes affecting safety and health at their worksites.

Paragraph (d) of the proposed fire protection rule sets minimum requirements for exchanging information and coordinating responsibilities for fire protection among host and contract employers. These requirements are fundamental to any effective fire safety program on a multi-employer worksite.

A multi-employer workplace is defined for the purposes of this rule as a workplace where there is a host employer and at least one contract employer. This proposed requirement is necessary because the existence of additional employers and their employees at a workplace makes addressing safety and health conditions at the workplace more complex. For example, at a multi-employer worksite, one employer may introduce hazards into the workplace that employees of other employers may not know about. All employers need information about hazards present at the worksite to enable them to fulfill their obligations to protect workers. For these reasons, communication and coordination among employers are essential.

Failure to communicate about hazards between employers and their employees can be tragic. For example, the 1989 explosion at a Phillips 66 chemical complex in Houston, which killed 23 people and injured more than 100 workers, resulted largely from the failure to coordinate safety and health activities on a multi-employer worksite. A Department of Labor/OSHA 1990 report to the President concerning this catastrophe concluded:

The catastrophe at the Phillips Complex not only emphasized the need for effective implementation of good safety management systems in the petrochemical industry but also raised questions about diffused responsibility for employee safety at worksites where one or more contractors are engaged in work for a company. OSHA had addressed this issue at construction sites, but not at petrochemical plants like the Phillips Complex, where a contractor was regularly employed to perform key maintenance operations and was directly involved in the October 1989 disaster (Ex. 10-5).

Events like the Phillips explosion and the increased reliance on using contractors throughout the shipyard industry have led OSHA to conclude that responsibility for fire safety must be specifically assigned to all employers, who must then be held accountable for discharging those responsibilities.

The need for and benefits of coordinating activities and exchanging information on multi-employer worksites are widely recognized, and requirements such as those being proposed here have been implemented in many workplaces throughout general industry, construction, and maritime industries. For example, the Chemical Manufacturers Association (now the American Chemistry Council) and the American Petroleum Institute state that improved occupational safety and health performance is one benefit that occurs when owners and contractors work together to enhance the management of contractor-related safety and health programs. Similarly, the National Safety Council has observed that "a strong partnership between [host and contract employers] can reduce or eliminate risks, injury, and illnesses; help control health and insurance costs; and improve employee production and morale." In the shipyard industry it is common practice to hire contractors for nonroutine or specialized work situations. For example, painters, joiners, carpenters and scaffolding contractors are routinely used in shipyard employment.

The requirement for host and contract employer coordination and for the exchange of information about safety and health conditions on multi-employer worksites is consistent with Congress' desire that employees be informed of the hazards to which they are exposed. (Sections 6(b)(7) and 8(c)(1) of the OSH Act.) Employees can only be informed of the hazards to which they are exposed if information about such hazards is communicated among employers on multi-employer worksites. Such an exchange of information is also necessary to make sure that all hazards in the workplace are identified and that the responsibility for controlling them and protecting employees can be appropriately allocated among all employers on the site.

Under the proposal host employers must inform all employers at the work site about the contents of the host's fire safety plan—including hazards, controls, and emergency procedures—and assign any appropriate responsibilities for fire safety to other employers. The Committee is in agreement with this approach to multi-employer worksites (Ex. 5-8). The employer representatives on the Committee felt that the shipyard should not be responsible for training contractors.

In § 1915.509 Definitions, the host employer is defined as an employer who is in charge of coordinating work or

hiring other employers to perform work at a multi-employer worksite. Proposed § 1915.501(d)(1) establishes the responsibilities of host employers. First, host employers must make sure that information about fire hazards, controls, safety and health rules, and emergency procedures is given to all the contract employers. The information includes whatever a contract employer must have to carry out his or her own duties as an employer under this rule. Contract employers need to inform employees of the fire hazards to which they are exposed at that worksite, the controls in place to reduce or eliminate those fire hazards, the safety and health procedures to be followed, and the steps to be taken in a fire emergency. Second, host employers must ensure appropriate fire safety and health responsibilities are assigned to contract employers at the worksite.

Contract employers must know about other hazards related to fire their employees may encounter at the workplace. Such knowledge allows contract employers to effectively plan and safely carry out their work and understand procedures, such as what to do when a fire alarm is sounded to evacuate a vessel. This information lessens the likelihood that accidents will occur. A host employer's workplace may have fire hazards of many kinds: toxic chemical, flammable or combustible liquids or dusts, electrical hazards, fall hazards, pressurized systems, confined spaces, and many more. Under this standard host employers must inform contract employers of the hazards related to fire they are likely to encounter to enable them, in turn, to protect their employees.

The Committee recognized that in the event of a fire emergency, contract employers must be able to take appropriate actions to protect their employees. Therefore, OSHA requires the host employer to make sure that all appropriate information about fire safety and evacuation procedures is conveyed to all contract employers working in shipyard employment.

OSHA is also requiring in paragraph (d)(1)(ii) that the host employer make sure that fire protection responsibilities are specifically assigned to the various employers working at a multi-employer worksite. The host employer must make sure that fire safety and health responsibilities are assigned as appropriate to other employers at the worksite. Some of these responsibilities include fire hazard abatement, informing employees of fire hazards before exposure, and stopping work because of an imminent danger

situation. A host employer might assign a contract employer the responsibility of preventing employees (other than the contract employer's employees) from being exposed to a hazard generated by the contract employer. For example, the host employer might require the contract employer to control the area around a painter to ensure that hot work is not permitted while painting is in progress. More generally, the host employer must, in conjunction with the contract employers, decide who is to train employees and control which hazards. The need to coordinate across organizational lines on a multi-employer worksite makes the clear assignment of responsibilities across those lines essential to achieve the overall goal of reducing employee exposure to potential fire hazards.

The proposed definition of "contract employer" in § 1915.509 Definitions is an employer who performs work under contract for a host employer or to another employer under contract to the host employer at the worksite. This definition specifically excludes employers who provide incidental services that do not influence shipyard employment (such as mail delivery or office supply services). The Agency recognizes that many vendors who work under contract to host employers do not engage in work that exposes their employees to the job-related hazards present at the site and do not themselves introduce new hazards to the site. This definition also makes sure, however, that contract employees engaged in work operations that do place them at risk, such as temporary labor (e.g. tank cleaners), blasting, and paint contractors are protected by the proposed provisions regarding multi-employer worksites.

As noted in this discussion, OSHA has provided additional definitions of "host employer" and "contractor employer" in order to help clarify multi-employer worksite provisions. In other places, the term "employer," which is already defined in 29 CFR part 1915, is used to describe duties that are generally the host employer's as the employer with control of the overall worksite. We believe the intent of this approach is clear. The host employer has overall responsibility for fire protection at the worksite. However, in order to have effective fire protection, all employees on the site need to be aware of the hazards and the procedures established to deal with fires, regardless of who employs them. And all of the hazards on the site need to be identified and controlled, regardless of which employer has introduced the hazard to the workplace. Thus the provisions of

the standard anticipate that an exchange of information will be required to ensure that fire protection is handled in a comprehensive and effective manner, and any necessary coordination of activities will occur. The Agency invites input on these terms and the way they are used in the proposed rule. Is it clear which employer is responsible in all of the proposed provisions? Is there another way to define or clarify which employer has responsibility for implementing the requirements?

The Agency is considering dropping the phrase "safety and health rules," in paragraph (d)(i) that refers to the contents of the fire safety plan and dropping the phrase "safety and health" in reference to contract employers' responsibilities for fire protection activities in paragraph (d)(ii). The Agency has concluded that the reference to "health" or "safety and health" rules or responsibilities is confusing and vague in the fire safety proposal and that the scope of issues should be confined to fire safety.

Paragraph (d)(2) of § 1915.501, sets forth the proposed responsibilities for contract employer's. The contract employer must inform the host employer of any fire hazards that could be created by the work being performed by his or her employees, and what steps the contract employer must take to address those hazards. In addition, OSHA proposes that any hazards that were not identified by the host employer, but were identified by the contract employer, must be shared with the host employer.

Proposed paragraph (d)(2)(i) requires contract employers to make sure that the host employer is aware of the fire related hazards presented by the contract employer's work and how the contract employer is addressing them. The work performed by contract employers is commonly beyond the knowledge and expertise of the host employer and typically is not a part of the host employer's routine work. Contract employers are often hired precisely because they have special expertise. They offer a wide range of services, such as equipment repair and maintenance, blasting, painting, atmospheric testing of spaces, tank cleaning, and selected scaffold erection. Consequently, their work can present a set of hazards that are unfamiliar to the host employer. For these reasons, OSHA believes that the proposed rule must include minimum requirements for contract employers on multi-employer workplaces to report fire hazards to host employers. Proposed paragraph (d)(2)(ii) requires that contract employers advise host employers of any fire hazards

unidentified by the host employer. In the course of his or her work, the contract employer may create or uncover fire hazards. The host employer must be made aware of all of the hazards, regardless of who created them, to enable him or her to coordinate the management of safety and health at a given multi-employer worksite.

Section 1915.502 Fire Safety Plan

The requirements for fire safety plans contained in this section were developed by the Committee based upon their combined professional experience and current industry practices. OSHA concurs with these recommendations. OSHA does not have any requirements for fire safety plans in its current standards.

The Committee recommended a program that would establish the location, type, and capacity of firefighting equipment such as extinguishers, fire hose and stand pipes, smoke detectors, automatic sprinklers, and other fixed firefighting systems in accordance with applicable fire codes. The plan must provide for the routine inspection, maintenance, and replacement of this equipment and mandate training for new workers and refresher training for all shipyard employment workers. Routine fire prevention inspections would be conducted by knowledgeable personnel with authority to correct deficiencies. The program would establish: Effective fire prevention measures for control of flammable and non-flammable compressed gases; identification and the control of ignition sources; the control of combustible materials; welding and hot work procedures and designated locations covering all operations (in addition to locations where hot work is authorized); and designated emergency evacuation routes and procedures.

The Committee felt that such a plan must be written. A written plan would enable employers and employees to see how the employer intends to protect workers; enable employers to readily exchange information; provide continuity of procedures; and would provide a practical means of communication to fire response organizations. Updating the plan to reflect changing fire control technology or changing the plan to reflect different fire hazards in different work situations is readily accomplished with a written plan. The Committee rejected the notion of verbal exchange as the equivalent of an established written fire safety plan.

In paragraph (a) of § 1915.502, OSHA proposes that the employer develop and implement a written fire safety plan that covers all the actions that employers

and employees must take to ensure employee safety in the event of a fire. OSHA is also proposing to include a note to the paragraph referring readers to a model fire safety plan that is included as Appendix A, a non-mandatory appendix to this subpart.

Appendix A contains a suggested outline for a model fire safety plan that employers could follow. Members of the small business community who participated in Committee negotiations strongly recommended that OSHA offer guidance for developing a fire safety plan. The purpose of the proposed appendix is to give guidance to any employers who may not have the expertise available to develop their own plan. If an employer chooses to use the model plan for a specific worksite, following the outline and addressing particular conditions at his or her specific worksite would meet the minimum requirements of this section.

In paragraph (b) of § 1915.502, OSHA sets forth the elements that the employer must include in the fire safety plan. They are: The identification of significant potential fire risks; procedures for recognizing and reporting unsafe conditions; alarm procedures; procedures for notifying employees of a fire emergency; procedures for notifying fire response organizations of a fire emergency; procedures for evacuation; procedures to account for all employees after an evacuation; and the names, job titles, or departments for individuals who can be contacted for further information about the plan. The Committee identified these elements as essential components that every effective plan must have. The Committee was particularly anxious for the alarm procedures to address the distinctive signaling devices and how they will be used to alert employers of fire and evacuation in a particular shipyard. The Committee and OSHA recognized that each shipyard may have its own unique alarm systems (*e.g.*, steam whistles, intercom, bells).

In paragraph (c) of § 1915.502, OSHA proposes that the employer must review the fire safety plan with each affected employee within 90 days of the effective date of this standard for employees who are currently working; upon initial assignment for new employees; and whenever the actions the employee must take under the plan change because of a change in duties or a change in the plan.

Paragraph (d) of § 1915.502 reflects the recommendations of the Committee. Consistent with that, OSHA proposes that the employer must also keep the plan readily accessible for review by employees, their representatives, and

OSHA; review and update the plan whenever necessary but at least annually; certify in writing that each affected employee has been informed of the plan; and give a copy of the plan to any outside fire response organization that the employer expects to respond to fires at a worksite, regardless of geographic location. These requirements are necessary in order for the plan to be effective in protecting employees.

In paragraph (e) of § 1915.502, OSHA proposes as additional responsibilities for contract employers, compliance with the host employer's fire safety program. At any given time, because of the nature of the work, there may be many employers within one particular shipyard. The additional employers and employees cause an increase in safety and health hazards in the worksite. OSHA's intent with this paragraph is that all employers take responsible actions to reduce these hazards when possible, and to alert other employers when hazards exist. Recognition of hazards and response to emergencies in a safe manner requires all employers on the site to follow the host employer's fire safety plan.

Section 1915.503 Precautions for Hot Work

The purpose of this section is to reduce the potential of fire hazards and to reduce the frequency and severity of any fires resulting from hot work. Three elements are normally present for a fire to occur: an ignition source, oxygen, and a fuel source. If one element is removed, then a fire will not occur. The proposed requirements in this paragraph are intended to prevent the combination of these three elements from occurring at the same time.

The Committee's proposal focused on reducing the hazards associated with both the fuel sources as well as the ignition sources for fires. The Committee advocated removing any fuel source from the area where hot work was to be performed. If that is not possible, then isolating the fuels, using protection (shielding), or posting a fire watch can be used to comply with the provision. These requirements reflect current industry practices and the requirements associated with § 1915.14 for flammable and combustible materials within confined and enclosed spaces and other dangerous atmospheres. The Committee also identified other materials that may be present that have properties that may increase the hazards associated with a fire, such as oxidizers and water reactive chemicals. The Committee's proposal would require the employer to perform a hazard assessment as part of

the decision-making process in authorizing hot work. The Committee concluded that fires resulting from hot work can be prevented through an authorization procedure and proper inspection of the worksite before hot work. This would involve identifying fire hazards and implementing appropriate control measures that include removing hazards, inerting spaces, shielding combustibles, or posting fire watches. The Committee believed this would be an innovative approach that protects shipyard workers from fire hazards while reflecting the best practices of the industry.

Following the Committee's recommendations, OSHA proposes that the requirements of this standard apply to all hot work operations in shipyard employment except those covered in subpart B of this part. The purpose of OSHA's proposed requirement is to make sure that the employer identifies all fire hazards in a hot work area. This section is also based upon requirements adapted from the existing § 1915.52 Fire Prevention, § 1910.252 Welding, Cutting and Brazing, and from an industry consensus standard, NFPA 51B-1998, Standard for Fire Prevention in Use of Cutting and Welding Processes (Ex. 20-3).

In paragraph (a)(1) of § 1915.503, OSHA is proposing that the employer, in designating areas for hot work, must determine that such areas do not contain potential fire hazards. The Committee recognized that there are areas within the shipyard that may not require an inspection before each hot work operation. These areas may, in fact, be designed for hot work. They include fabricating shops, sub-assembly areas, and welding and burning areas within shops, such as pipe, boiler, and sheet metal shops. These areas are examples of what the Committee considered to be "Designated Areas" along with certain areas on board vessels and vessel sections. In "designated areas" the hot work operations are regular and continuous as opposed to incidental operations occurring throughout the yard. Nonetheless, such areas must be initially inspected to establish them as "designated areas" and then maintained as such, as proposed in paragraph (b)(1) of this section.

The requirement for authorization of hot work in nondesignated areas is addressed in paragraph (a)(2) of this section. In paragraph (a)(2)(i) of § 1915.503, OSHA proposes that before authorizing hot work in non-designated area, the employer must visually inspect the area where hot work is to be performed, including adjacent spaces, to

identify potential fire hazards, unless a Marine Chemist's certificate or shipyard Competent Person's log is used for the authorization. The Committee recommended that this section include any area not covered by subpart B of this part. As mentioned earlier, OSHA is not addressing hot work in areas covered by subpart B Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment. This subpart already covers the hazards of performing hot work in these areas. Addressing them again in this subpart would be duplicative. OSHA believes that by requiring authorization before hot work in the non-designated areas, the employer will pre-plan the operation and thereby identify and control the hazards associated with hot work.

OSHA notes that although Marine Chemists and Shipyard Competent Persons have specific functions to perform under subpart B, this paragraph recognizes that the employer may also use them to assess and inspect both designated and nondesignated hot-work areas for potential fire hazards.

The Committee considered whether the authorization of hot work issued by the employer should be in a written form or whether a verbal authorization would give equivalent safety. Currently all shipyards handling repair or overhaul-type U.S. Navy contracts have written authorization procedures because Navy work requires authorization (hot work permits) as a standard item. On the other hand, shipyards that do not handle Navy contracts allow employees to perform hot work following either verbal or written authorizations. The Committee decided that shipyard employers should have the flexibility to decide what type of authorization is best suited for their hot-work operations. For example, in many cases associated with new construction, hot work is done with an authorization specifying that no special precautions are required and no written authorization (permit) is issued. The intent here is to enable the employer to perform the steps and to assess the hazard each time before authorizing the hot work, but not necessarily introduce the specification that requires a formal written permit. Therefore, in this paragraph OSHA does not specify what form of authorization must be issued.

In paragraph (a)(2)(ii) of § 1915.503, OSHA proposes that the employer be allowed to authorize employees to do hot work only in areas that have been visually inspected and found to be free of fire hazards or in inspected areas where fire hazards are controlled by

physical isolation, fire watches, or other positive means such as inerting.

In developing the proposed language above, the Committee discussed under what circumstances the employer may authorize hot work on board vessels and vessel sections. Everyone on the Committee agreed that decisions about authorizing hot work on board vessels and vessel sections must be based on the inspection. When the inspection shows that there are no uncontrolled combustible or flammable materials in the area, then authorization for hot work is appropriate. The Committee also recognized that most of the mid-to large-size yards pre-outfit ship sections with electrical cables and fixtures, insulation, and other combustible materials requiring the employer to decide for each section what type of fire protection should be provided when hot work is to be done.

The likelihood of the hot work areas containing combustible materials during ship repair is greater than in shipbuilding. During ship repair, as in other work the employer must control the fire hazards prior to authorizing the hot work. Control, as required in paragraph (a)(2)(ii), can be by physical isolation, posting fire watches, or other positive means. For example, an employer can achieve physical isolation of combustibles by simply moving them to an area at least 35 feet away from the hot work (*see* definition of "physical isolation"). The Committee discussed the 35-foot vertical and horizontal distance and found it to be consistent with current industry practice. Where combustibles can not be moved or otherwise physically isolated, the employer can post a fire watch to control the fire hazard. Additionally, when flammable atmospheres are found adjacent to the hot work area, the employer can control the fire hazard by inerting the adjacent space with a non-reactive substance that will not support combustion. For further information on controlling spaces (flammable atmospheres) adjacent to where hot work is being performed, *see* subpart B of this part.

Members of the public and shipyard representatives on the Committee commented during negotiations that the individual performing the hot work is usually expected to conduct his or her own final visual survey of the hot work area to make sure that conditions are safe for hot work. This is a common practice whether identified on a written permit or as part of the verbal authorization/assignment to the work. If the survey discovers unsafe conditions (*e.g.*, appreciable combustibles in an area, leaking lines of combustible

liquids—hydraulic fluid, oil), then the worker will not initiate the work and will contact the individual authorizing the work for further instruction. It is also expected that work would not start until the situation was corrected. As explained by a Committee member, the employer is ultimately responsible for making sure that areas are inspected before hot work and that safe conditions are maintained throughout the hot work area. This may be done by requiring frequent inspection, training, or warning signs even when the employer has delegated the responsibilities for the inspections. OSHA has not proposed to require the hot worker to conduct a survey as the Agency believes the employer has the responsibility for determining if the area is safe. An employer may, of course, have such a survey as part of his or her work practices.

While subpart B has a requirement that a record be prepared by the Marine Chemist, Coast Guard Authorized Person, or Shipyard Competent Person allowing the hot work to be authorized as defined by § 1915.14, not all hot work areas need to be certified by a Marine Chemist or inspected by a Coast Guard Authorized Person or Shipyard Competent Person before the employer's authorization for hot work to begin. The employer may assign the authorization responsibility to other individuals who are knowledgeable in the hazards associated with hot work.

In paragraph (b) of § 1915.503, OSHA is proposing that the employer keep all hot work areas free of hazards that may cause or contribute to the spread of fire. This proposed paragraph summarizes the Committee's belief that fires cannot occur if the hazards contributing to them are controlled. This requirement is to prevent the introduction of combustible or flammable materials during the performance of hot work. Often, safe conditions exist at the start of the hot work process; however, over the duration of the work, these materials may be brought to the site thereby creating a fire hazard. For example, one worker may be performing hot work at the same time another worker from another job introduces combustible or flammable materials within 35 feet of the hot work operation. The worker's safety can be further compromised by the fact that the worker doing the hot work is wearing a face shield that obstructs vision, preventing that worker from seeing the entrance of the second worker. It is the intent of this requirement that hazard assessment be a continual process and not a singular, one-time event. Therefore any measures

used by the employer to control fire hazards must be maintained.

Fuel gas and oxygen burning lines and torches are typically used in shipyard employment as follows. A burner (an employee engaged in burning or brazing) is trained and becomes qualified in the safe operation and testing of his equipment; namely the burning torch, gauges, care and use of the fuel gas and oxygen hose lines and proper connection to the supply manifold. Only qualified employees are issued this equipment from the tool room. After being issued his equipment, a burner working on a vessel will proceed to the manifold on the fantail of the vessel. Assigned to work in the lower level of the machinery space (enclosed space) 200 feet from the manifold, he will connect four 50 foot sections of hose together and to his torch. Next, he will connect this assembly to the gauges that he, in turn, attaches to the supply manifold. He then charges the entire burning rig by opening the oxygen and fuel supply lines. He then tests the torch and lines for compression integrity using his gauges first having turned off the supply valves. If the gauges indicate compromised integrity, the burner will then re-tighten all of the connections and test again. Once the integrity of the burning rig is established, he then proceeds to roll out the lines on the deck to his assigned worksite. Upon reaching his worksite, he then returns to the supply manifold, energizes the system, and proceeds to secure his hose lines elevated and out of walkways to eliminate tripping hazards. Finally, he returns to his worksite and begins burning.

In paragraph (b)(2)(i) OSHA proposes that the employer must make sure that no unattended fuel gas and oxygen hose lines or torches are left in confined spaces. The proposed language in this paragraph has been adapted from 29 CFR 1910.252; § 1915.52; and NFPA 312-2000, Standard for Protection of Vessels During Construction, Repair, and Lay-up (Ex. 20-4). The Committee and participants from the public attending the Committee's meetings agreed with the proposed requirement in paragraph (b)(2)(i). This requirement reflects the current practice in the industry.

The potential danger associated with unattended fuel gas and oxygen hoses or torches in confined spaces is apparent and universally accepted. Leaking fuel gas and oxygen from unattended hoses or torches can accumulate rapidly in confined spaces leading to several hazardous conditions such as increased fire hazards, oxygen-enriched

atmospheres, explosive atmospheres, and similar conditions. This proposed paragraph seeks to eliminate the hazards associated with unattended fuel gas and oxygen hoses or torches in confined spaces.

In paragraph (b)(2)(ii) of § 1915.503, OSHA is proposing that employers must not allow unattended charged fuel gas and oxygen hose lines or torches in enclosed spaces for more than 15 minutes. The proposed language in this paragraph has also been adapted from 29 CFR 1910.252; § 1915.52; and NFPA 312-2000, Standard for Protection of Vessels During Construction, Repair, and Lay-up (Ex. 20-4). The Committee agreed with this proposed requirement following extensive discussion and analysis. They felt that the potential for fire or explosion caused by unattended charged lines in enclosed spaces far outweighs the burden of pulling to open air or disconnecting.

In paragraph (b)(2)(iii) of § 1915.503, OSHA is proposing that the employer must disconnect all fuel gas and oxygen hoses at the supply manifold at the end of each shift. The fact that paragraph (b)(2)(iii) does not propose a hose removal requirement needs to be further discussed in rulemaking. The Agency seeks comment on this subject. Some shipyard employers indicated that at shift change fuel gas and oxygen hoses are rolled back to the manifold and disconnected at the supply end, while other shipyard employers found this to be impractical. They noted that at a large shipyard work can be done on a vessel as long as 800 feet with as many as seven decks. For this work, employees need to connect burning rigs on the fantail supply manifold and string 700 feet of fuel gas and oxygen hose lines through a number of enclosed spaces to reach a worksite. Adding more lines to this supply manifold with additional manifolds also located on the fantail creates the problem of unstringing and rolling back literally miles of hose lines to disconnect them. The potential for confusion exists when these lines are disconnected and then need to be reconnected. The Committee agreed that the hoses should be removed from the confined spaces, but there remained a question about whether this was necessary for enclosed spaces.

The concern is not necessarily about leaking hoses and their potential for creating a hazardous space. Rather, the bigger concern seems to be with the possibility of hooking up, at the supply manifold, a different (wrong) hose whose torch end was left hanging in an enclosed space. Because it is the wrong hose, it may now be dispensing gas (oxygen and fuel gas) into a space

without anyone knowing, a space that is not involved in the intended work. The contaminated space may not be discovered until much later, thus creating a fire/explosion hazard. Additionally, leaking fuel gas and oxygen may create a flammable or oxygen-enriched atmosphere that may reach an ignition source.

OSHA deals with these hazards in proposed paragraphs (b)(2)(iii)(A) and (B) of § 1915.503. When fuel gas and oxygen lines are to be disconnected, the employer has two options. One is to completely roll the lines back to the supply manifold (open air) and then disconnect the torch. The other is, where a positive means of identification on the fuel gas and oxygen hose lines has been given before rolling out or extending the line, the employee can leave the lines extended, disconnect them at the supply manifold, and then disconnect the torch. This would assure that, not only would the proper extended lines be disconnected, but also that the proper lines will be reconnected, thus eliminating the hazards discussed above. Also, because the torch must be removed from the enclosed space after disconnecting the extended line from the supply manifold, the potential for the build-up of a hazardous atmosphere is greatly reduced.

Selecting the positive means of identification for the fuel gas and oxygen hose lines is left, by this performance type requirement, to the discretion of the employer. Examples of the positive means of identification include stenciling both ends of the line, color coding, stamped brass tags, and so forth. It is clear however, that the lines must be identified at both ends regardless of how many sections are joined, creating the run.

The Committee felt that extended lines could be reconnected safely provided that certain measures were followed: positively identifying hose line ends and maintaining the integrity of the complete burning rig. The former has already been discussed. The Committee recognized that maintaining the integrity of the burning rig can be accomplished in a number of ways. The preferred way is the drop test using gauges which has already been discussed. Another way is the use of a lockout device (Ex. 16b). Still another is testing a pressurized system, using soapy water at all connections. The Committee concluded—and OSHA agrees—that using such performance language as an alternative to specifications will help to nurture developing technology in these areas.

Section 1915.504 Fire Watches

The requirements of this section, as recommended by the Committee, apply to fire watch activity designated by the employer in shipyard employment. The requirements are proposed in three parts: (a) the employer's written policy on fire watches, (b) the posting of a fire watch, and (c) fire watch assignments.

The existing subpart in § 1915.52 Fire Prevention in Welding, Cutting and Heating is a 35-year-old standard. It was identified by SESAC in 1992 as needing updating and extension of its scope to cover all the situations in shipyard employment regardless of geographic location. The Committee has recommended, and OSHA agrees, that the existing requirements in § 1915 that address fire protection be replaced by the proposed requirements of this subpart.

Paragraph (a) of § 1915.504 requires employers to create and keep current a written policy on fire watches specifying the requirements for the training, duties, equipment, and PPE necessary for fire watches in the workplace. The PPE that fire watches will need is specified in to 29 CFR subpart I Personal Protective Equipment. No specific format is proposed for the written policy. The Committee determined the employer was in the best position to determine how the requirement can be met, and OSHA agreed. OSHA recognizes that the employer needs the discretion to tailor the plan to his or her workplace.

Paragraph (b) of § 1915.504 proposes that the employer must determine the need for and post a fire watch if during hot work: (1) Slag, weld splatter, or sparks might pass through an opening and cause a fire; (2) fire-resistant guards or curtains are not used to prevent ignition of combustible materials during work on or near decks, bulkheads, partitions, or overheads; (3) combustible material closer than 35 ft. (10.7m) horizontally and vertically cannot be removed, protected with flame-proof covers, or otherwise shielded with metal or fire-resistant guards or curtains, so that the material will not be ignited by the hot work; (4) on or near insulation, combustible coatings, or sandwich-type construction on either side cannot be shielded, cut back, or the materials removed. In the latter case, if removal is impracticable, the space affected by the hot work must be inerted; if that cannot be done, then a fire watch must be posted. A fire watch must also be posted when: (5) Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or of sandwich-type

construction may be ignited by heat conduction or radiation; (6) hot work on pipes or other metal is close enough to cause ignition through heat radiation or conduction if contact is made with insulation, combustible coatings, or combustible decks, bulkheads, partitions, or overheads; (7) hot work is close enough to unprotected combustible pipe or cable runs to cause ignition from exposure to the hot work; or (8) a watch is required by a Marine Chemist, a Coast Guard authorized person, or a shipyard Competent Person. The Committee identified these eight probable cases where a fire watch is needed for any size shipyard employment. OSHA's proposed requirements for this paragraph are based on their recommendations.

Paragraph (b)(1) of § 1915.504 proposes controlling ignition sources for work processes that generate slag, weld splatter, or sparks that might pass through an opening and cause a fire. It has been adapted from NFPA 51B-1999, Standard for Fire Prevention in Use of Cutting and Welding Processes (Ex. 19-3) and 1910.252(a)(2)(iii)(A)(3). During the meetings, the Committee discussed the size of the openings. The Committee considered whether the size needs to be specified. The provision's intent as proposed is to leave the requirement performance oriented. If a spark can get through an opening and cause a fire, then the area should be protected. The Committee preferred to not be specific, but to leave it to the employer to determine which openings need to be protected.

Paragraph (b)(2) of § 1915.504 proposes to recognize that ignition sources can be controlled through the use of fire-resistant guards or curtains. Where the combustible materials cannot be protected from a possible ignition source, the employer must post a fire watch. The Committee recognized that combustible materials can be protected through the use of fire-resistant guards or curtains. For example, a sandwich-type bulkhead could be safely protected from ignition of the combustible materials during hot work by using a fire-resistant guard or curtain.

Paragraph (b)(3) of § 1915.504 reflects the 35 ft. requirement (minimum distance of combustible materials from hot work) from the 1910.252(a)(2)(vii), subpart Q Welding, Cutting and Brazing and NFPA 51B-1999, Standard for Fire Prevention in Use of Cutting and Welding Processes (Ex. 19-3). In this paragraph OSHA proposes to require that an employer post a fire watch unless combustible materials are relocated to at least 35 feet beyond the hot work area or are protected by

shielding. The Committee discussed the 35-foot distance at length during the course of the meetings and agreed that if the possibility exists that hot work materials could make contact with the combustible material in any way, a fire watch must be posted. No specific reasons or evidence to change the distance was suggested by any of the members or representatives from the public. The Committee's proposal kept the 35-foot distance. The Committee believes that the distance has been in regulatory requirements and national consensus standards for many years and reflects the current industry practice. The Agency concurs that such protection is reasonable and necessary.

Paragraph (b)(4) of § 1915.504 addresses the hazards associated with combustible coatings, sandwich-type construction, or other insulating materials. Besides shielding, cutting back, removing the materials and posting a fire watch, an industry practice for the acoustic foams that are commonly found in inaccessible voids is to inert the areas to make them safe for hot work. Industry practice, in these situations, has been to also provide charged fire hoses or portable extinguishers as fire protection measures for fire watches. Polyurethane and other organic foams are increasingly used on vessels because of their excellent insulating and lightweight properties. When properly installed and protected against fire, organic foams present no more fire hazard than other combustible materials. However, when organic foams (including those described as self-extinguishing, non-burning, fire resistant, flame resistant, and by similar terms) are exposed to fire or heat, they may ignite and burn with rapid flame spread, high temperatures, toxic gases, and voluminous quantities of smoke.

Paragraph (b)(5) of § 1915.504 addresses the potential hazards of adjacent spaces. This paragraph is adapted from § 1915.52(a)(3). It is an important part of the hazard assessment "since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent compartment, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is performed." During hot work on or near insulation, combustible coatings, or sandwich-type construction on either side, if the employer cannot cut back or remove the materials or inert the space, a fire watch must also be posted on the opposite side of the hot work. This requirement is intended to address the increased fire hazard potential (noted in the explanation above for paragraph (b)(4))

that results from hot work conducted in areas with or adjacent to polyurethane or other organic foams.

In cases where hot material from hot work could involve more than one level, as in trunks and machinery spaces, a fire watch must be stationed at each affected level unless positive means are available to prevent the spread or fall of hot material. Positive means could be accomplished by placing barriers or by physically isolating an area. The same is true for adjacent spaces; a fire watch must be stationed at each affected work area.

Paragraph (b)(6) of § 1915.504 requires a fire watch during hot work when performed on pipes or other metal in contact with insulation, combustible coatings or combustible materials on or near decks, bulkheads, partitions, or overheads if the work is close enough to cause ignition by radiation or conduction. The fire watch workgroup discussed at length the term "bulkhead and deck." Because the scope of subpart P is for shipyard employment, the subgroup discussed the fact that bulkheads and decks refer to vessels and vessel sections and although these terms could be used for structures and buildings, that is not the norm. Normally on landside structures the terms "walls and floors" are commonly used. Would use of "bulkhead and deck" in this provision cause confusion as to the applicability throughout shipyard employment, both on land side and aboard vessels? The Agency invites comment on this issue.

Paragraph (b)(7) of § 1915.504 requires a fire watch if hot work is conducted close enough to combustible pipe or cable runs to cause ignition (unless the pipe or cable runs are protected from exposure to the hot work). This provision takes into account the large amount of cable runs through vessel compartments. Although these cables must be tested to low flame spread and smoke production rates, they are still combustible and have been responsible for the spread of fire in many cases. Also, the use of combustible piping is increasing, and although required to meet strict flame spread and smoke production criteria, the potential for fire spread through pipe runs is the same as through cable runs and should therefore be safeguarded.

Paragraph (b)(8) of § 1915.504 proposes to add a provision for posting a fire watch when required by a Marine Chemist, a Coast Guard authorized person, or a shipyard Competent Person. These individuals are trained to know when a fire hazard requiring a fire watch exists even in circumstances not set forth in paragraphs (b)(2) through

(b)(7) above. In one of the areas of biggest concern—where flammable and combustible liquids are present, for example, in vessel construction—the regulations already require a competent individual to determine where a fire watch will be required. An employer is already required to designate a shipyard Competent Person in accordance with applicable requirements of 29 CFR 1915.7. These requirements, coupled with the time-tested recommendations of NFPA 51B–1999 and 29 CFR 1915 subpart B, were considered adequate by the Committee.

Paragraph (c) of § 1915.504 outlines the assignment of fire watch duty. Originally, the Committee's Fire Watch Workgroup had recommended language for this paragraph that specifically states that the employer is responsible for a worker's assignment to fire watch duty. However, the Committee felt that this should be understood throughout the regulations that the employer is ultimately responsible for workplace fire safety, and thus it does not need to be repeated. OSHA agrees.

Paragraph (c)(1) of § 1915.504 states that an employee must not be assigned other duties when designated as fire watch by the employer. The Committee wanted to be very clear on this requirement, because although fire watch as an exclusive assignment is recognized as industry practice, the fire watch posting is crucial to maintaining safe working areas. For example, welders with their shields down rely totally on the fire watch's observations. This watch should not be distracted by having other duties assigned at the same time.

The provision in paragraph (c)(2)(i) requires that a fire watch must have a clear view of all areas assigned. This requirement effectively precludes a worker acting as his or her own fire watch. The workgroup told the Committee that if hot work workers, *i.e.*, welders and burners, were, in fact, acting as their own fire watch, the requirement for a clear view of those areas affected could not be met. They noted that when a welder's shield is down, the immediate area where the arc hits is the only area the welder is concentrating on, and the welder is oblivious to the surrounding work area affected. The Committee agreed and wanted to note specially that a worker performing hot work, such as a welder, cannot be his or her own fire watch under any circumstances.

The Committee was concerned that a fire watch be able to do his or her job. This means that a fire watch must be physically capable of accessing the necessary area and wearing the

appropriate PPE. For example, a fire watch may have to climb ladders to access tanks or other structures, carry fire extinguishers, pull hoses, see the assigned area, pull alarm stations, and communicate the alarm verbally. Although there was much discussion, the Committee did not include a requirement stating that the employer must make sure that personnel who are expected to stand fire watch will perform and are capable of carrying out the duties of fire watch. The logic, after discussions, was that the employer would be the best judge of physical capability and mental alertness of the fire watch.

Paragraph (c)(2)(ii) of § 1915.504 proposes that employees assigned to fire watch duty must be able to communicate with workers exposed to hot work. As addressed later in the preamble for paragraph (c)(2)(x) of § 1915.508 Training, there was considerable discussion within the workgroup about current industry practices for the fire watch's contact with other workers. The Committee decided that communication is important because a fire watch may not be able to see a hot worker when, for example, the fire watch is on the other side of a compartment from the hot worker. The Committee did not want to limit the means of communication. For example, in the case of a fire watch on the other side of the bulkhead from the employee doing hot work, the means may be as simple as tapping on the bulkhead to signal whether the hot worker can continue or must stop, or it could be a more electronic communication system such as radio communication.

Paragraph (c)(2)(iii) of § 1915.504 specifies that the fire watch must remain in the hot work area at least 30 minutes after hot work is completed. A provision has been added that permits the fire watch to be relieved sooner if the employer or the employer's representative surveys the exposed areas, conducts a post-work hazard assessment, and determines that no further fire hazard exists. Obviously, this determination can only be made after a hazard assessment is completed. The fire watch workgroup carried forth this requirement from SESAC's recommendation that the NFPA and industry-accepted practice be used as the rationale for the 30 minute requirement unless the employer surveys the affected work area(s) and determines that there is no further fire hazard. The workgroup recommended to the Committee that when the work area was protected before the hot work was done, the employer or the

employer's representative could resurvey the affected area and determine the area was safe from fire hazards without the need for a fire watch for 30 minutes after completion of the hot work. The Committee agreed. The intent of this provision is to encourage employers or their representative to use the hazard assessment process throughout the work—beginning, middle (to see if conditions change), and at the end (to determine how long the fire watch may be needed).

OSHA invites comment on whether the fire watch remaining in the hot work area for at least 30 minutes after completion of the hot work is the equivalent to the employer's immediate survey of the exposed area to making a determination that there is no further fire hazard.

Paragraph (c)(2)(iv) of § 1915.504 proposes that the employer must ensure that employees assigned to fire watch duty are trained to detect fires that occur in areas exposed to the hot work. (For a further explanation, see the Training section at § 1915.508.)

Paragraph (c)(2)(v) of § 1915.504 requires that the fire watch must attempt to extinguish any incipient stage fires in the assigned work area that are within the available equipment's capacity and within the fire watch's training qualifications as defined in 1915.508 Training. The term "incipient stage fire" is defined in the General Industry Fire Protection Standard § 1910.155(c)(26): Incipient stage fire means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, class II standpipe or small hose systems without the need for protective clothing or breathing apparatus. Although the maritime industry asked for a single standard, this definition is an example where the general industry standard is referenced to reduce regulatory duplication. OSHA seeks comment on whether the definition needs to be included in this standard.

Paragraph (c)(2)(vi) of § 1915.504 proposes the requirement that the fire watch alert employees of any fire that goes beyond the incipient stage. The method the fire watch uses to alert other employees is not specified. The fire watch can alert in the way most suited to the worksite and conditions. Whether this is accomplished by shouting, waving of arms, or hand signals is left up to the employer to instruct the fire watch. In a noisy working environment, it might be most appropriate to tap hot workers on the shoulder and then motion to them to follow or exit the area. In a smokey situation, vocal

communication would be more appropriate.

Paragraph (c)(2)(vii) of § 1915.504 provides that if fire watches are unable to extinguish fire in the areas exposed to the hot work, they must activate the alarm and start the evacuation procedure as trained according to § 1915.508(c)(2)(xi) and the employer's fire safety plan, § 1915.502.

Section 1915.505 Fire Response

In this section OSHA proposes specific requirements for fire response in shipyard employment. At present, OSHA does not have any specific requirements for fire response in shipyard employment.

Responders to shipyard fires encounter a complex set of fire hazards involving buildings, vessels in dry-dock or on ways, afloat, or alongside a quay. Fire responders need to be prepared to suppress a wide range of fire scenarios from a flammable liquid storage room in a shipyard building to oil-soaked rags in an engine room on a ship. Types of fires could include ordinary combustible materials (such as wood, paper or cloth), flammable or combustible liquids (such as oil, fuels, paints or chemicals), insulation and other materials that give off toxic gases and smoke, electrical fires (involving energized motors, circuit controls, transformers or wiring) or even a rare combustible metal fire (such as magnesium or titanium).

Shipyard firefighting as defined in section 1915.509 Definitions may be provided by:

1. Members of a fire brigade established by the shipyard, consisting of employees who have primary duties other than firefighting;
2. Workers of the shipyard employed as full-time firefighters; or
3. Public, private, governmental, or military units providing rescue, firefighting, and other related services.

As expressed by one Committee member, when firefighters respond to a shipyard fire, the safety of the shipyard workers rests with those firefighters; therefore, that member noted, the safety of all firefighters should be addressed by this standard and these rules should apply to them as well. In fact, the Committee expressed concern that whoever provides fire response to shipyard employment must meet certain minimum standards. The Committee's consensus was that designated workers (whether employed by the shipyard or by another employer) must be trained and equipped to fight fires in shipyard employment as safely as possible to reduce worker deaths or injuries related to these fires.

To ensure that this happens when firefighters are not shipyard workers, the Committee decided to require a liaison be established between the shipyard employer and the outside organization providing response services. Consistent with the recommendations of the Committee, OSHA is proposing that the shipyard liaison's communication with an outside fire response organization must include addressing facility and layout familiarization and coordination protocols. Public fire departments in those states with approved section 18b State Plans that respond to shipyard facilities will be covered by similar requirements through their respective states. Federal OSHA does *not* have jurisdiction over state and municipal fire departments or volunteers. Federal firefighters are covered under Executive Order No. 12291. OSHA believes that the safety of all firefighters is a major concern and intends the broadest coverage possible under the Act regardless of the shipyard employer's fire response arrangements. The Committee was in full agreement that anyone responding to a shipyard employment fire to actually extinguish a fire should be covered by this proposed rule to the extent possible. The proposed coverage of this standard, for fire responders has to exclude state and municipal fire departments and volunteers even though they will benefit from the requirement to establish a liaison with them.

Shipyard fire responders do not include support personnel responding at or near fires who have only limited support functions to perform. The Committee agreed that the shipyard employment workers who might respond to provide support services but are not exposed to the hazards of the fire, should not be covered. Such support services include electricians, utility workers, and facility management representatives. As explained by one Committee member, the requirements of this proposal are not intended to apply to employees responding to a shipyard employment fire to open or close valves, turn off electric service, or disconnect gas supplies. "Support personnel," as the Committee called them, are designated persons not put into harm's way but performing such tasks as shutting down or isolating gas lines and disconnecting electrical service. They are not fire response personnel since they are not exposed to the hazards of firefighting. Members of the public, including Vincent Galattli from Bender Shipbuilding and Michael Davis from Halter Marine, noted that some shipyard

employment workers join community fire departments as volunteers. These volunteers are sometimes used in shipyard employment to pull hoses but do not fight fires. Committee member Buck Hurley from the Norfolk Naval Shipyard noted that crane operators could be used to provide supplies, water, or chemicals, but not perform actual firefighting.

This proposed section consolidates the requirements of 29 CFR 1910.156 Fire Brigades with some of the provisions in NFPA 1500–2002, Fire Department Occupational Safety and Health Program (Ex. 20–5), creating a standard that specifically addresses shipyard fire response.

A Committee workgroup consisting of representatives of the fire service, government, labor, and employers developed the initial proposed language for this section. In addition to using the SESAC recommended proposal and current industry practice, the workgroup relied heavily on NFPA 1500–2002. The workgroup also discussed and reviewed NFPA 600–2000, Standard on Industrial Fire Brigades (Ex. 20–6).

NFPA completely revised NFPA 600 in 2000 to be consistent with OSHA's Fire Brigade Standard. In 2000, NFPA further revised the document to include industrial fire departments that were previously covered in NFPA 1500.

The workgroup chose to rely more heavily on NFPA 1500–2002 rather than NFPA 600–2000 because of the need to make sure that response from outside the yard would be compatible with response from inside the yard. In many communities, particularly where there are small employers, the shipyard must rely on and coordinate fire response with the local fire authority. Through this section, OSHA intends to assure the coordination between the yard and the outside fire response organization so that they can work together safely.

There is one general distinction that OSHA wants to make clear with respect to fire response in shipyard employment. As recommended to OSHA by the Committee, shipyard support personnel are not considered members of the shipyard fire brigade or fire department when they respond to fires on board vessels or vessel sections. The Committee agreed that additional shipyard personnel, usually yard maintenance or temporary service employees, can and do react to fire alarms on board vessels and vessel sections. However, when these employees respond to the fire location, they do so with the understanding that they will not put themselves at risk by attempting to fight fires. Rather, their

only responsibility is to offer skilled support to fire brigade or fire department responders by securing certain utilities (*i.e.*, electrical, ventilation, compressed air, and oxy-fuel lines supplying the vessel or vessel section) when necessary during fire suppression activities. Because they have detailed knowledge of the vessel's or vessel section's layout of temporary services and the locations within the yard for controlling these services, they can also serve as an information resource for firefighters responding to the fire.

For example: A large cargo ship is tied up at a pier. Manifolds provide fuel gas and oxygen for hot work located on the main deck of the vessel. The manifolds are fed from the pier. A fire is discovered below decks and the fire alarm sounds throughout the vessel. The employees leave their work stations and proceed off the vessel to a waiting area. The yard's fire brigade arrives and boards the vessel. The outside or municipal fire department is alerted and initiates its response plan. As part of the yard's fire safety plan, the temporary service and yard maintenance departments respond to the pier alongside the vessel. Representatives of the yard's fire brigade meet with the temporary service employees and they communicate with the firefighters on board the vessel to identify the location of the fire. Based upon the information received from the firefighters on board the vessel, the temporary service employees will begin to secure utilities that provide service to the fire area. Once the utilities have been secured to prevent hazards to the firefighters, the temporary service employees will return to the staging area and await further requests from the yard's fire brigade.

In this scenario, the temporary service employees did not enter the vessel's compartments with the intent to fight the fire. They responded to give skilled, technical support to the responding fire departments. OSHA wants to make it clear that in shipyard employment, the shipyard support personnel, such as temporary service employees, are not considered part of the shipyard's fire brigade or fire response department. Shipyard fire response department or brigade employees who participate in the actual role of fire suppression and control are the only employees covered by this section. These employees must be trained for the duties and functions they are expected to perform. The shipyard employees who are not part of the shipyard's fire brigade or fire department, including skilled support employees, are not covered by this

section. Their protection is provided by other standards in this part.

In paragraph (a)(1) of § 1915.505, the shipyard employer is required to determine who will perform fire response in the shipyard and what type of response will be provided. The Committee recommended this approach based on the diverse fire response capabilities it found throughout the industry. Some shipyard employers, those with very large facilities, employ full-time shipyard firefighters and provide them with response apparatus and equipment. At the other end of the spectrum are the employers at small shipyards who must rely totally on public fire protection. One Committee member indicated that his shipyard fire response personnel constitute the superior fire protection expertise in his community. This is with regard not only to shipyard fires but also to the fire response operations of the local public fire department to which he offers support and back-up. Yet, at another meeting, a public fire official indicated his department provides all of the fire protection for the shipyards located in his district. The Committee consensus is that the deciding factors are so many and so varied that each shipyard employer must take responsibility for determining who will provide fire response services and what those services will be.

OSHA proposes in paragraph (a)(2) of § 1915.505 that the employer must create and maintain an updated written statement or policy that describes the internal and outside fire response organizations that the employer will use. In complete agreement with the Committee, OSHA is promoting the idea of pre-planning throughout this proposed fire response section.

Paragraph (a)(3) of § 1915.505 proposes that the employer create, maintain, and update a written statement or policy that defines what evacuation procedures employees must follow if the employer chooses to require a total or partial evacuation of the worksite at the time of a fire.

The Committee stated strongly that once the shipyard employer decides how to protect employees from the hazards of fire, the methods of protection must be pre-planned and documented regardless of the type of response the employer chooses. Accordingly, in paragraph (b) of § 1915.505, OSHA proposes the information that must be included in the written policy statement required by this section. These written policy statements should set forth the basis for operating a fire response service. A key point is to set out clearly the specific

functions the fire response service is authorized and expected to perform. Employers must assert their authority to set the specific functions and the limits of the functions the fire response service will provide. The employer also must furnish the necessary resources for delivering the designated services. Such services might include structural fire response, emergency medical services, hazardous materials response, high-angle rescue, heavy rescue, and others.

OSHA proposes in paragraph (b)(1) of § 1915.505 that, if the employer chooses to provide internal fire response, then the employer must create, maintain, and update a written statement or policy that defines the fire response to be provided. The information would include the organizational structure of the fire response service; the number of trained fire response employees; the minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each type of fire response at the employer's facility; training requirements; expected functions that may need to be carried out; and procedures for use of protective clothing and equipment. Spelling out the specific parameters of services to be provided allows the fire response service to plan, staff, equip, train, and deploy members to perform these duties.

Similarly, OSHA proposes in paragraph (b)(2) of § 1915.505 that if the employer chooses to use an outside fire response organization, then the employer must include specific information in the employer's policy statement. The policy statement should include the following: (1) The types of fire suppression incidents to which the fire response organization is expected to respond at the employer's facility or worksite; (2) the liaison which would presumably be by individual name or job title, between the employer and the outside fire response organization; (3) a plan for fire response functions that discusses using or getting help from other organizations, and familiarizes the external fire response organization with the layout of the employer's facility or worksite, including access routes to controlled areas, and site-specific operations, occupancies, vessels or vessel sections, and hazards; and how hose and coupling connection threads are to be made compatible and where the adapter couplings are kept; or have a statement saying that they will not allow the use of incompatible hose connections.

OSHA further proposes in paragraph (b)(3) of § 1915.505 that if the employer chooses to use a combination of an internal and an outside fire response organization, then the employer must define the fire response services in addition to the requirements in (b)(1) and (2) above, that will be provided by each fire response organization. Specifically, the following information must be included: The basic organizational structure of the combined fire response; the number of combined trained fire responders; the fire response functions that need to be carried out; the minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each particular type of fire response at the worksite; and the type, amount, and frequency of joint training that must be given to fire response employees.

As an alternative to providing active fire response, the Committee recognized in paragraph (b)(4) of § 1915.505, OSHA's longstanding policy that employers may also ensure employee safety in case of fire through the means of evacuation. Accordingly, paragraph (b)(4) of § 1915.505 would require that the employer's evacuation policy statement include the following: Emergency escape procedures; procedures to be followed by employees who may remain longer in the worksite to perform critical shipyard operations before they evacuate; procedures to account for all employees after emergency evacuation is completed; the preferred means of reporting fires and other emergencies; and names or job titles of the employees or departments who may be contacted for further information or explanation of duties. These requirements are based on similar requirements found in employee emergency plans and fire prevention plans (29 CFR 1910.38).

Emergency escape procedures in shipyard employment can vary greatly depending upon whether the worksite is located on a vessel or vessel section or in a landside facility. For example, on a vessel at anchorage, escape routes from the vessel may be more difficult to identify than those found in a landside machine shop, carpenter's shop, welding shop, cafeteria, employment office, or similar worksite. This paragraph also requires procedures to protect employees who must remain behind to perform critical shipyard operations before they evacuate. Critical shipyard operations may include shutting down a vessel's power plant, securing utilities to the fire area, or

similar activities. Additionally, accountability procedures for all employees following emergency evacuation must be established. For example, employees could be directed to report to a specific location after evacuation. Another important element of the evacuation policy is the preferred means of reporting fires or other emergencies. Examples include telephone or radio communications, fire alarms, steam whistles, verbal communication, or other tactile, visual, or audible means of communication at the employer's discretion. Finally, as a means to administer the evacuation policy effectively, the statement must indicate the key individuals by name, job title, or department to be contacted for further information or explanation of duties under the policy.

In paragraph (b)(5) OSHA is proposing a requirement that the employer must include a description of the emergency rescue procedures and names or job titles of the employees who are assigned to perform rescue and emergency response. The Committee recommended this requirement and OSHA agrees.

In paragraph (c) of § 1915.505, OSHA, following the recommendation of the Committee, proposes the physical and medical qualifications shipyard employees must meet to be a part of the fire response. In paragraph (c)(1) of § 1915.505, OSHA requires that all fire response employees receive medical examinations to assure that they are physically and medically fit for the duties they are expected to perform. This approach is consistent with NFPA 600-2000, NFPA 1500-2002, and other OSHA standards, such as in 29 CFR 1910.156 and 29 CFR 1910.120. OSHA recognizes that firefighting is one of the most hazardous occupations and that those who perform fire response activities must be able to perform them properly without jeopardizing the safety and health of themselves and other firefighters. Of particular concern to OSHA are such conditions as emphysema, heart disease, and epilepsy. While these conditions do not preclude participation in fire response, they may preclude participation in certain fire response activities. For that reason, OSHA proposes to require the employee's physical and mental fitness be in accord with the duties the employee will perform.

In paragraph (c)(2) of § 1915.505, OSHA is proposing that fire response employees who are required to wear respirators while performing their duties must meet the medical requirements of 29 CFR 1915.154 Respiratory protection. This

requirement is consistent with the language of 29 CFR 1910.134 (c)(1) that requires employers whose employees use respirators to develop and implement a respiratory protection program. One of the elements of a respiratory protection program is implementing medical evaluation for employees who use respirators. Paragraphs (g)(3) and (g)(4) of 29 CFR 1910.134 require firefighters who perform interior structural firefighting or who enter atmospheres that are immediately dangerous to life and health (IDLH atmospheres) to wear self-contained breathing apparatus.

In paragraph (c)(3) of § 1915.505, OSHA proposes to require that the employer make sure that all fire response employees have an annual medical examination. Further, in paragraph (c)(4), medical records of fire response employees must be kept according to 29 CFR 1915.1020 Access to Employee Exposures and Medical records. These proposed requirements are consistent with existing regulations found in 29 CFR 1910.156 and 29 CFR 1910.134.

In paragraph (d) of § 1915.505, OSHA addresses the procedures the employer would have to follow for organizing internal fire response functions. Paragraph (d)(1) proposes that the employer must organize the employer's fire response functions to make sure that there are enough resources to safely conduct emergency operations at the site. This language is consistent with the goals and language of paragraph 4.1.1 of NFPA 1500–2002 addressing the fire department's organizational statement. The Committee believes organization of the internal fire response functions is critical to its success in a fire emergency.

In paragraph (d)(2) of § 1915.505, OSHA proposes that the employer must set up written administrative regulations, standard operating procedures, and departmental orders for fire response functions. This proposed language is also consistent with the language of Chapter 4 in NFPA 1500–2002 addressing the organization of fire response providers.

In paragraph (d)(3) of § 1915.505, OSHA proposes that the employer must set up an Incident Management System (IMS) to coordinate and direct fire response functions. It is proposed that this system must include specific fire emergency responsibilities; how the employer will account for all fire response employees during an emergency operation; and what resources would be offered by outside organizations. This proposal is consistent with the goals and language

found in paragraph 8.1 of NFPA 1500–2002. The IMS is an improved fire department management and control system, based on actual experience with the Incident Command System (ICS) recognized in other OSHA standards such as 29 CFR 1910.156 Fire Brigades and 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response. Incident command is now a subset of incident management. The new system recognizes that command at an incident is only part of the overall management necessary to safely respond to emergency situations.

In paragraph (d)(4) of § 1915.505, OSHA proposes that employers provide this information (of paragraph (d)) the outside fire response organization to be used. The Committee believes that providing this information will improve coordination and ease pre-planning efforts to ensure a safe overall fire response. These proposed provisions are consistent with existing OSHA requirements (29 CFR 1910.156 Fire brigades and 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response).

Paragraph (e)(1) of § 1915.505, addresses the personal protective equipment of fire response employees. OSHA proposes the employer must provide hazard specific personal protective clothing and equipment, at no cost, to fire response employees. It is also proposed that the employer must make sure that each employee wears the personal protective clothing and equipment that offers protection from the hazards to which that employee is likely to be exposed. This general requirement was recommended by the Committee and is consistent with the language found in chapter 7 of NFPA 1500–2002. It is specifically consistent with existing OSHA standards and with paragraph 7.1.2 of NFPA 1500–2002.

In paragraph (e)(2) of § 1915.505, OSHA proposes the requirements for protective clothing's thermal stability and flame resistance. It is proposed in paragraph (e)(2)(i) that the employer would have to make sure that each fire response employee exposed to the hazards of flame does not wear clothing that, when exposed to flames, could increase the extent of injury that the fire response employee would sustain. Proposed paragraph (e)(2)(ii) specifically prohibits wearing clothing made from acetate, nylon, or polyester, either alone or in blends, unless it could be shown that the fabric can withstand the flammability hazard that could be encountered, or that the clothing is worn in such a way to eliminate the flammability hazard that may be encountered. This language is consistent

with the language in existing OSHA standards and in paragraph 7.1.6 of NFPA 1500–2002.

In paragraph (e)(3) of § 1915.505, OSHA proposes the requirements for respiratory protection for shipyard fire response employees. The proposed requirements in paragraph (e)(3) are consistent with current industry practice as discussed by the Committee.

In paragraph (e)(3)(i) of § 1915.505, OSHA proposes that the employer provide self-contained breathing apparatus (SCBA) to all shipyard fire response employees who are involved in emergency operations in an atmosphere that is immediately dangerous to life or health (IDLH), may become IDLH, or is unknown. This language is consistent with existing OSHA standards and paragraph 7.8.7 of NFPA 1500–2002.

In paragraph (e)(3)(ii) of § 1915.505, OSHA proposes that the employer provide SCBA to fire response employees performing emergency operations during hazardous chemical emergencies that will expose them to known chemicals in vapor form or to unknown chemicals. OSHA recognizes that there may be a potential for employee exposure to hazardous chemicals during fire response emergencies due to the nature of shipyard employment. As proposed, this requirement would limit employers to the use of SCBAs for this type of chemical exposure.

In paragraph (e)(3)(iii) of § 1915.505, it is proposed that the employer must provide either SCBA or respiratory protective devices. The SCBA or respiratory device must be certified by NIOSH under 42 CFR part 84 as suitable for the specific chemical environment, to fire response employees who perform or support emergency operations that will expose them to chemicals in liquid form. In this proposal, OSHA recognizes that the hazard to employees because of liquid chemical exposure is such that respirators other than SCBAs, such as cartridge respirators, may provide appropriate protection and be less costly to provide and maintain.

In paragraph (e)(3)(iv) of § 1915.505, OSHA also proposes that the employer must ensure that additional outside air supplies used in conjunction with SCBA be positive pressure systems and certified by NIOSH under 42 CFR part 84. Again, this proposal is consistent with existing OSHA standards and paragraph 7.10.1.1 of NFPA 1500–2002.

In paragraph (e)(3)(v) of § 1915.505, OSHA proposes that the employer must provide only SCBA that meets the requirements of NFPA 1981–1997, Standard on Open-Circuit Self-

Contained Breathing Apparatus for Firefighters (Ex. 20–7). The fire response members of the committee, stated that this has been a long standing recommendation and has become standard equipment for all fire response organizations throughout the country.

In paragraph (e)(3)(vi) of § 1915.505, OSHA proposes that the employer establish a respiratory protection program and use respiratory protective equipment according to 29 CFR 1915.154 Respiratory Protection. The Committee based this proposal on the language found in 29 CFR 1910.156, and 29 CFR 1910.134(g).

In paragraph (e)(4) of § 1915.505, OSHA proposes that the employer must supply at no cost to all fire response employees who are exposed to the hazards of interior structural firefighting within shipyard employment, either protective coats and trousers, or protective coveralls; helmets; gloves; footwear; and protective hoods that meet the applicable requirements of NFPA 1971–2000, Standard on Protective Clothing Ensemble for Structural Firefighting (Ex. 20–8). This proposal is based upon chapter 7 of NFPA 1500–2002.

In paragraph (e)(5) of § 1915.505, OSHA proposes that the employer must supply, at no cost to all fire response employees who are exposed to the hazards of proximity firefighting, the appropriate protective proximity clothing that would have to meet the applicable requirements of NFPA 1976–2000, Standard on Protective Clothing for Proximity Firefighting (Ex. 20–9).

It is the intent of this section to require that only the shipyard employees who will be engaged in operations that will expose them to the intense radiant heat of a proximity firefighting incident (the proximity hot zone) be equipped with specialized proximity firefighting protective clothing.

Employee protection from the hazards of proximity firefighting situations should be viewed in a similar manner to hazardous materials operations. That is, employees must be fully encapsulated to protect them from the unique hazards associated with both situations. The employer should know the locations where such potential exposure to high radiant heat hazards exists, such as bulk flammable liquid or bulk flammable gas facilities. By determining what operations employees could undertake and what the potential exposure will be for those employees conducting fire response operations, the employer will know which employees need proximity firefighting clothing.

At an incident, the employer must establish the boundaries of the proximity hot zone for that incident and require all who must operate within those boundaries to be protected from the intense radiant heat. Intense radiant heat may cause injury to the employees or damage or destroy their structural firefighting protective clothing. The employer could make the decision to evacuate the area and protect employees from such exposures. Then the employer can summon mutual aid that is equipped with the appropriate equipment and proximity protective clothing to handle the proximity hot zone of the incident. The employer could also use fixed protection systems available at the facility to apply extinguishing agents (master streams, water deluge, foam, *etc.*) into the proximity hot zone. Alternatively, the employer could train and equip his or her own response employees to be able to fully deal with these incidents.

Not every employee needs to be included in the proximity hot zone operations unless the employer's written statement or policy requires these resources. For example, the employer may plan fire response operations that would contain and control the fire without the need for employees' operating within the proximity hot zone. Therefore, the employer would not need to provide proximity firefighting protective clothing. Using other protective strategies (including but not limited to physical shields or barriers, or large volume water stream applications that are sustained over the entire duration of the incident) could protect employees who otherwise would need proximity firefighting protective clothing. This language is consistent with the language in paragraph 7.3 of NFPA 1500–2002.

In paragraph (e)(6) of § 1915.505, OSHA proposes that the employer provide a Personal Alert Safety System (PASS) device to each fire response employee involved in firefighting operations. The PASS devices must meet the requirements of NFPA 1982–1998, Standard on Personal Alert Safety Systems (PASS) for Firefighters (Ex. 19–10). This language is consistent with the language in paragraph 7.13.1 of NFPA 1500–2002.

A PASS is a device that is attached to or is an integral part of self-contained breathing apparatus (SCBA). It automatically sounds a distinctive alarm (some units also display a flashing strobe light) if a fire response employee becomes immobile for a pre-determined period of time (usually 30–40 seconds). For example, the device would be activated in the event a fire responder

becomes incapacitated from structural collapse or runs out of breathing air. It can also be activated manually by the fire response employee. Fire response employees who might become trapped or lost, but are not unconscious, can also activate the device to help searchers locate them. The shrill alarm allows rescuers to locate the wearer quickly in dark or heavy smoke conditions. The alerting sound of a PASS can easily be distinguished from a low air supply alarm emitted by a SCBA. The Committee agreed that it is every fire fighter's nightmare to be in a fire situation and hear both alarms coming from a comrade's position. This means the comrade has run out of air and is motionless. All incidental fire response activities will immediately stop until the disabled fire fighter is located and pulled to safety. PASS devices are now considered standard issue and are recommended by NFPA Standard No. 1982–1998. It is also industry practice.

Section 1915.505(e)(7) addresses life safety ropes, body harnesses, and hardware. The workgroup, based on their experience, proposed this requirement to the Committee. Their recommendation is consistent with current practice in the fire service. The committee accepted the workgroups recommendations.

In paragraph (e)(7)(i) of § 1915.505, OSHA proposes that all life safety ropes, body harnesses, and hardware used by fire response employees for emergency operations must meet the applicable requirements of NFPA 1983–2001, Standard on Fire Service Life Safety Rope, Harnesses, and Hardware (Ex. 19–11). This is consistent with subpart I of this part and paragraph 7.14.1 of NFPA 1500–2002.

In paragraph (e)(7)(ii) of § 1915.505, OSHA proposes that only class I body harnesses may be used to attach fire response employees to ladders and aerial devices. This is consistent with NFPA 1983–2001.

In paragraph (e)(7)(iii) of § 1915.505, OSHA proposes that only class II and class III body harnesses may be used by fire response employees for fall arrest and repelling operations. This is consistent with NFPA 1983–2001.

In paragraph (f) of § 1915.505, OSHA addresses equipment maintenance.

In paragraph (f)(1) of § 1915.505, OSHA proposes that the employer must inspect and maintain personal protective equipment used to protect fire response employees to make sure that it provides the intended protection. Such inspection and maintenance is consistent with OSHA's personal protective equipment standards.

In paragraph (f)(2) of § 1915.505, OSHA addresses the maintenance of fire response equipment. The requirements for testing and maintaining fire response equipment are consistent with sound safety practices and the requirements for tools and equipment found in chapter 7 of NFPA 1500–2002.

In paragraph (f)(2)(i) of § 1915.505, the employer is required to keep fire response equipment in a state of readiness.

In paragraph (f)(2)(ii) of § 1915.505, OSHA proposes that the employer must make sure that all fire hose coupling and connection threads are standardized throughout the facility and on vessels and vessel sections by providing the same type of hose coupling and connection threads for hoses of the same or similar diameter. It is important to stress the need for standardized or compatible threads in couplings and connections. The Committee heard testimony from fire department personnel stressing the need for compatibility and standardization. Those fire department representatives indicated for example, that many 1½-inch hoses have threads that look very similar but cannot be connected.

In paragraph (f)(2)(iii) of § 1915.505, OSHA proposes that if the employer uses an outside fire organization for fire response and the employer expects them to use the employer's facility's or vessel's or vessel section's fire response equipment, then the employer must make sure that either all the facility's or vessel's or vessel section's hose and coupling connection threads are the same as those used by the outside fire authority or that suitable adapter couplings are supplied. This language is consistent with the language found in paragraph 9.3 of NFPA 14–2000 (Ex. 20–12).

Section 1915.506 Hazards of Fixed Extinguishing Systems on Board Vessels and Vessel Sections

This section addresses the hazards associated with fixed extinguishing systems on board vessels and vessel sections that could create a hazardous atmosphere when activated in shipyard employment, regardless of geographic location. Of particular concern is the incorrect or inadvertent activation of these systems. Fixed fire extinguishing systems found on land side are covered by the next section of this proposed subpart, § 1915.507 Land side Fire Protection Systems.

The hazards associated with the use of fixed extinguishing systems on board vessels and vessel sections have long been recognized by the United States Coast Guard (USCG) as evidenced by

Coast Guard Commandant Notices and Instructions that date to 1978. The International Maritime Organization² (IMO) has also addressed this issue by issuing regulations that are part of the International Convention for the Safety of Life at Sea (SOLAS).

Testing these ships' fixed extinguishing systems has led to several fatalities. In October, 1996, aboard the Italian flag liquid natural gas (LNG) carrier SNAM PORTVENERE, an American Bureau of Shipping (ABS) surveyor and five shipyard technicians were killed when carbon dioxide (CO₂) was released accidentally from a fixed fire extinguishing system that was being tested. On May 3, 1993, aboard the M/V CAPE DIAMOND, while a contractor was testing a low pressure CO₂ system that protected the ship's engine room, CO₂ was discharged accidentally, causing the deaths of a Coast Guard marine inspector and a shipyard contractor. Additionally, an intentional activation of a manual CO₂ extinguishing system aboard the Australian naval vessel HMS APPLELEAF, caused the death of four persons. These incidents were attributed to human error in which the discharge of CO₂ extinguishing systems protecting spaces aboard vessels was allowed to occur while employees were working inside.

The Committee recognized and OSHA agrees that although the casualty history reveals problems with only CO₂ systems, the potential exists for the use of new extinguishing agents and application methods to produce hazards similar to CO₂. Therefore, the proposed employer's responsibilities in paragraph (a) of § 1915.506 apply to all fixed extinguishing systems aboard vessels and vessel sections, regardless of geographic location, that may result in a hazardous atmosphere if discharged. It is very likely that the only systems that may be affected by this regulation will be those that employ gaseous or two-phase (gaseous/liquid) extinguishing agents. However, by including all systems that may create a hazardous atmosphere when activated, the Committee believes that the regulation will be broad enough to cover future systems and/or extinguishing agents that are currently unforeseen. Examples of future possibilities include systems employing dry chemical extinguishing agents (these systems currently exist but are not typically installed on vessels), combination dual water/dry chemical

systems, or systems using Halon alternative agents.

While developing this proposal, the Committee discussed whether to include requirements for other systems that do not cause hazardous atmospheres when activated, such as foam and automatic water sprinkler systems. After extensive discussion, the Committee decided that a standard for these systems was not necessary because they are not typically relied upon on board vessels and vessel sections, and they do not pose a significant safety and health threat to employees.

In proposed paragraph (b) of § 1915.506, the Committee agreed to require that systems, whether designed to be activated automatically or manually, be physically isolated or be provided with other positive means to prevent discharge of the systems before any work is done in a space equipped with fixed extinguishing systems. The Committee recognized the increased hazard posed by systems that are activated by either pneumatic, electronic, or other means, with no human action necessary to set them into operation. However, even if a system also has a manual means of activation, it would have to be physically isolated or provided with other positive means to prevent discharge. Examples of other positive means can be found in paragraph (c) of this section. Systems that are activated automatically are normally located in typically unoccupied spaces such as paint lockers and storage lockers, but can also be found in normally occupied spaces such as engine rooms and pump rooms.

In paragraphs (b), (d), and (e) of § 1915.506, the term physically isolated refers to physically preventing the extinguishing agent from entering the work area. This is typically done by installing a blank (a flat piece of metal between two flanges) in the supply line of the extinguishing system so that the extinguishing agent can not possibly be released into the protected area.

Paragraph (b) of § 1915.506 sets forth the provisions that must be completed before any work is done in a space equipped with such fixed fire extinguishing systems. In paragraph (b)(1) of § 1915.506, OSHA proposes that systems must be physically isolated or have other positive means to prevent discharge.

Proposed paragraph (b)(2) of § 1915.506 requires employee training to ensure recognition of systems discharge and evacuation alarms, and recognition of the appropriate escape routes. This training consists of making sure that employees recognize the discharge and

² The International Maritime Organization is the United Nations' specialized agency responsible for improving maritime safety and preventing pollution from ships.

evacuation alarms and escape routes in accordance with § 1915.508 of this subpart.

Proposed paragraph (b)(3) of § 1915.506 was included as a result of Coast Guard information about a casualty at sea. The United States Coast Guard recognized the need to ensure adequate means of escape from spaces protected by CO₂ systems. In this incident, the chief engineer inadvertently discharged CO₂ into a space with an inward opening door. Members of the crew were unable to open the door until pressure in the space subsided. During that time some crew members were asphyxiated. As a result of this incident the Coast Guard recommended that during inspections, CO₂ storage provisions and means of escape should be evaluated. The Coast Guard stated further that protective measures should be provided, such as making sure that doors open outward, that there are kick-out panels in doors or bulkheads, that doors are blocked open when the space is occupied, or that there are sufficient vent openings to the atmosphere. These recommendations are also recognized in COMDTINST 16000.7, MSM, Vol. II (Ex. 17) and SOLAS 74/78 (Ex. 18) which require outward opening access doors in CO₂ protected spaces aboard vessels.

Proposed § 1915.506(b)(4) addresses the Committee's concern with inward opening doors, hatches, scuttles, and other potential barriers that may close off escape routes as a result of system activation. The Committee recognized that fully opening or removing doors may cause unacceptable exposures of equipment or employees to the elements (e.g. freezing, precipitation, etc.) and, therefore, proposed that this concern may be satisfied by placing a blocking device between the door and door frame to make sure that in the event of system discharge escape routes will not be impaired.

OSHA recognizes that placing a blocking device in a fire door is normally an unacceptable practice. However, in this case, because of the hazard of asphyxiation, OSHA would allow the doors to be blocked open, as long as the blocks are removed before the system is relied upon to provide fire protection.

Proposed paragraph (b)(5) of § 1915.506 requires employee training in the hazards associated with extinguishing systems, such as how to avoid disturbing system components and equipment that are located within spaces. Such components and equipment include piping, cables, linkages, detection devices, activation devices, and alarm devices. Typically in

shipyard employment, employees rig materials and equipment in and out of vessel and vessel sections, using chain falls and come-alongs. Employees untrained about the dangers of disturbing system components could accidentally activate the system while in the process of rigging.

The Committee recognized that the majority of current CO₂ systems are not equipped with components and instrumentation that would allow a simple method for physically isolating the system. Therefore, the Committee proposed paragraph (c) of 1915.506 to allow work in a space protected by a system activated solely by manual means without the need to physically isolate. Although the safest method is to physically isolate the system, OSHA believes that the requirements included in paragraphs (b)(1) through (5) of § 1915.506 provide an acceptable level of safety. One reason for these options is the impracticality of physically isolating the system for routine and short-duration maintenance and repairs. The Committee wanted to encourage manufacturers, standards writing agencies, and end users to work to develop a simple and practical means for physically isolating existing and future systems.

Proposed paragraph (c) of § 1915.506 is intended to minimize the risk of intentional or accidental activation of a manual system during sea trials by requiring that all activation stations, whether remote or local, must be secured under lock and key or an attendant posted. The intent is to prevent unauthorized persons access to the activation controls of a manual system.

Proposed paragraphs (d) and (e) of § 1915.506 address system testing and system maintenance operations. These have been demonstrated to be the most likely causes of accidental system activation. The Coast Guard currently requires fixed fire extinguishing systems to be disconnected when undergoing any testing or maintenance. The need for these requirements is demonstrated clearly by the fatalities that occurred while testing the fixed system on the M/V CAPE DIAMOND mentioned above. As a result of this incident the Coast Guard recommended that personnel in spaces protected by CO₂ systems be evacuated during testing, unless suitable safeguards are instituted, such as isolating the CO₂ supply from the protected space or providing personnel with self-contained breathing apparatus (SCBA).

The Committee considered the Coast Guard recommendation for employees doing testing to have the option of using

SCBAs or using emergency escape breathing devices (EEBD). But the Committee concluded that, because the potential for accidental discharge is so great during testing and maintenance of the system, it is necessary to physically isolate the system during testing and maintenance. The Committee further proposed requiring evacuation of the space by all personnel not directly involved in testing. The reason for proposing both to physically isolate the system and to evacuate non-essential personnel during testing is that testing of the system typically results in alarm activation and discharge of extinguishing agent. Therefore all indications of a test gone awry may be ignored as a false or nuisance alarm by non-essential employees until it is too late to evacuate the space safely. OSHA agreed that the proposal to evacuate all personnel not involved in testing the system best protects the safety of shipyard employees.

Several members of the Committee noted that during sea trials, the employer may expect employees to rely on the on board fixed extinguishing system in the event of a fire. In proposed paragraph (f) of § 1915.506, OSHA addresses the hazards associated with using fixed fire extinguishing systems by proposing that employees be trained and designated as necessary to operate and activate the system properly. Further, OSHA proposes that all employees be evacuated from protected spaces, affected areas, and accounted for before the discharge of the system.

Two serious incidents resulting in ten fatalities were caused by intentional activation of a manual CO₂ extinguishing system protecting an engine room while personnel were trapped inside. One incident occurred on the SNAM PORTOVENERE. Lloyd's Register reported on November 7, 1996, that "an autopsy on the victims revealed that carbon dioxide was the cause of death, rather than the fire or smoke from the blaze which had been reported in the engine room. Sources said the fire was small and was being put out with hand extinguishers when the carbon dioxide plant was activated, saturating about 85% of the engine room within 2 minutes, according to one of the technicians who survived the incident." (Ex. 10-1). OSHA therefore proposes in paragraph (f)(1) of § 1915.506 to require that employees be trained and designated to operate fixed manual systems when the employer expects these systems to be relied on in the event of a fire.

As reported in the London Guardian, the second incident occurred aboard the

HMS APPLELEAF, when, "an Australian naval captain ordered that the engine room be sealed off and the compartment flooded with carbon dioxide—with four crew members inside." (Ex. 10–2). Although the report was not clear as to whether or not the cause of the deaths in this case was from asphyxiation by the carbon dioxide or from fire and smoke exposure, the incident illustrates the hazards associated with discharging a lethal concentration of an extinguishing agent into an occupied, enclosed space. The Committee strongly recommended and OSHA agreed to propose in paragraph (f)(2) of § 1915.506 to require that the protected space and affected areas must be evacuated completely and all employees accounted for before discharge of the fixed manual extinguishing system.

Section 1915.507 Land Side Fire Protection Systems

While developing these provisions, the Committee examined existing OSHA regulations for fire protection. Currently there are several OSHA requirements for land side portable and fixed fire protection systems in part 1915. For flammable liquids, § 1915.36(a)(6) requires "Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use." For welding, cutting and heating operations, § 1915.52(a)(2) requires, "If the object to be welded, cut or heated cannot be moved and if all the fire hazards including combustible cargoes cannot be removed, positive means shall be taken to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them." For all hot work § 1915.52(b)(2) requires "Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use." For all hot work § 1915.52(b)(4) requires that "Vaporizing liquid extinguishers shall not be used in enclosed spaces."

Additionally, for ship breaking operations only, § 1915.52(c) requires "In all cases, suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use. Personnel assigned to contain fires within controllable limits shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used." For general working conditions, § 1915.91(d) requires, "Free access shall be maintained at all times to all exits and to all fire alarm boxes or fire extinguishing equipment." While these

standards apply specifically to fire protection in shipyard employment, the Committee recognized that there are also additional standards in the part 1910 General Industry Standards that are currently used as guidelines in shipyard employment and are accepted industry practice. The Committee has recommended, and OSHA agrees, that the existing requirements in § 1915 that address fire protection will be replaced by the requirements of this subpart.

Subpart L of part 1910 contains the general industry standards for portable and fixed fire suppression systems. The specific types of equipment and systems regulated include portable fire extinguishers, standpipe and hose systems, automatic sprinkler systems, and fixed extinguishing systems using liquid, solid, or gaseous extinguishing agents. There are also requirements for fire detection and fire alarm systems. The current standards in subpart L were developed in 1980 (45 FR 60710) as a major revision to the original 6(a) standards adopted in May, 1971. While subpart L of part 1910 does not apply to the maritime industry (29 CFR 1910.155), many of these standards are used voluntarily as guidelines to control hazards to shipyard employees working in shipyard employment.

In addition to reviewing current OSHA standards, the Committee also considered applicable national consensus standards and codes developed by NFPA. The NFPA codes and standards are the recommendations of the NFPA consumers, property owners, fire authorities, federal agencies, insurance companies, and other persons interested in providing fire safety to life and property. The NFPA codes and standards are purely advisory documents so far as the NFPA is concerned. They become an influential force for the public when adopted by governmental authority. Many of the NFPA standards were adopted under the section 6 (a) of Occupational Safety and Health Act of 1970.

The Occupational Safety and Health Administration, through its standards, uses NFPA codes and standards in two ways: In most cases, the codes or standards are incorporated by reference, citing a particular edition. This may not be the latest edition published by the Association. In other cases, the OSHA standards actually extract some or all of the text from NFPA codes and standards and include it in the regulatory text of the OSHA rule.

With respect to this section (land side fire protection systems) of the proposal, the Committee recommended that OSHA incorporate by reference, the

most current edition of an NFPA code or standard rather than extract the NFPA text and publish it as the OSHA rule. OSHA proposes, in this section, to follow the Committee's recommendation and incorporate by reference the necessary NFPA codes and standards. The standards proposed in this notice are based upon the current and applicable OSHA and NFPA codes and standards reviewed by the Committee.

In paragraph (a) of § 1915.507, OSHA proposes to establish the employer's responsibilities under the section. Under the proposed rule, the employer would be responsible for ensuring that all fixed and portable fire protection systems installed to meet a particular OSHA standard comply with the appropriate proposed requirements of this section. The proposed rules in this section do not apply to fixed or portable fire protection systems the employer has installed to meet requirements other than OSHA's.

This proposal is consistent with the philosophy adopted in part 1910 for regulating fixed and portable fire extinguishing systems. OSHA found during the development of the general industry requirements for fixed and portable fire protection systems that some employers may opt to take property protection systems out of service rather than upgrade them to meet OSHA standards, an action that is contrary to basic fire prevention policy and property protection concepts. Therefore, rather than risk the loss of property, and the associated economic impact of such losses, OSHA decided in 1980 to regulate only those systems it requires. (See 45 FR 60710.) Fire protection systems installed to meet other codes or standards would not be regulated by OSHA.

In paragraph (b) of § 1915.507, OSHA proposes to regulate the use of portable fire extinguishers and hose systems. By proposing to incorporate by reference NFPA 10–1998, Standard for Portable Fire Extinguishers (Ex. 20–1) in paragraph (b) of this section, the employer may replace up to one-half of the required complement of fire extinguishers by uniformly spaced 1½-inch (3.8 cm) hose stations. If the employer chooses to use hose systems, then the employer would have to meet the requirements of NFPA 14–2000, Standard for the Installation of Standpipe Systems (Ex. 20–12). This is consistent with current OSHA practice under 29 CFR 1910.157 and 1910.158. The incorporation by reference here, in paragraph (b)(1) of § 1915.507, should impose no greater burden on employers. Rather, it will permit some flexibility in

offering protection for incipient stage fires.

In paragraph (b)(2) of this section, OSHA is proposing that the employer may use hose lines attached to class II or class III standpipe systems in place of portable fire extinguishers if those hose systems meet the applicable selection, installation, inspection, maintenance, and testing requirements of NFPA 14–2000 (Ex. 19–12), Standard for the Installation of Standpipe and Hose Systems.

OSHA proposes in paragraph (c) of § 1915.507 to address the general requirements of fixed extinguishing systems the employer must install to meet a particular OSHA standard. In paragraph (c)(1) OSHA requires that all fixed extinguishing systems required by OSHA must be approved for their use by a National Recognized Testing Laboratory (NRTL). This is consistent with OSHA's current practice of requiring that all fire protection equipment and systems be approved for their purpose and design by a NRTL.

In paragraph (c)(2) of § 1915.507, OSHA proposes, as the Committee recommended, that employers must notify employees and take the necessary precautions to protect employees when a fire extinguishing system becomes inoperable.

In paragraph (c)(3) of § 1915.507, OSHA also requires that any inoperable system be repaired by a qualified technician or mechanic. This proposal is consistent with and taken from current, fire protection standards (29 CFR 1910.160 and NFPA 12–2000).

OSHA proposes in paragraph (c)(4) of § 1915.507 that when an area remains hazardous to employee safety or health as a result of the discharge of an extinguishing agent, personal protective equipment must be provided to employees who enter the discharge area or effective safeguards must be provided to warn employees not to enter the discharge area. This proposal is consistent with the requirements in § 1910.160(c).

This paragraph is necessary because some systems must be designed to discharge extinguishing agents in concentrations greater than what is safe for humans. These systems, with the potential for creating a hazard to employees, need special consideration and control. OSHA proposes to carry the current requirement in § 1910.160(c) over to the proposal, recognizing that the hazards of such systems need to be identified and controlled in shipyard employment. This is particularly true of systems using carbon dioxide and some of the newer Halon replacement agents. OSHA is also proposing a note to this

paragraph directing the reader to § 1915.12, Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres, for additional requirements for entry into dangerous atmospheres that may be created by the discharge of certain extinguishing agents.

In paragraph (c)(5) of § 1915.507, OSHA proposes to require the employer to post hazard warning or caution signs at both the entrance to and inside of areas protected by fixed systems that could discharge extinguishing agents in concentrations that are known to be hazardous to employee safety or health. This proposal is consistent with paragraph (b)(5) of 29 CFR 1910.160.

In paragraph (c)(6) of § 1915.507, OSHA proposes, as recommended by the Committee, that the employer must select, install, inspect, maintain, and test all automatic fire detection systems and emergency alarms according to the NFPA 72–1999, National Fire Alarm Code (Ex. 19–13). Presently, OSHA requires only that those fire detection systems and emergency alarms required to meet a specific OSHA standard meet the requirements of 29 CFR 1910.164 and 1910.165. OSHA's current standards in §§ 1910.164 and 1910.165 were based upon existing standards and technology available in the 1970s when OSHA developed the standard. Since that time, several technological advancements have occurred in both fire detection and fire alarm technology.

As a result, the NFPA consensus committee responsible for developing fire detection and alarm standards and codes made extensive changes to NFPA 72. The most recent edition of their consensus standard, the 1999 edition, recognizes many changes that have taken place in the detection and alarm industry, such as those required by the Americans with Disabilities Act, software testing, fire modeling, and communication technology. OSHA believes, as the Committee recommended, that incorporating by reference, NFPA 72–1999 as the OSHA standard for designing and installing all fire detection and alarm systems will provide employees with protections consistent with protections provided by other codes and standards used by local authorities having jurisdiction.

OSHA, in paragraph (d) of this section, addresses the selection, installation, maintenance, inspection, and testing requirements for specific types of fixed fire extinguishing systems the employer uses to meet a particular OSHA standard. In paragraph (d)(1) OSHA proposes, as recommended by the Committee, that standpipe and hose

systems in land side facilities follow NFPA 14–2000.

In paragraph (d)(2) of § 1915.507, OSHA proposes to incorporate by reference, NFPA 13–1999, Standard for the Installation of Automatic Sprinkler Systems (Ex. 19–14); NFPA 750–2000, Standard on Water Mist Extinguishing Systems (Ex. 19–15); and NFPA 25–2002, Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems (Ex. 19–16), as the OSHA standard for installing OSHA-required automatic sprinkler systems in land side facilities. As above, this standard is being incorporated by reference at the recommendation of the Committee. OSHA does not believe that there is any increased burden placed upon employers by incorporating by reference this newer edition of the standard OSHA used in developing 29 CFR 1910.159. One of OSHA's goals with this proposal is to update outdated standards used as source standards in previous OSHA rules.

OSHA is also proposing a new standard in paragraph (d)(2) that would address installing fixed extinguishing systems that use water mist as the extinguishing agent. OSHA proposes to incorporate by reference NFPA 750–2000, Standard on Water Mist Extinguishing Systems (Ex. 19–15), as the OSHA standard for installing this type of system. The systems are found land side in places such as flammable liquid storage facilities and electrical equipment spaces.

In paragraph (d)(3) of § 1915.507, OSHA proposes to incorporate by reference several NFPA standards for fixed extinguishing systems that use water spray or foam for the extinguishing agent. OSHA proposes to incorporate by reference: the NFPA 11–2000, Standard for Low-Expansion Foam (Ex. 19–17); the NFPA 11A–1999, Standard for Medium- and High-Expansion Foam (Ex. 19–18); and NFPA 15–2002, Standard for Water Spray Fixed Systems for Fire Protection (Ex. 19–19) as the OSHA standards for installing fixed foam extinguishing systems. The provisions of this proposed incorporation by reference differentiate between the various expansion densities of foam discharges.

Current OSHA standards in part 1910 address foam extinguishing systems in general rather than specific terms. As stated above, one of OSHA's goals is to incorporate current standards in this proposal. Therefore, OSHA is proposing to incorporate by reference both NFPA 11–2000 and NFPA 11A–1999 to recognize current technologies and the possible use of low-, medium-, and high-expansion foam systems in

shipyard employment. OSHA believes this incorporation by reference will offer greater guidance and flexibility to those employers who choose to use fixed foam extinguishing systems to meet OSHA's standards.

In paragraph (d)(4) of § 1915.507, OSHA proposes to incorporate by reference the current edition of NFPA 17-1998, Standard for Dry Chemical Extinguishing Systems (Ex. 20-20), as the OSHA standard for installing fixed extinguishing systems using dry chemical extinguishing agents. Again, this proposed paragraph would apply only to those fixed dry chemical extinguishing systems the employer chooses to install to meet a particular OSHA standard. OSHA's proposal is based upon the Committee's recommendation.

In paragraph (d)(5) of § 1915.507, OSHA proposes to incorporate by reference the current edition of NFPA standards that address fixed extinguishing systems using gas as the extinguishing agent. Specifically, for standards for designing and installing fixed extinguishing systems, OSHA references NFPA 12-2000, Standard on Carbon Dioxide Extinguishing Systems (Ex. 20-21); NFPA 12A-1997, Standard on Halon 1301 Extinguishing Systems (Ex. 20-22); and NFPA 2001-2000, Standard on Clean Agent Fire Extinguishing Systems (Ex. 20-23).

OSHA recognizes that the fire extinguishing agent Halon 1301 is being phased out because of environmental concerns. However, for economic reasons, existing Halon 1301 systems may remain in service until such time as they are replaced by an alternative agent. Recognizing that existing Halon 1301 systems that remain in service, OSHA proposes to continue regulating their design and installation to ensure employee safety. For the systems that will replace Halon, OSHA is proposing for the first time that the employer meet NFPA 2001-2000 for their design and installation. This new proposal is based upon the Committee's recommendation that OSHA incorporate by reference the most recent edition of applicable NFPA standards to protect employees from hazards in the workplace.

Section 1915.508 Training

The Committee unanimously recognized the importance of employee training in combating the hazards of fire throughout shipyard employment. Specific emphasis is placed on hazard recognition, fire watch, and fire response. This is consistent with OSHA's long held philosophy that an adequately trained employee is a safe employee. OSHA is proposing the

Committee's full recommendations regarding training. Also, OSHA's proposal extends the training requirement beyond ship breaking operations to include all activities in shipyard employment regardless of geographic location. This would include operations involving shipbuilding and ship repair activities as well as other activities engaged in by shipyard workers.

Under paragraph (a) of § 1915.508, the employer must train employees expected to perform incipient stage firefighting on board vessels, in vessel sections, and in land side facilities. Such training must be conducted initially upon employment and when necessary to keep them proficient in the following: (1) The general principles of using fire extinguishers or hose lines, the hazards involved with incipient firefighting, and the procedures used to reduce these hazards; (2) the hazards associated with fixed and portable fire protection systems that they may use or to which they may be exposed during discharge of those systems; (3) the activation and operations of fixed and portable fire protection systems provided for their use in the workplace; (4) the emergency alarm signals, including system discharge and employee evacuation alarms; and (5) the primary and secondary evacuation routes they must use in the event of a fire in the workplace.

At the Houston meeting held in February, 2002, the Committee agreed to add a note to paragraph (a) of § 1915.508 stating that while all vessels and vessel sections have a primary evacuation route, not all will have a secondary evacuation route. This language was added as clarification to paragraph (a)(5) because although this fire protection standard applies to all of shipyard employment, the uniqueness of vessels and vessel sections in comparison to buildings or structures should be noted.

OSHA's proposal is consistent with the current training requirements found in part 1915 for ship breaking activities and in part 1910 for other shipyard activities. The requirement to train and retrain selected employees is based upon the current requirements found in 29 CFR 1910.157.

In paragraph (b) of § 1915.508, OSHA addresses training requirements for fire response employees and the training requirement found in existing paragraph (c) of § 1915.52. That paragraph requires that, only for ship breaking operations, all personnel assigned to contain fires within controllable limits must be instructed about the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

In paragraph (b)(1) of § 1915.508, OSHA proposes that the employer must have a written training policy, as part of the Fire Safety Plan (§ 1915.502) of this part, stating that fire response employees are to be trained and capable of carrying out their duties and responsibilities at all times. This is consistent with the requirements found in 29 CFR 1910.156 and NFPA 1500-2002.

In paragraph (b)(2), OSHA proposes that the employer keep written standard operating procedures (SOPs) that address anticipated emergency operations and update these procedures as necessary. The Committee concluded, and OSHA agrees, that written standard operating procedures are standard training tools that represent the best practice in the industry. This is consistent with the language in paragraphs 3-1.5 and 3-1.8 of NFPA 1500-2001.

In paragraph (b)(3) of § 1915.508, OSHA proposes that the employer review, in advance, all training programs and hands-on sessions to make sure that fire response employees are protected from training accidents. This proposal is based on a recommendation from the workgroup with full Committee approval and not from any established standard. The proposal requires a review of all training programs to make sure that the procedure will not expose trainees and their instructors to hazardous training conditions. The proposal should prevent the occurrence of accidents resulting from unexpected events such as flare-ups, collapses, entrapments, and stress-induced injuries during training evolutions.

In paragraph (b)(4) of § 1915.508, OSHA proposes that all fire response employees receive adequate training for carrying out their duties and responsibilities under the employer's standard operating procedures. This training program must make sure that these employees remain competent to respond to a fire. For example, the employee must know how to respond to a fire on board a vessel, where the pier hook-ups are located, how to gain access to the vessel, the location of the fire within the vessel, and the type of fire.

In paragraph (b)(5) of § 1915.508, OSHA proposes that the employer make sure that new fire response service employees are trained before they engage in emergency duties so that they can work safely and effectively at a fire scene. This language is consistent with the language in paragraph 3-1.3 of NFPA 1500-2002. The purpose of this proposal is to make sure that employees are trained to perform the duties

expected of them. If they have not been trained in a particular skill, they would not be permitted to perform any duty involving that skill. However, they may respond and perform duties for which they have been trained even if they have not received the entire training module for their position.

In paragraph (b)(6) of § 1915.508, OSHA proposes that the employer provide training for firefighters at least quarterly, according to the employer's written operational procedures. The Committee recommended that quarterly training is for actual firefighters, not necessarily for other fire response personnel who usually have just one function, such as connecting hoses to fire mains, starting fire pumps, or directing traffic. This language is consistent with the current requirement in 29 CFR 1910.156(c)(2) which requires annual training for all fire brigade members and quarterly training for those fire brigade members who may perform interior structural firefighting operations. The workgroup believed that the quarterly training requirement was appropriate because most fire response operations in shipyard employment, whether on the vessel or in land side facilities, would be beyond the incipient stage and most likely involve an interior attack.

In paragraph (b)(7) of § 1915.508, OSHA proposes that all fire response operations training must be conducted by qualified instructors. The Committee recognized, as does OSHA, the importance of using qualified instructors in all training provisions required by this section. This language is consistent with the language in paragraph 5.2.11 of NFPA 1500–2002.

In paragraph (b)(8) of § 1915.508, OSHA proposes that any training the employer does that involves live fire-fighting exercises would have to be done according to NFPA 1403–2002, Standard on Live Fire Training Evolutions (Ex. 19–24). This language is consistent with paragraphs 4.9.4 and 5.2.10 of NFPA 1500–2001.

In paragraph (b)(9) of § 1915.508, OSHA proposes that the employer must provide semiannual drills that cover site-specific operations, occupancies, buildings, vessels and vessel sections, and hazards, according to the employer's written operational procedures. The semiannual requirement for drills is consistent with the recommended frequency found in paragraph 5.3 of NFPA 1500–2002.

The Committee had some concerns about the requirement for the shipyard employment's fire department to perform two training drills within a one-year period. Some members of the

Committee requested that OSHA count a fire response as one training drill. Most of the members did not want to count a fire response as a training drill citing that the drill is to be used for assessing and improving operational or deployment procedures. When an alarm is sounded and the shipyard fire department responds, the on-scene command is coordinating the scene and cannot simultaneously evaluate the response. The commander's primary responsibility is to ensure that their employees respond safely. The Committee understands that at the end of the response, the fire department's employees evaluate their deployment tactics, site-specific approach (buildings, shops, vessels and vessel sections), and hazards. This is usual and customary throughout the country and is not to be considered a training drill. Drills are used for the sole purpose of training, and fire response is for saving lives and property. OSHA agrees that fire responses are not to be considered drills for the purposes of this paragraph.

In paragraph (b)(10) of § 1915.508, OSHA proposes that the employer must not use smoke generating devices that could create a hazardous atmosphere in training exercises. This includes training done on vessels and vessel sections as well as in buildings and other structures. This language is consistent with paragraph 8.3.2 of NFPA 1500–2002. According to the NFPA Committee that developed NFPA 1500–2002, several accidents have occurred where smoke bombs or other smoke-generating devices that produce a toxic atmosphere have been used for training exercises. Where the employer must simulate emergency conditions, smoke-generating devices that do not create a hazard must be used.

Paragraph (c) of § 1915.503 sets forth the training requirements for fire watch duty. The Committee recommended that OSHA propose specific language stating when a shipyard employer should train workers as fire watches.

In paragraph (c)(1) of § 1915.508, OSHA proposes that the employer make sure the worker has been trained: (i) Before beginning the fire watch; (ii) when there is a change in operations that presents a hazard for which the worker has not been previously trained; or (iii) when the employer determines that the fire watch employee needs to be trained.

The Committee urged OSHA to include in the requirements for fire watch training a basic understanding of fire behavior that covers such elements as awareness, anticipation of different classes of fire in combination with different physical work areas, and

extinguishing agents and their uses. The Committee recognizes that the fire watch's role is important in protecting lives and preventing fires within shipyard employment. To be able to evaluate a work area and to consider both the physical conditions and possible adverse effects of a fire in that area are also important skills that a fire watch needs to have. The Committee did not want to specify a particular course that must be used to train fire watches. OSHA has followed the recommendation by proposing these requirements in a performance-oriented manner to allow the employer to train workers in the most efficient and feasible manner for his or her shipyard employment environment. The hazards associated with each type of cargo must be taken into consideration. For example, repairing chemical barges has been concentrated in the Gulf and the inland waters of the Gulf. Therefore, fire watches in the Gulf area would likely be trained to deal with fires involving chemicals that are shipped by barge. Another consideration is the regional difference in temperatures that could affect the ignition and spread of fire. OSHA agrees with the Committee that individual employers are best suited to develop their fire watch training geared to specific shipyard employment operations.

In paragraph (c)(1)(iv) of § 1915.508, based on the Committee's recommendation, the Agency proposes that the employer must retrain fire watches annually. The Committee recognized fire watches as the first line of defense against the spread of fire, as discussed above under paragraph (c)(1) of § 1915.504. Annual training is an industry practice. In addition, according to the Committee, annual training is required on Navy contracts throughout the country, and it is not viewed as an additional requirement burden.

In paragraph (c)(2) of § 1915.508, the Agency proposes that each employee who stands a fire watch duty be trained. The training would include how to anticipate and be aware of the hazards that may be faced while performing fire watch duties. Such hazards may include limited egress or possible changes in atmospheric conditions. For the training requirement for fire watches to recognize the adverse health effects that may be caused by the exposure to fire, the Committee noted that workers have to be familiar with the OSHA standard for Hazard Communication, 29 CFR 1910.1200, and its requirements related to the products the workers are using in their work and the Material Safety Data Sheets (MSDSs) for those products, and where appropriate, for the last three

products carried in this space or the coatings that were applied to the steel before hot work. It was explained to the committee that workers exposed to hazardous chemicals are already covered by the OSHA Hazard Communication standard. The Committee noted that the workers need to be knowledgeable about fire prevention practices so they can correctly react to changes in the hot work area environment that introduce hazards not identified at the start of hot work. Examples are deterioration of housekeeping or introduction of combustible or flammable materials.

Paragraph (c)(2)(i) of § 1915.508 requires the employer to train a fire watch on the basics of fire behavior, the classes of fires, extinguishing agents and stages of fire, and methods of extinguishment. The basics of fire behavior usually include the definition of the fire triangle and tetrahedron as set forth by NFPA 1001-1997—Standard for Fire Fighter Professional Qualification (Ex. 19-25). Extinguishing agents commonly used in shipyard employment are dry chemical, water, and CO₂. Methods of extinguishing require removing one or more of the following: heat (ignition), oxygen, fuel, or chemical chain reactions. Members of the Committee suggested that the selection of a fire extinguisher used on certain materials may, in fact, present a hazard in itself. Even though the worker is trained to be able to identify, select, and use the appropriate extinguishing agent, such training does not relieve the employer from the responsibility to assess the hot work area hazards and make the correct extinguishing agents available. The Committee noted that particular extinguishing agents may vary and that in some yards, according to one employer, workers are forbidden to use CO₂ extinguishers in confined spaces.

The Committee raised a number of issues when reviewing paragraph (c)(2)(ii) of § 1915.508 Training Requirements For Fire Watch Duty. One issue discussed was whether the employer should require live fire training for all fire watches. The Committee found that there were different requirements and restrictions across the country. Some members thought that how fire watch personnel are trained should be left up to the yard and not this Committee. Others stated that the only way a fire watch can learn the proper procedure is for that individual to have hands-on training on attacking a fire. One member stated that classroom training is the only way he could train employees because of his state's strict emissions standards.

Another member stated that although the State of California has a ban on open-burning, the Department of Air Quality for the State of California does issue an annual permit for open fire burning for this type of training. Some members stated that the only way to train employees on how to properly use a fire extinguisher or fire hose is to put the trainees in a realistic situation. The training exercise would be a controlled burn and would teach the trainee the proper way to approach the fire. Initially, the Committee could not reach a full consensus on the issue of live versus classroom (lecture/video) training. During deliberations, one committee member from a large shipyard located on the Gulf Coast had not considered live-fire training but was persuaded by the discussion and is currently building a facility within the shipyard to perform this training. The Committee noted that there are various apparatuses available for live fire training that are either fabricated within the shipyard or commercially available. After lengthy discussions, a recommendation was unanimously agreed upon by the Committee and added by OSHA as proposed § 1915.508(c)(2)(ii). In this paragraph, the employer must ensure that each fire watch is trained using live fire scenarios whenever allowed by law.

Paragraphs (c)(2)(iii), (iv), and (v) propose, respectively, that employees who stand fire watch duty must be able to recognize the adverse health effects that may be caused by exposure to fire; be familiar with the physical characteristics of the hot work area; and be able to anticipate and understand the hazards associated with fire watch duties.

Paragraphs (c)(2) (vi) and (vii) of § 1915.508 require training on personal protective equipment (PPE), including what PPE is appropriate in a particular situation, as well as how to use it. The Committee noted that a fire watch may need the same or different items of PPE, and even PPE providing a different level of protection, from that used by a hot worker. The Committee further pointed out that the fire watch(es) could be assigned to an isolated or confined space and, therefore, would need the additional protection that is required under other sections of part 1915.

Paragraph (c)(2)(viii) of § 1915.508 proposes that an employee who stands fire watch duty must be trained to be able to select and operate fire extinguishers and fire hoses likely to be used. As in the case of fire extinguishers, whenever a fire watch may be expected to use a fire hose, the fire watch must be trained in its use.

The Committee noted that fire hoses 1½-inches in diameter are used by fire watches in some yards but not in others. For example, a Marine Chemist's instructions on a certificate may specify that a fire watch be placed inside a tank with a charged 1½-inch fire hose. A fire watch who has been trained with a fire extinguisher does not necessarily understand how to use a 1½ inch fire hose. The Committee strongly recommended, and OSHA agrees, that fire watches need particular training if they must deal with this equipment within their shipyard employment.

The Agency proposes that a fire watch be trained to select and operate the different types of fire extinguishers and 1½-inch fire hoses likely to be used by fire watches in the area. In paragraphs (g)(1) and (g)(2) of 29 CFR 1910.157, OSHA requires the employer to train any employee who has been designated to use portable fire extinguishers or, as proposed in paragraph (c)(2)(viii) of this section, fire hose, and to be familiar with the general principles of fire extinguisher use and the hazards of fighting incipient stage fires. Again, OSHA does not believe that adopting this training requirement from part 1910 imposes any new burden on shipyard employers than what currently exists.

Paragraph (c)(2)(ix) of § 1915.508 states that fire watch personnel be trained to be aware of the location and use of barriers that are part of the employer's fire protection program. Throughout the maritime industry, where partial cleaning has been performed, barriers are placed to ensure that product is not returned to the hot work area. Barriers are also used to contain molten metal or sparks from traveling to unclean areas. However, the Committee recognized that barriers can create hazards by blocking an employee's egress or by suppressing ventilation to the point where fumes or vapors can accumulate. A worker who stands fire watch must understand how barriers are used. OSHA is recommending that this provision be included in the training of fire watch personnel.

In paragraph (c)(2)(x) of § 1915.508, OSHA proposes to require that the fire watch be trained in the means of communicating with each worker performing hot work. There was considerable discussion within the Committee workgroup about current industry practices for the fire watch's contact with other workers. One member suggested OSHA incorporate NAVSEA's 009-07 Fire Prevention and Housekeeping (September 13, 1996). However, other workgroup members pointed out that this Navy Standard

Item was written primarily to protect property and that only the parts that addressed the safety of workers would be appropriate for the OSHA proposal. Therefore, the workgroup committee took only certain provisions relating to the safety of workers, including the requirement that the fire watches have a clear view and immediate access to the areas they are watching, from NAVSEA 009-07. However, the workgroup decided that requiring a clear view and access would not adequately protect workers, without also requiring a means of communication between the fire watch and the hot worker. As one member pointed out, communication is important because a fire watch may not be able to see a hot worker when, for example, the fire watch is on the other side of a compartment from the hot worker. In this case, the means may be as simple as tapping on the bulkhead to signal whether the hot worker can continue or must stop, or an electronic communication system such as a two-way radio. The phrase, "with a clear view and immediate access to the area(s) affected by the hot work," was eventually dropped from the training requirements, but substantively added to the duty requirement in paragraph (c)(2)(i) of 1915.504 Fire Watches.

In paragraphs (c)(2)(xi) and (xii) of § 1915.508, OSHA proposes to require that fire watches be trained to know when and how to initiate fire alarm procedures and to be familiar with the shipyard's evacuation plan. OSHA recognizes that fire watch work assignments may change from vessel or vessel sections to a land side facility and that each may have different alarm systems, evacuation plans, and exit routes. For example, the alarm/evacuation systems found in vessels vary significantly among vessels types. The alarm system installed and procedures established on an oiler are far more sophisticated from those found on a VLCC (very large crude carrier). Evacuation procedures and alarm systems will be different in a land side paint facility or machine shop where flammable coatings or cutting oils pose a hazard. However, the Committee concluded that regardless of the system, a primary responsibility of a fire watch must be to recognize when to initiate a fire alarm procedure and begin evacuation. A fire watch needs to know when a fire has progressed beyond the incipient stage, when a fire alarm should be activated, and when evacuation should be initiated. The Committee decided and OSHA agrees not to specify a particular type of alarm

system. Both noted that the employers are in the best position to develop their own alarm systems but that fire watches need to be familiar with what the employer has developed or what is already in place in the case of a ship or barge. For example, a yard in the southern area of California could have a Navy vessel, a cruise liner, and a tug under repair at the same time, all with different alarm systems. OSHA believes that the employer must make sure that fire watches are familiar with the type of alarm systems being used on the vessel where they are working. Obviously, if assigned to all three vessels, the fire watch must be familiar with each particular alarm and evacuation scenario.

Paragraph (c)(3) of § 1915.508 continues with fire watch personnel training, specifically, the employer must ensure that each fire watch is trained to alert others to exit the work area whenever: (i) The fire watch perceives an unsafe condition associated with hot work; (ii) the fire watch perceives that a hot worker is in danger; (iii) evacuation is ordered by the employer or designated representative; or (iv) an evacuation signal such as an alarm is activated. A labor union committee member requested that language be added as item (i) to address a situation where an employee perceives an unsafe condition either before beginning work when originally surveying the work area or perhaps when changes in conditions occur during work. The employee should be trained to report the unsafe conditions. The Committee agreed to recommend this requirement.

In shipyard employment, some employers hire contract workers as needed for the sole purpose of fire watch. The employer is ultimately responsible for ensuring that these fire watches are appropriately trained as proposed in § 1915.508(c). One way to do this is for the employer to have a written evaluation of the contractor's training program that the employer could review and thereby ensure compliance with the OSHA standard. Again, OSHA wants to make clear that it is the employer's responsibility to make sure that all fire watches are properly trained.

In paragraph (d) of § 1915.508, OSHA proposes that the employer document that the training required by paragraphs (a), (b), and (c) has been accomplished.

In paragraph (d)(1) of § 1915.508, OSHA proposes to require that the employer document the worker's training by keeping a record of the worker's name, the name of the trainer, the type of training, and the date(s) of the training.

In addition, OSHA proposes in paragraph (d)(2) of § 1915.508 that the employer keep the documentation for at least one year, and, consistent with other OSHA standards, the record must be available for inspection and copying by OSHA personnel on request.

These requirements were fully supported by the members of this Committee. Representatives of management, labor, government, and professional organizations agreed that a training record, because it represents assurance that the worker standing fire watch has been trained, is essential to the safety of the fire watch, the worker doing hot work, and other personnel in the area. Despite the trend toward less recordkeeping, employer representatives believed that making and keeping the training record would not be burdensome and that any resources needed to comply with the recordkeeping would be well spent. Several members noted that fire watch was a very important duty that must be performed by trained personnel. A written record was necessary so that the employer and the workers would be able to find out that the fire watch had been trained and when the training occurred.

The record that must be kept is minimal and need contain only the worker's name, the name of the trainer, the type of training, and the date(s) of the training. It can be kept as part of the worker's personnel file, in a master file of training, or in any other format the employer chooses. A record in an electronic file or database is sufficient. However, regardless of how the record is kept, it must be available for inspection by the persons authorized to see it. To be available means that it can be easily found, so the employer must first decide how the record is to be kept, and then make certain there is access to it, possibly requiring a note or index pointing the searcher toward the information.

The record must be kept until it is replaced by the worker's new training record or for one year from when the record was made in the case of a worker who leaves the workplace or whose duties no longer include fire watch. Representatives of shipyard employers stated that there was no reason to keep records longer. The only important information in the record was that the training had occurred within the required time frame, the type of training, when the training was carried out, and who had given it. For the worker who is separated from the shipyard, OSHA is proposing to require the employer to keep the record for one year from the time it was made. Even

after a worker is no longer a fire watch, the information may be relevant to determining whether the employer's fire watch training program was adequate and for research on the effectiveness of the standard. In addition, the employee or worker representative may need this time to access the records.

OSHA seeks comment on whether the requirement for training record retention should be one or three years.

Section 1915.509 Definitions

OSHA proposes in § 1915.509 to define the terms that OSHA uses in this proposed subpart. Words that OSHA uses only in this subpart that require a definition are included. Terms that OSHA uses in other subparts of part 1915 Occupational Safety and Health Standards for Shipyard Employment, are also included in this section until a new definition section for all of part 1915 is established. At that time, all of the definitions in part 1915 will be combined into one section. The Committee believed that it was necessary to propose these definitions at this time so that readers would understand the proposed regulations clearly.

The Committee formed a work group to develop the definitions for the terms they believed needed to be defined. The work group first met during the July 1997, meeting in Baltimore, MD. The discussion that follows explains the key definitions the work group developed. Not all of the definitions that OSHA proposes in this subpart are discussed. OSHA believes some of the terms have been long understood by employees and employers. However, OSHA encourages the public to comment on any of the definitions.

The Committee agreed that the following terms used in this subpart have definitions that are the same or similar to the definitions found in either parts 1915 or 1910. Therefore, OSHA is not discussing them at this time. These terms are: "confined space"; "dangerous atmosphere" (see 29 CFR 1915.11); "flammable liquid" (29 CFR 1910.106); "incipient stage fire" (29 CFR 1910.155 (c)(26)); and "hot work" (29 CFR 1915.11).

The Committee proposed to define the term "designated areas" as an area established for hot work after an assessment of fire hazard potential of facilities, vessels, or vessel sections. The Committee discussed and came to agreement on this definition during the meeting held in Houston, Texas, in February 2002.

OSHA proposes to define the term "contract employer" as an employer who performs work for a host employer

at the host employer's workplace. The Committee discussed and agreed that this definition is not intended to include employers who provide incidental services that do not directly influence shipyard employment (e.g., mail delivery or office supply services). There are several employee populations that may visit the shipyard for brief periods of time and who have only incidental levels of exposure to hazards that other contract employees may have. The Committee did not want to regulate these populations.

The Committee developed the definition for "fire response employee" based upon the definitions used by NFPA in NFPA 1500-2002 and by OSHA in 29 CFR 1910.156, Fire Brigades. OSHA proposes to define the term "fire response employee" as a shipyard employee who carries out duties and responsibilities of shipyard firefighting in accordance with the fire safety plan. A fire response employee may be a full-time employee, may occupy any position or rank within the shipyard, and may engage in fire emergency operations.

The Committee adapted the definition for "fixed extinguishing system" from the current definition in 29 CFR 1910.155. The Committee discussed and changed the definition because they believed it did not adequately define systems used both in land side facilities and aboard vessels and vessel sections where components may be remotely located from the space where the system will discharge. OSHA is proposing to change the definition to encompass all parts of a fixed extinguishing system regardless of location.

The Committee adapted the definition for "physically isolated" from three sources: A proposed change to NFPA 12-2000, Carbon Dioxide Extinguishing Systems (Ex. 20-21); from Coast Guard guidance published in COMDTINST 16000.7, Marine Safety Manual, Volume II, Material Inspection; and from Coast Guard recommendations published in the March/April, 1996, NFPA Journal. (Ex. 20-26). In discussing and developing this definition, the Committee considered the different types of fixed extinguishing systems, including two-phase gaseous/liquid type high pressure systems where the extinguishing agent is stored in cylinders, and low-pressure systems where the agents are refrigerated and stored in large pressure vessels.

OSHA believes that all of the other definitions proposed in this section are "terms of the industry" that are universally recognized by shipyard employees and employers. OSHA welcomes comment or questions

submitted to the record about definitions for these terms.

V. Summary of the Preliminary Economic and Initial Regulatory Flexibility Screening Analyses

Introduction

OSHA has determined that this proposal is a not economically significant regulatory action under E.O. 12866 and not a major rule under the Congressional Review provisions of the Small Business Regulatory Enforcement Fairness Act. Because this rule has been listed as significant for other reasons in the Regulatory Agenda, OSHA has provided the Office of Information and Regulatory Affairs with an assessment of the costs, benefits and alternatives, as required by section 6(a)(3)(C) of E.O. 12866, which is summarized below.

Executive Order (EO) 12866 requires regulatory agencies to conduct an economic analysis for rules that meet certain criteria. The most frequently used criterion under EO 12866 is that the rule will impose annual costs on the economy of \$100 million or more. Neither the benefits nor the costs of this rule exceed \$100 million.

The Regulatory Flexibility Act of 1980, as amended in 1996, requires OSHA to determine whether the Agency's regulatory actions will have a significant impact on a substantial number of small entities. Making such a determination for this proposal required OSHA to perform a screening analysis to identify any such impacts. OSHA's screening analysis indicated that the proposed rule will not have significant impacts on a substantial number of small entities.

OSHA's Preliminary Economic Analysis (PEA) and initial regulatory flexibility screening analysis include: A description of the industries potentially affected by the standard; an evaluation of the risks addressed; an assessment of the benefits attributable to the proposed standard; a determination of the technological feasibility of the requirements of the standard; an estimate of the costs employers will incur to comply with the standard; a determination of the economic feasibility of compliance with the standard; and an analysis of the economic and other impacts associated with this rulemaking, including those on small businesses. The PEA has been provided to the docket as (Ex. 15) This section of the preamble summarizes the results of that analysis.

Affected Industries

The proposed Fire Protection in Shipyard Employment standard will

affect all establishments in the ship building, ship breaking and repair industry. These include large shipyards, government shipyards and shipyards operated under Navy contracts, operations owning a dock or drydock, and the vast majority of small firms that perform shipbuilding and repair work, such as metal fabricators, painters, asbestos removal, etc., who do not own or rent docks. For purposes of this analysis OSHA has defined small firms as: (1) Firms with fewer than 1,000

employees (the SBA definition of small businesses in this sector); (2) firms with fewer than 250 employees (the definition of small business recommended by the negotiated rulemaking committee); and (3) firms with fewer than 20 employees. OSHA has based its estimates of number of firms, establishments, employment and wages on general BLS and Department of Commerce data for the standard industrial classification (SIC) codes for ship building 3731 and ship breaking

4499. OSHA has based its estimates concerning revenues of firms on SBA data, and concerning profit rates on Robert Morris Associates data. Table V-1 shows the total number of establishments, number of firms, employment, and revenues and profits per firm affected by the rule. As the table shows there are 717 establishments owned by 669 firms in the industries. The industries employ 97,822 workers, of whom 70 percent are production employees.

TABLE V-1.—INDUSTRIAL PROFILE OF EMPLOYEES AND ESTABLISHMENTS

Industry characteristic	1-19 Employees	1-250 Employees	1-1,000 Employees	>1,000 Employees	Entire affected industry
Total Establishments	412	621	697	20	717
Total Firms	412	607	660	9	669
Employees	2,305	14,774	39,063	58,759	97,822
Revenues Per Firm (\$1,000's)	\$653	\$2,353	\$5,907	\$718,166	\$15,540
Profits Per Firm (\$1,000)	\$24	\$85	\$213	\$25,854	\$559

Source: Office of Regulatory Analysis, OSHA.

Evaluation of Risk and Potential Benefits

For this Preliminary Economic Analysis, OSHA developed a profile of the risks facing workers in shipyards that might be affected by the standard. OSHA's risk profile for exposure to fire based risks in shipyards is based on data from the Bureau of Labor Statistics' National Census of Fatal Occupational Injuries, data from the Bureau's Survey of Occupational Injuries and Illnesses, and an analysis of OSHA fatality/catastrophe inspection data obtained from the Agency's Integrated Management Information System.

OSHA anticipates that the proposed standard will significantly reduce the number of fire and explosion related incidents and resulting injuries and fatalities currently reported in the shipyard industry. OSHA believes that the proposed standard's requirements for inspection prior to hot work, fire watches, planning and training will help to save lives and prevent injuries in the shipyard workforce. OSHA estimates that approximately 1 fatality, 110 injuries involving days away from work and 204 injuries not involving days away from work occur annually among shipyard workers due to fire and explosions; this is the current industry risk baseline used in this analysis. OSHA projects that full compliance with the proposed standard would annually prevent 0.88 fatalities, 102 of these injuries involving days away from work, and 190 of the injuries not involving days away from work.

In addition to saving lives and improving overall safety in shipyards,

OSHA believes that full compliance with the proposed standard would yield substantial cost savings to parties within and connected with the industry and ultimately to society as a whole. These monetized benefits take the form of reductions in employer and insurer accident-related costs in several areas: Value of lost output associated with temporary total disabilities and permanent partial disabilities, an income-based measure derived from estimates of workers' compensation indemnity payments; reductions in accident-related medical costs; administrative expenses incurred by workers' compensation insurers; and indirect costs related to productivity losses, work stoppages, and accident investigations and reports. Applying data from the construction and insurance industries on the direct costs of accidents and data from the literature on the indirect costs of accidents and other administrative-related costs to OSHA's preliminary estimate of avoided injuries, the Agency monetized the value of the cost savings employers and society will accrue by avoiding these injuries. OSHA estimates that annual costs savings of \$6.2 million will result from compliance with the proposed rule. These savings are those associated with injuries due to fires. OSHA did not attempt to quantify the cost savings resulting from reduced fire damage to property and reduced need to respond to fires.

Thus, OSHA estimates that the proposed standard will prevent 292 injuries and one death per year. As a result of prevention of the injuries,

OSHA estimates that there will be direct cost savings of \$6.2 million per year, excluding savings associated with reduced property damage and reduced fire response costs.

Only some of these direct cost savings accrue directly to employers in the form of reduced workers' compensation payments and administrative cost. Other cost savings represent increased income to employees and greater tax collections by the government. Even the portion of direct cost savings that accrue directly to employers may not be a saving to the employer of the injured employee because of the risk spreading effects of workers' compensation insurance. The issue of the extent to which the direct cost savings are an economic motivation for employers is discussed in detail in the final chapter of the Preliminary Economic and Initial Regulatory Flexibility Screening Analysis.

Technological Feasibility and Compliance Costs

Consistent with the legal framework established by the OSH Act, Executive Order 12866 and court decisions, OSHA has assessed the technological feasibility of the proposed fire protection in shipyards standard. The standard does not require any practices not already undertaken in many shipyards today. Moreover, the proposed standard is based on a consensus draft recommended to the Agency by a negotiated rulemaking committee consisting of representatives from labor, government, industry in particular divergent industry interests, including small employers, who would

be affected by any changes to the maritime regulations. The committee reached consensus on the language of the draft, thereby implicitly acknowledging the feasibility of the proposed revisions to the standard. Therefore, based on the fact that many firms in the industry are already implementing the controls and practices required by the proposed standard and that the negotiated rulemaking committee reached consensus on the draft underlying the proposed revisions, OSHA has preliminarily determined that the proposed fire protection in shipyards standard is technologically feasible.

OSHA developed estimates of the costs of compliance for shipyard employers subject to the proposed standard. To develop these estimates OSHA first examined the extent to which shipyard employers were already in compliance with the requirements of the standard as a result of existing OSHA requirements, compliance with rules of other parties (such as the U.S. Navy in some shipyards) and compliance with voluntary codes and good practices. Eliminating provisions for which there is already substantial compliance, OSHA arrived at the list of activities for which shipyard employers would incur costs shown in Table V-2. Table V-2 shows that the annualized costs of the proposed standard are \$4.3 million per year. Ninety-one percent of the costs are associated with fire watch-related provisions; most of these costs are for posting additional fire watch personnel in situations in which fire watches are not currently being posted.

TABLE V-2. TOTAL ANNUALIZED COMPLIANCE COST PER REQUIREMENT FOR THE PROPOSED STANDARD

Requirement	Annualized cost
Posting Fire Watches	\$3,789,057
Safe Work Practices	245,839
Fire Watch Written Program	36,546
Fire Response Policy	11,630
Fire Safety Plan	36,546
Fire Watch Training	95,204
Fire Safety Plan Review/ General Training	37,327
Fire Protection Systems Training	9,642
Fire Response Training	49,430
Total	4,261,222

Numbers do not total due to rounding.

Source: Office of Regulatory Analysis, OSHA.

Economic Impacts

OSHA analyzed the impacts of these compliance costs on firms in the

shipbuilding sector. In order to do this, OSHA determined costs as a percentage of revenues and costs as a percentage of profits. These two measures (in percent) correspond to two assumptions used by economists to bound the range of possible impacts: the assumption of no-cost pass-through, *i.e.*, that employers will be unable to pass any of the costs of compliance forward to their customers (compliance costs as a percentage of profits), and the assumption of full-cost pass-through (compliance costs as a percentage of revenues), *i.e.*, that employers will be able to pass all of the costs of compliance forward to their customers. As summarized in Table V-3, below, OSHA estimates that, if affected firms in the ship building sector were forced to absorb these compliance costs entirely from profits (a highly unlikely scenario), profits would be reduced by an average of 1.14 percent. If, at the other extreme, affected firms were able to pass all of these compliance costs forward to their customers, OSHA projects that the price (revenue) increase required to pay for these costs would be less than 0.1 percent (0.04 percent). Given the minimal impact on both prices and profits, OSHA preliminarily concludes that the regulation is economically feasible.

TABLE V-3. ECONOMIC IMPACTS FOR THE PROPOSED STANDARD

Firm size	Compliance costs as a percentage of revenues	Compliance costs as a percentage of profits
All Firms	0.04	1.14
1-19 Employees	0.11	3.09
1-250 employees	0.07	1.83
1-1000 Employees (SBA Definition)	0.06	1.61

Source: Office of Regulatory Analysis, OSHA.

Regulatory Flexibility Screening Analysis

The Regulatory Flexibility Act of 1980 (RFA), as amended in 1996 (5 U.S.C. 601 *et seq.*), requires regulatory agencies to determine whether regulatory actions will adversely affect small entities. The Small Business Administration (SBA) defines small entities, or "concerns," in terms of number of employees or annual receipts. For employers in SIC 3731, small firms are defined by SBA as those with less than 1,000 employees. As shown in Table VI-3, for firms with less than 1,000 employees, costs are 1.61 percent of profits and 0.06 percent of revenues. OSHA also examined costs as

a percentage of profits and revenues for firms with less than 250 employees, as recommended by the negotiated rulemaking committee, and for firms with less than 20 employees to see whether there might be significant impacts on the very smallest firms. For firms with less than 250 employees, costs were 1.83 percent of profits and 0.07 percent of revenues. For firms with less than 20 employees, costs were 3.09 percent of profits and 0.11 percent of revenues.

A major source of these disparate impacts is lower levels of baseline compliance by small firms. Although the economic impacts on the smallest size class of employers are low, they are somewhat higher than for larger employers. The Agency is interested in hearing from smaller employers about disparate impacts on small employers. Do small employers believe there will be a greater impact on them than on larger employers? Is there a way to reduce these impacts?

OSHA has set the criteria that if costs exceed one percent of revenues or five percent of profits, then the impact on small entities is considered significant for purposes of complying with the RFA. For all of the classes of affected small firms in the shipbuilding and repair and shipbreaking sectors, costs were less than one percent of revenues and five percent of profits. OSHA therefore certifies that this regulation will not have an economically significant impact on a substantial number of small entities.

VI. OMB Review Under the Paperwork Reduction Act of 1995

The proposed rule for Fire Protection in Shipyard Employment contains several collections of information (paperwork) requirements that are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA-95), 44 U.S.C. 3501 *et seq.*, and its regulation at 5 CFR 1320. OMB is currently reviewing OSHA's request for approval of the proposed collections. OSHA solicits comments on the collection of information requirements and the estimated burden hours associated with these collections, including comment on the following:

- Whether the proposed information-collection requirements are necessary for the proper performance of the Agency's functions, including whether the information is useful;
- The accuracy of OSHA's estimate of the burden (time and costs) of the information-collection requirements, including the validity of the methodology and assumptions used;

- The quality, utility, and clarity of the information collected; and
- Ways to minimize the burden on employers who must comply; for example, by using automated or other technological information-collection and -transmission techniques.

OSHA estimates the total burden hours associated with all of the collection of information requirements at 5,625 burden hours in the first year and 5,241 burden hours in the second and subsequent years. A collection of information is defined in PRA-95 to mean, "the obtaining, causing to be obtained, soliciting, or requiring the disclosure to third parties or the public of facts or opinions by or for an agency regardless of form or format." (44 U.S.C. 3502(3)(A)). Each of the collections is summarized below.

• **1915.501—General Provisions**

Paragraph (d)(1)(i) of this section requires the host employer on multi-employer worksites to inform all employers (contract employers) at the worksite about the content of the host employer's fire safety plan.

Paragraph (d)(2)(i) of this section requires that contract employers make sure the host employer is aware of fire hazards associated with the contract work and how the contract employer will address those hazards. In addition, paragraph (d)(2)(ii) requires the contract employer to identify hazards that arise during the course of work that were not identified as part of the information transfer required by paragraph (d)(2)(i) described above.

• **1915.502—Fire Safety Plan**

Paragraph (a) of this section requires the employer to develop a written fire safety program covering the elements listed in paragraph (b), including the following information:

- (1) The identification of the significant potential fire risks;
- (2) Procedures for recognizing and reporting unsafe conditions;
- (3) Alarm procedures;
- (4) Procedures for notifying employees of a fire emergency;
- (5) Procedures for notifying fire response organizations of a fire emergency;
- (6) Procedures for evacuation;
- (7) Procedures to account for all employees after an evacuation; and
- (8) Names, job titles, or department for individuals who can be contacted for further information about the plan.

Paragraph (c) requires the employer to review the fire safety plan with each affected employee at the following times:

- (1) Within 90 days of the effective date of the standard;

(2) Upon initial assignment for new employees; and

(3) When there is a change in the plan or a change of the employee's duties.

Paragraph (d) specifies the following:

(1) The plan be kept accessible to employees, employer representatives, and to OSHA;

(2) The plan be updated when necessary, but no less than annually;

(3) The employer certify in writing that each employee was informed about the plan; and

(4) A copy of the plan be given to outside fire response organizations who may be expected to respond to fires at the employer's worksite.

• **1915.504—Fire Watches**

Paragraph (a) requires the employer to prepare and keep current, a written policy specifying the following information:

(1) The training employees must be given;

(2) The duties employees are to perform;

(3) The equipment employees must be given; and

(4) The personal protective equipment (PPE) employees must be given as required in 29 CFR part 1915, subpart I, Personal Protective Equipment.

• **1915.505—Fire Response**

Paragraph (a)(2) requires employers to create, maintain, and update a written statement or policy that describes the internal and outside fire response organizations that the employer will use.

Paragraph (b)(1) lists the information to be included in the statement or policy if internal fire response is to be used. The information includes the following:

(1) The basic structure of the fire response organization;

(2) The number of trained fire response employees;

(3) The fire response functions that may need to be carried out;

(4) The minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each type of fire response at the employer's facility;

(5) The type, amount, and frequency of training that must be given to fire response employees; and

(6) The procedure for use of protective clothing and equipment.

Paragraph (b)(2) lists the information to be included in the statement or policy if outside fire response is to be used. The information includes the following:

- (1) The types of fire suppression incidents to which the fire response

organization is expected to respond at the employer's facility or worksite;

(2) The liaisons between the employer and the outside fire response organization; and

(3) A plan for fire response functions that:

(A) Addresses procedures for obtaining assistance from other fire response organizations;

(B) Familiarizes the outside fire response organization with the layout of the employer's facility or worksite, including access routes to controlled areas, and site-specific operations, occupancies, vessels or vessel sections, and hazards;

(C) Sets forth how hose and coupling connection threads are to be made compatible and includes where the adapter couplings are kept; or

(D) States that the employer will not allow the use of incompatible hose connections.

Paragraph (b)(3) lists the information to be included in the statement or policy where a combination of internal and outside fire response is to be used. The information includes all the information from paragraphs (b)(1) and (b)(2) as listed above and the following information:

(1) The basic organizational structure of the combined fire response;

(2) The number of combined trained fire responders;

(3) The fire response functions that need to be carried out;

(4) The minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each particular type of fire response at the worksite; and,

(5) The type, amount, and frequency of joint training that must be given to fire response employees.

Paragraph (a)(3) requires employers to create, maintain, and update a written statement or policy that defines the evacuation procedures employees must follow, if the employer chooses to require a total or partial evacuation of the worksite at the time of a fire.

Paragraph (b)(4) prescribes the employee evacuation information that must be included in the employer's policy statement required by (a)(3). That information includes the following:

(1) Emergency escape procedures;

(2) Procedures to be followed by employees who may remain longer at the worksite to perform critical shipyard employment operations during the evacuation;

(3) Procedures to account for all employees after emergency evacuation is completed;

(4) The preferred means of reporting fires and other emergencies; and

(5) Names or job titles of the employees or departments to be contacted for further information or explanation of duties.

Paragraph (b)(5) prescribes the rescue and emergency response information that must also be included in the employer's policy statement required in paragraph (a)(3). That information includes the following:

(1) A description of the emergency rescue procedures; and

(2) Names or job titles of the employees who are assigned to perform them.

Paragraph (c)(2) requires that fire response employees who are required to wear respirators meet the medical requirements of the Respiratory Protection Program Standard in 1915.154. The paperwork burden for the respiratory protection requirements has been approved under OMB Control Number 1218-0099.

Paragraph (c)(3) requires annual medical exams for all fire response employees. There is no burden or cost for these medical exams because all employees affected, as a usual and customary practice, are now receiving the medical exams.

Paragraph (c)(5) requires that the medical records of fire response employees be kept as required in 1915.1020. The paperwork burden for access to medical records is approved under OMB Control Number 1218-0065.

Paragraph (d)(2) requires the employer to set up written:

(1) Administrative regulations;

(2) Operating procedures; and

(3) Departmental orders for fire response functions

Paragraph (d)(3) requires the employer to set up an incident management system (IMS) to coordinate and direct fire response functions, including the following:

(1) Specific fire emergency responsibilities;

(2) Accountability for all fire response employees participating in an emergency operation; and,

(3) Resources offered by outside organizations.

Paragraph (d)(4) requires the employer to provide the information [required by (d)(2) and (d)(3)] to the outside fire response organization to be used.

• *1915.506—Hazards of Fixed Extinguishing Systems on Board Vessels and Vessel Sections*

Paragraph (b)(2) requires certain employers (those who have employees exposed to fixed extinguishing systems

that could create a hazardous atmosphere when activated aboard vessels and vessel sections) to ensure that employees are trained to recognize systems discharge and evacuation alarms and to recognize the appropriate escape routes.

• *1915.507—Landside Fire Protection Systems*

Paragraph (c)(2) requires employers to notify employees and take the necessary precautions to make sure employees are safe from fire if for any reason a fire extinguishing system stops working, until the system is working again.

Paragraph (c)(5) requires the employer to post hazard warning or caution signs at both the entrances to and inside of areas protected by fixed extinguishing systems that use extinguishing agents in concentrations known to be hazardous to employee safety or health.

• *1915.508—Training*

Paragraph (a) of this section requires the employer to train affected employees when they first start working and also when necessary to maintain proficiency in the five specific areas listed in paragraph (a)(1) to (a)(5).

Paragraph (b) of this section specifies the training requirements for employees designated to perform fire response activities.

Paragraph (b)(1) requires the employer to have a written training policy stating that fire response employees are to be trained and capable of carrying out their duties and responsibilities at all times. Because OSHA specifies the wording for the training policy, there is no burden associated with this collection of information requirement.

Paragraph (b)(2) requires the employer to keep written standard operating procedures that address anticipated emergency operations and to update these procedures as necessary. Note that operating procedures are also required in 1915.505(d)(2).

Paragraph (b)(4) requires the employer to provide training for fire response employees that ensures they are capable of carrying out their duties and responsibilities under the employer's standard operating procedures (see (b)(2) above).

Paragraph (b)(5) requires employers to train new fire response employees before they engage in emergency operations and paragraph (b)(6) requires employers to train fire response employees who are expected to fight fires according to the written operating procedures (see (b)(2) above) at least quarterly.

Paragraphs (b)(7) to (b)(10) specifies criteria for the instructors and the training methods.

Paragraph (c) specifies requirements related to the training of employees assigned to fire watch duty. Paragraph (c)(1)(i) to (iv) specify the intervals of training, including:

(1) Before being assigned to fire watch duty;

(2) Whenever there is a change in operation that presents a new or different hazards;

(3) Whenever the employer has reason to believe that the fire watch's knowledge or understanding of the training previously provided is inadequate; and,

(4) Re-training annually.

Paragraph (c)(2) specifies 12 areas on which the fire watch must be trained.

Paragraph (c)(3) specifies 4 additional areas on which the fire watch must be trained.

Paragraph (d) requires that employers keep records that demonstrate that employees have been trained as required by paragraphs (a), (b), and (c). The records must include the following information:

(1) The employee's name;

(2) The trainer's name;

(3) The types of training, and

(4) The date(s) on which the training took place.

Paragraph (d)(2) requires the employer to keep each training record for one year from the time it was made or until it is replaced, whichever is shorter, and to make it available for inspection and copying by OSHA personnel on request.

OSHA will use the records developed in response to this Standard to determine compliance with the safety and health provisions of the Standard. The employer's failure to generate and disclose the information required in this Standard will affect significantly OSHA's effort to control and reduce injuries and fatalities related to fires in shipyard employment.

Interested persons may submit comments regarding the burden estimates or other aspects of this collection of information to the OSHA Docket Office, Docket No. S-051, Occupational Safety and Health Administration, Room N-2625, 200 Constitution Avenue, NW., Washington, DC 20210, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, New Executive Office Building, Room 10235, 725 17th Street, NW., Washington, DC 20503 (Attn: OSHA Desk Officer (RIN 1218-AB51)).

The complete Information Collection Request (ICR), including the supporting

rationale is available for inspection and copying in the OSHA Docket Office or the ICR can be mailed to persons who request a copy by telephoning Todd Owen at (202) 693-1941 or Theda Kenney at (202) 693-2044.

VII. Public Participation

Interested persons are requested to submit written data, views, and arguments concerning this proposal. These comments must be received by March 11, 2003, and submitted in triplicate to the Docket Office; Docket No. S-051, Room N2624, U.S. Department of Labor, Occupational Safety and Health Administration; 200 Constitution Ave., NW., Washington, DC 20210.

All written comments received within the specified comment period will be made a part of the record and will be available for public inspection and copying at the above Docket Office address.

Additionally, under section 6(b)(3) of the OSH Act and 29 CFR 1911.11, interested persons may file objections to the proposal and request an informal hearing. The objections and hearing requests should be submitted in triplicate to the Docket office at the above address and must comply with the following conditions:

1. The objection must include the name and address of the objector;
2. The objections must be received by March 11, 2003;
3. The objections must specify with particularity grounds upon which the objection is based;
4. Each objection must be separately numbered; and
5. The objections must be accompanied by a detailed summary of the evidence proposed to be adduced at the requested hearing.

Interested persons who have objections to various provisions or have changes to recommend may, of course, make those objections and their recommendations in their comments and OSHA will fully consider them. There is only need to file formal "objections" separately if the interested person requests a public hearing.

OSHA recognizes that there may be interested persons who, through their knowledge of safety or their experience in the operations involved, would wish to endorse or support certain provisions in the standard. OSHA welcomes such supportive comments, including any pertinent accident data or cost information that may be available, in order that the record of this rulemaking will present a complete picture of the public response on the issues involved.

VIII. State Plan Standards

This **Federal Register** document issues a proposal for new and revised rules addressing fire protection in shipyard employment regulated in 29 CFR 1915. The rules when final will be codified into the applicable section of the Code of Federal Regulations.

The 26 states or U.S. Territories with their own OSHA approved occupational safety and health plans must develop a comparable standard applicable to both the private and public (state and local government employees) sectors within six months of the publication date of a permanent final Federal rule or show OSHA why there is no need for action, e.g. because an existing state standard covering this area is already "at least as effective as" the new Federal standard. Three states and territories cover only the public sector (Connecticut, New York, and New Jersey).

Currently five states (California, Minnesota, Oregon, Vermont and Washington) with their own state plans cover private sector onshore maritime activities. Federal OSHA enforces maritime standards offshore in all states and provides onshore coverage of maritime activities in Federal OSHA states and in the following State Plan states: Alaska, Arizona, Connecticut (plan covers only state and local government employees), Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Jersey (plan covers only state and local government employees), New Mexico, New York (plan covers only state and local government employees), North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Virginia, Virgin Islands, Washington, and Wyoming. Until such time as a State standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate, in those States.

IX. Federalism

The standard has been reviewed in accordance with Executive order 13132 (64 FR 43255; August 10, 1999) regarding Federalism. This Order requires that agencies, to the extent possible, refrain from limiting State policy options, consult with States before taking any actions that would restrict State policy options, and take such actions only when there is clear constitutional authority and the presence of a problem of national scope. The Order provides for preemption of State law only if there is a clear Congressional intent for the agency to do so. Any such preemption is to be limited to the extent possible.

Section 18 of the Occupational Safety and Health Act (OSH Act), expresses Congress' clear intent to preempt State laws relating to issues with respect to which Federal OSHA has promulgated occupational safety or health standards. Under the OSH Act a State can avoid preemption only if it submits, and obtains Federal approval of, a plan for the development of such standards and their enforcement. Occupational safety and health standards developed by such Plan-States must, among other things, be at least as effective in providing safe and healthful employment and places of employment as the Federal standards.

The Federal standards on shipyard employment operations address hazards which are not unique to any one state or region of the country. Nonetheless, those States that have elected to participate under section 18 of the OSH Act would not be preempted by this final regulation and would be able to deal with special, local conditions within the framework provided by this performance-oriented standard while ensuring that their standards are at least as effective as the Federal standard.

X. Unfunded Mandates

For the purposes of the Unfunded Mandates Reform Act of 1995, as well as Executive Order 12875, this rule does not include any federal mandate that may result in increased expenditures by State, local, and tribal governments, or increased expenditures by the private sector of more than \$100 million.

List of Subjects in 29 CFR 1915

Hazardous substances, Longshore and harbor workers, Occupational safety and health, Reporting and recordkeeping requirements, and Vessels.

XI. Authority and Signature

This document was prepared under the direction of John L. Henshaw, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210. The proposed sections 4, 6, and 8 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No 3-2000 (65 FR 50017); and 29 CFR part 1915.

Signed in Washington, DC, this 25th day of November 2002.

John L. Henshaw,
Assistant Secretary of Labor.

For the reasons set forth in the preamble, OSHA proposes to amend 29 CFR chapter XVII as follows:

PART 1915—[AMENDED]**Subpart D—[Amended]**

1. The authority citation for part 1915 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 35736), 1-90 (55 FR 9033), 6-96 (62 FR 111), or 3-2000 (65 FR 50017) as applicable.

§ 1915.52 [Removed]**§ 1915.55 [Amended]**

2. Subpart D—Welding, Cutting and Heating of part 1915 is amended by removing § 1915.52, and by removing and reserving § 1915.55(d),(f), and (g).

3. Part 1915 is amended by adding a new subpart, subpart P to read as follows:

Subpart P—Fire Protection in Shipyard Employment.

Sec.

1915.501	General provisions.
1915.502	Fire safety plan.
1915.503	Precautions for hot work.
1915.504	Fire watches.
1915.505	Fire response.
1915.506	Hazards of fixed extinguishing systems on board vessels and vessel sections.
1915.507	Land side fire protection systems.
1915.508	Training.
1915.509	Definitions applicable to this subpart.

§ 1915.501 General provisions.

(a) *Purpose.* The purpose of the standard in this subpart is to require employers to protect all employees from fire hazards in shipyard employment, including employees engaged in fire response activities.

(b) *Scope.* This subpart covers employers with employees engaged in shipyard employment aboard vessels, vessel sections, or on land side operations regardless of geographic location.

(c) *Employee participation.* The employer must provide ways for employees and employee representatives to participate in developing and periodically reviewing programs and policies adopted to comply with this subpart.

(d) *Multi-employer worksites.* (1) *Host employer responsibilities.* The host employer's responsibilities are to:

(i) Inform all employers at the worksite about the content of the fire safety plan including hazards, controls, fire safety and health rules, emergency procedures; and

(ii) Make sure the safety and health responsibilities for fire protection are

assigned as appropriate to other employers at the worksite.

(2) *Contract employer responsibilities.* The contract employer's responsibilities are to:

(i) Make sure that the host employer knows about the fire related hazards associated with the contract employer's work and what the contract employer is doing to address them; and

(ii) Advise the host employer of any previously unidentified fire related hazards that the contract employer identifies at the worksite.

§ 1915.502 Fire safety plan.

(a) *Employer responsibilities.* The employer must develop and implement a written fire safety plan that covers all the actions that employers and employees must take to ensure employee safety in the event of a fire.

Note to paragraph (a): See appendix A to this subpart for a Model Fire Safety Plan.

(b) *Plan elements.* The employer must include the following information in the Fire Safety Plan:

(1) Identification of the significant potential fire risks;

(2) Procedures for recognizing and reporting unsafe conditions;

(3) Alarm procedures;

(4) Procedures for notifying employees of a fire emergency;

(5) Procedures for notifying fire response organizations of a fire emergency;

(6) Procedures for evacuation;

(7) Procedures to account for all employees after an evacuation; and

(8) Names, job titles, or departments for individuals who can be contacted for further information about the plan.

(c) *Reviewing the plan with employees.* The employer must review the plan with each affected employee at the following times:

(1) Within 90 days of the effective date of this subpart for employees who are currently working;

(2) Upon initial assignment for new employees; and

(3) When the actions the employee must take under the plan change because of a change in duties or a change in the plan.

(d) *Additional employer requirements.* The employer also must:

(1) Keep the plan accessible to employees, employee representatives, and OSHA;

(2) Review and update the plan whenever necessary, but at least annually;

(3) Certify in writing that each affected employee has been informed about the plan as required by paragraph (c) of this section; and

(4) Give a copy of the plan to any outside fire response organization that the employer expects to respond to fires at the employer's worksite, regardless of geographic location of that worksite.

(e) *Contract employers.* Contract employers in shipyard employment must have a fire safety plan for their employees, and this plan must comply with the host employer's fire safety plan.

§ 1915.503 Precautions for hot work.

(a) *General requirements—*(1)

Designated Areas. The employer may only designate areas for hot work in sites such as vessels and vessel section area, fabricating shops, and subassembly areas that do not contain potential fire hazards.

(2) *Non-designated Areas—*(i) Before authorizing hot work, the employer must visually inspect the area where hot work is to be performed, including adjacent spaces, to identify potential fire hazards, unless a Marine Chemist's certificate or shipyard Competent Person's log is used for the authorization.

(ii) The employer shall authorize employees to perform hot work only in areas that are free of fire hazards, or that have been controlled by physical isolation, fire watches, or other positive means.

Note to paragraph (a)(2): The requirements of this standard apply to all hot work operations in shipyard employment except those covered in subpart B of this part.

(b) *Specific requirements—*(1) *Maintaining fire hazard-free conditions.* The employer must keep all hot work areas free of hazards that may cause or contribute to the spread of fire.

Note to paragraph (b)(1): Unexpected energizing and energy release are covered by 29 CFR 1915.181, subpart L. Exposure to toxic and hazardous substances is covered in 29 CFR 1915.1000-1915.1450, subpart Z.

(2) *Fuel gas and oxygen supply lines and torches.* The employer must make sure that:

(i) No unattended fuel gas and oxygen hose lines or torches are in confined spaces;

(ii) No unattended charged fuel gas and oxygen hose lines or torches are in enclosed spaces for more than 15 minutes;

(iii) All fuel gas and oxygen hose lines are disconnected at the supply manifold at the end of each shift; and

(A) All disconnected fuel gas and oxygen hose lines are rolled back to the supply manifold or to open air to disconnect the torch; or

(B) Extended fuel gas and oxygen hose lines are not reconnected at the supply

manifold unless the lines are given a positive means of identification when they were first connected and a drop test is done using gauges or other positive means to ensure the integrity of fuel gas and oxygen burning system.

§ 1915.504 Fire watches.

(a) Written fire watch policy. The employer must create and keep current a written policy that specifies the following requirements for employees performing fire watch in the workplace:

- (1) The training employees must be given;
 - (2) The duties employees are to perform;
 - (3) The equipment employees must be given; and
 - (4) The personal protective equipment (PPE) employees must be given as required in 29 CFR Part 1915, subpart I.
- (b) *Posting fire watches.* The employer must post a fire watch if during hot work:

- (1) Slag, weld splatter, or sparks might pass through an opening and cause a fire;
- (2) Fire-resistant guards or curtains are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads;
- (3) Combustible material closer than 35 ft. (10.7m) to the hot work in either the horizontal or vertical direction cannot be removed, protected with flame-proof covers, or otherwise shielded with metal or fire-resistant guards or curtains, so that the material will not be ignited by the hot work;
- (4) On or near insulation, combustible coatings or sandwich-type construction on either side cannot be shielded, cut back or removed, or the space inerted;
- (5) Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or of sandwich-type construction may be ignited by conduction or radiation;
- (6) The hot work is close enough to cause ignition through heat radiation or conduction on the following:
 - (i) Insulated pipes, bulkheads, decks, partitions, or overheads; or
 - (ii) Combustible materials and/or coatings.
- (7) The work is close enough to unprotected combustible pipe or cable runs to cause ignition; or
- (8) A Marine Chemist, a Coast Guard-authorized person, or a shipyard Competent Person, as defined in 29 CFR part 1915, subpart B, requires that a fire watch be posted.

(c) *Assigning employees to fire watch duty.* (1) The employer must not assign other duties to an employee assigned to fire watch;

(2) Employers must ensure that employees assigned to fire watch duty:

(i) Have a clear view of and immediate access to all areas included in the fire watch;

(ii) Are able to communicate with workers exposed to hot work, if necessary;

(iii) Remain in the hot work area for at least 30 minutes after completion of the hot work, unless the employer or his or her representative surveys the exposed area and makes a determination that there is no further fire hazard;

(iv) Are trained to detect fires that occur in areas exposed to the hot work;

(v) Attempt to extinguish any incipient stage fires in the hot work area that are within the capability of available equipment and within the fire watch's training qualifications, as defined in § 1915.508 of this Part;

(vi) Alert employees of any fire beyond the incipient stage; and

(vii) If unable to extinguish fire in the areas exposed to the hot work, activate the alarm to start the evacuation procedure in accordance with the employer's fire prevention plan.

§ 1915.505 Fire response.

(a) *Employer responsibilities.* The employer must:

(1) Decide what type of response will be provided and who will provide it;

(2) Create, maintain, and update a written statement or policy that describes the internal and outside fire response organizations that the employer will use; and

(3) Create, maintain, and update a written statement or policy that defines what evacuation procedures employees must follow, if the employer chooses to require a total or partial evacuation of the worksite at the time of a fire.

(b) *Required written policy statement information.* (1) *Internal fire response.* If an internal fire response is to be used, the following information must be included in the employer's policy statement:

(i) The basic structure of the fire response organization;

(ii) The number of trained fire response employees;

(iii) The fire response functions that may need to be carried out;

(iv) The minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each type of fire response at the employer's facility;

(v) The type, amount, and frequency of training that must be given to fire response employees; and

(vi) The procedure for use of protective clothing and equipment.

(2) *Outside fire response.* If an outside fire response organization is used, the following information must be included in the employer's policy statement:

(i) The types of fire suppression incidents to which the fire response organization is expected to respond at the employer's facility or worksite;

(ii) The liaisons between the employer and the outside fire response organizations;

(iii) A plan for fire response functions that:

(A) Addresses procedures for obtaining assistance from other fire response organizations;

(B) Familiarizes the outside fire response organization with the layout of the employer's facility or worksite, including access routes to controlled areas, and site-specific operations, occupancies, vessels or vessel sections, and hazards; and

(C) Sets forth how hose and coupling connection threads are to be made compatible and includes where the adapter couplings are kept; or

(D) States that the employer will not allow the use of incompatible hose connections.

(3) *A combination of internal and outside fire response.* If a combination of internal and outside fire response is to be used, the following information, in addition to the requirements in paragraphs (b)(1) and (2) of this section, must be included in the employer's policy statement:

(i) The basic organizational structure of the combined fire response;

(ii) The number of combined trained fire responders;

(iii) The fire response functions that need to be carried out;

(iv) The minimum number of fire response employees necessary, the number and types of apparatus, and a description of the fire suppression operations established by written standard operating procedures for each particular type of fire response at the worksite;

(v) The type, amount, and frequency of joint training that must be given to fire response employees;

(4) *Employee evacuation.* The employer must include the following information in the employer's policy statement:

(i) Emergency escape procedures;

(ii) Procedures to be followed by employees who may remain longer at the worksite to perform critical shipyard employment operations during the evacuation;

(iii) Procedures to account for all employees after emergency evacuation is completed;

(iv) The preferred means of reporting fires and other emergencies; and

(v) Names or job titles of the employees or departments to be contacted for further information or explanation of duties.

(5) *Rescue and emergency response.* The employer must include the following information in the employer's policy statement:

(i) A description of the emergency rescue procedures; and

(ii) Names or job titles of the employees who are assigned to perform them.

(c) *Medical requirements for shipyard fire response employees.* The employer must make sure that:

(1) All fire response employees receive medical examinations to assure that they are physically and medically fit for the duties they are expected to perform;

(2) Fire response employees who are required to wear respirators in performing their duties meet the medical requirements of 29 CFR 1915.154;

(3) Each fire response employee has an annual medical examination;

(4) The medical records of fire response employees are kept in accordance with 29 CFR 1915.1020.

(d) *Organization of internal fire response functions.* The employer must:

(1) Organize fire response functions to ensure enough resources to conduct emergency operations safely;

(2) Set up written administrative regulations, standard operating procedures, and departmental orders for fire response functions; and

(3) Set up an incident management system (IMS) to coordinate and direct fire response functions, including:

(i) Specific fire emergency responsibilities;

(ii) Accountability for all fire response employees participating in an emergency operation; and

(iii) Resources offered by outside organizations.

(4) Provide this information to the outside fire response organization to be used.

(e) *Personal protective clothing and equipment for fire response employees.*—(1) *General requirements.* The employer must:

(i) Supply to all fire response employees, at no cost, the appropriate personal protective clothing and equipment they may need to perform expected duties; and

(ii) Make sure that fire response employees wear the appropriate personal protective clothing and use the equipment when necessary, to protect them from hazardous exposures.

(2) *Thermal stability and flame resistance.* The employer must:

(i) Make sure that each fire response employee exposed to the hazards of flame does not wear clothing that could increase the extent of injury that could be sustained; and

(ii) Prohibit wearing clothing made from acetate, nylon, or polyester, either alone or in blends, unless it can be shown:

(A) That the fabric will withstand the flammability hazard that may be encountered; or

(B) That the clothing will be worn in such a way to eliminate the flammability hazard that may be encountered.

(3) *Respiratory protection.* The employer must:

(i) Provide self-contained breathing apparatus (SCBA) to all fire response employees involved in an emergency operation in an atmosphere that is immediately dangerous to life or health (IDLH), potentially IDLH, or unknown:

(ii) Provide self-contained breathing apparatus (SCBA) to fire response employees performing emergency operations during hazardous chemical emergencies that will expose them to known chemicals in vapor form or to unknown chemicals;

(iii) Provide fire response employees who perform or support emergency operations that will expose them to chemicals in liquid form, either:

(A) Self-contained breathing apparatus (SCBA), or

(B) Respiratory protective devices certified by NIOSH under 42 CFR part 84 as suitable for the specific chemical environment.

(iv) Ensure that additional outside air supplies used in conjunction with SCBA result in positive pressure systems that are certified by NIOSH under 42 CFR part 84;

(v) Provide only SCBA that meet the requirements of NFPA 1981–1997, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Firefighters* (incorporated by reference in § 1915.5);¹ and

(vi) Ensure that the respiratory protection program and all respiratory protection equipment comply with 29 CFR 1915.154.

(4) *Interior structural firefighting operations.* The employer must:

(i) Supply at no cost to all fire response employees exposed to the hazards of shipyard fire response, a protective coat and trousers or a protective coverall along with a helmet, gloves, footwear, and protective hoods; and

(ii) Ensure that this equipment meets the applicable requirements of NFPA 1971–2000, *Standard on Protective Clothing Ensemble for Structural Firefighting* (incorporated by reference in § 1915.5).

(5) *Proximity firefighting operations.* The employer must: Provide, at no cost, to all fire response employees who are exposed to the hazards of proximity firefighting, appropriate protective proximity clothing meets the applicable requirements of NFPA 1976–2000, *Standard on Protective Clothing for Proximity Firefighting* (incorporated by reference in § 1915.5).

(6) *Personal Alert Safety System (PASS) devices.* The employer must:

(i) Provide each fire response employee involved in firefighting operations with a PASS device; and

(ii) Ensure that each PASS device meets the requirements of NFPA 1982–1998, *Standard on Personal Alert Safety Systems (PASS) for Firefighters* (incorporated by reference in § 1915.5).

(7) *Life safety ropes, body harnesses, and hardware.* The employer must ensure:

(i) That all life safety ropes, body harnesses, and hardware used by fire response employees for emergency operations meet the applicable requirements of NFPA 1983–2001, *Standard on Fire Service Life Safety Rope, Harnesses, and Hardware* (incorporated by reference in § 1915.5);

(ii) That fire response employees use only class I body harnesses to attach to ladders and aerial devices; and

(iii) That fire response employees use only class II and class III body harnesses for fall arrest and repelling operations.

(f) *Equipment maintenance.* (1) *Personal protective equipment.* The employer must inspect and maintain personal protective equipment used to protect fire response employees to ensure that it provides the intended protection.

(2) *Fire response equipment.* The employer must:

(i) Keep fire response equipment in a state of readiness;

(ii) Standardize all fire hose coupling and connection threads throughout the facility and on vessels and vessel sections by providing the same type of hose coupling and connection threads for hoses of the same or similar diameter; and

(iii) Ensure that either all fire hoses and coupling connection threads are the same within a facility or vessel or vessel section as those used by the outside fire response organization, or supply suitable adapter couplings if such an organization is expected to use the fire

¹ In the final rule, OSHA will amend § 1915.5 to reflect the incorporation by reference of the NFPA standards referenced in this subpart.

response equipment within a facility or vessel or vessel section.

§ 1915.506 Hazards of fixed extinguishing systems on board vessels and vessel sections.

(a) *Employer responsibilities.* The employer must comply with the provisions of this section whenever employees are exposed to fixed extinguishing systems that could create a hazardous atmosphere when activated aboard vessels and vessel sections, regardless of geographic location.

(b) *Requirements for automatic and manual systems.* Before any work is done in a space equipped with fixed extinguishing systems:

(1) The employer must either physically isolate the systems or have other positive means to prevent the systems' discharge; or

(2) Ensure employees are trained to recognize systems discharge and evacuation alarms, and to recognize the appropriate escape routes;

(3) Protective measures must be taken to ensure that all doors, hatches, scuttles, and other exit openings remain working and accessible for escape in the event the systems are activated; and

(4) If systems activation could result in a positive pressure in the protected spaces, all inward opening doors, hatches, scuttles, and other potential barriers to safe exit must be removed, locked open, braced, or otherwise secured so that they remain open and accessible for escape; and

(5) Employees must be trained to recognize hazards associated with the extinguishing systems and agents including the dangers of disturbing system components and equipment such as, piping, cables, linkages, detection devices, activation devices, and alarm devices.

(c) *Additional Requirement for manual systems.* Before any work is done in a space equipped with fixed extinguishing systems that are activated only manually, the employer must ensure that during trials all pull stations and other activation stations, whether remote or local, must be secured either under lock and key or by posting an attendant, so that they cannot be accessed by unauthorized persons.

(d) *Testing the system.* The employer must make sure that the system is physically isolated and that all employees not directly involved in testing it are evacuated from the protected spaces and affected areas on board any vessel or vessel sections, before testing any fixed extinguishing system.

(e) *Conducting system maintenance.* Before conducting maintenance on a

fixed extinguishing system the employer must make sure that the system is physically isolated.

(f) *Using fixed manual extinguishing systems for fire protection.* If fixed manual extinguishing systems are used to provide fire protection for protected spaces, the employer must ensure that:

(1) Employees are trained and designated to operate and activate the systems; and

(2) All employees are evacuated from the protected spaces and affected areas and accounted for, before the fixed manual extinguishing system is activated.

§ 1915.507 Land side fire protection systems.

(a) *Employer responsibilities.* All fixed and portable fire protection systems the employer installs to meet an OSHA standard for employee life safety or employee protection from fire hazards in land side facilities, including, but not limited to, buildings, structures, and equipment must meet the requirements of this section.

(b) *Portable fire extinguishers and hose systems.* (1) The employer must select, install, inspect, maintain, and test all portable fire extinguishers according to NFPA 10–2002, *Standard for Portable Extinguishers* (incorporated by reference in § 1915.5).

(2) The employer shall be permitted to use class II or class III hose systems, in accordance with NFPA 10–2002, as portable fire extinguishers if the employer selects, installs, inspects, maintains, and tests those systems according to the specific requirements in NFPA 14–2000, *Standard for the Installation of Standpipe and Hose Systems* (incorporated by reference in § 1915.5).

(c) *General requirements for fixed extinguishing systems.* The employer must:

(1) Ensure that any fixed extinguishing system component or extinguishing agent be approved by an OSHA Nationally Recognized Testing Laboratory (NRTL), meeting the requirements of 29 CFR 1910.7, for use on the specific hazards the employer expects it to control or extinguish;

(2) Notify employees and take the necessary precautions to make sure employees are safe from fire if for any reason a fire extinguishing system stops working, until the system is working again;

(3) Make sure that all repairs to fire extinguishing systems and equipment are done by a qualified technician or mechanic;

(4) When the atmosphere remains hazardous to employee safety or health,

provide proper personal protective equipment when employees enter discharge areas or provide safeguards to prevent employees from entering those areas.

Note to paragraph (c)(4): See § 1915.12 for additional requirements applicable to safe entry into spaces containing dangerous atmospheres.

(5) Post hazard warning or caution signs at both the entrance to and inside of areas protected by fixed extinguishing systems that use extinguishing agents in concentrations known to be hazardous to employee safety or health; and

(6) Select, install, inspect, maintain, and test all automatic fire detection systems and emergency alarms according to NFPA 72–1999, *National Fire Alarm Code* (incorporated by reference in § 1915.5).

(d) *Fixed extinguishing systems.* The employer must select, install, maintain, inspect, and test all fixed systems required by OSHA as follows:

(1) Standpipe and hose systems according to NFPA 14–2000, *Standard for the Installation of Standpipe Systems* (incorporated by reference in § 1915.5);

(2) Automatic sprinkler systems according to NFPA 13–1999, *Standard for the Installation of Automatic Sprinkler Systems* or NFPA 750–2000, *Standard on Water Mist Extinguishing Systems*, and NFPA 25–2002 *Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems* (incorporated by reference in § 1915.5);

(3) Fixed extinguishing systems that use water or foam as the extinguishing agent according to NFPA 15–2001, *Standard for Water Spray Fixed Systems for Fire Protection*, NFPA 11–2000, *Standard for Low-Expansion Foam*, and NFPA 11A–1999, *Standard for Medium- and High-Expansion Foam Systems* (incorporated by reference in § 1915.5);

(4) Fixed extinguishing systems using dry chemical as the extinguishing agent, according to NFPA 17–1998, *Standard for Dry Chemical Extinguishing Systems* (incorporated by reference in § 1915.5); and

(5) Fixed extinguishing systems using gas as the extinguishing agent, according to NFPA 12–2000, *Standard on Carbon Dioxide Extinguishing Systems*, NFPA 12A–1997, *Standard on Halon 1301 Fire Extinguishing Systems*, and NFPA 2001–2000, *Standard on Clean Agent Fire Extinguishing Systems* (incorporated by reference in § 1915.5).

§ 1915.508 Training

(a) *Employee training.* The employer must train affected employees when

they first start working and also when necessary to maintain proficiency in the following:

(1) The general principles of using fire extinguishers or hose lines, the hazards involved with incipient firefighting, and the procedures used to reduce these hazards;

(2) The hazards associated with fixed and portable fire protection systems that employees may use or to which they may be exposed during discharge of those systems;

(3) The activation and operation of fixed and portable fire protection systems that the employer expects employees to use in the workplace;

(4) The emergency alarm signals including system discharge and employee evacuation alarms; and

(5) The primary and secondary evacuation routes that employees must use in the event of a fire in the workplace.

Note to paragraph (a)(5): While all vessels and vessel sections have a primary evacuation route, not all will have a secondary evacuation route.

(b) *Training requirements for shipyard employees designated for fire response.* The employer must:

(1) Have a written training policy stating that fire response employees are to be trained and capable of carrying out their duties and responsibilities at all times;

(2) Keep written standard operating procedures that address anticipated emergency operations and update these procedures as necessary;

(3) Review fire response employee training programs and hands-on sessions before they are used in fire response training to make sure that fire response employees are protected from hazards associated with fire response training;

(4) Provide training for fire response employees that ensures they are capable of carrying out their duties and responsibilities under the employer's standard operating procedures;

(5) Train new fire response employees before they engage in emergency operations;

(6) At least quarterly, provide training on the written operating procedures to fire response employees who are expected to fight fires;

(7) Use qualified instructors to conduct the training;

(8) Conduct any training that involves live fire response exercises in accordance with NFPA 1403–2002, *Standard on Live Fire Training Evolutions* (incorporated by reference in § 1915.5) (Ex. 19–24);

(9) Conduct semi-annual drills for fire response employees that cover site-

specific operations, occupancies, buildings, vessels and vessel sections, and hazards according to the employer's written procedures; and

(10) Not use smoke generating devices that create a hazardous atmosphere in training exercises.

(c) *Training requirements for fire watch duty.* (1) The employer must ensure that each fire watch is trained as follows:

(i) Before being assigned to fire watch duty;

(ii) Whenever there is a change in operations that presents a new or different hazard;

(iii) Whenever the employer has reason to believe that the fire watch's knowledge or understanding of the training previously provided is inadequate; and

(iv) Receives annual retraining.

(2) The employer must ensure that each employee who stands fire watch duty is trained in:

(i) The basics of fire behavior, the different classes of fire and of extinguishing agents, the stages of fire, and methods for extinguishing fires;

(ii) Extinguishing live fire scenarios whenever allowed by local and federal law;

(iii) The recognition of the adverse health effects that may be caused by exposure to fire;

(iv) The physical characteristics of the hot work area;

(v) The hazards associated with fire watch duties;

(vi) The personal protective equipment (PPE) needed to perform fire watch duties safely;

(vii) How to use the PPE;

(viii) How to select and use any fire extinguishers and fire hoses likely to be used by a fire watch in the work area;

(ix) The location and use of barriers;

(x) The means of communication designated by the employer for fire watches;

(xi) When and how to start fire alarm procedures; and

(xii) The employer's evacuation plan.

(3) The employer must ensure that each fire watch is trained to alert others to exit the space whenever:

(i) The fire watch perceives an unsafe condition;

(ii) The fire watch perceives that a worker performing hot work is in danger;

(iii) The employer or a representative of the employer orders an evacuation; or

(iv) An evacuation signal, such as an alarm, is activated.

(d) *Records.* The employer must keep records that demonstrate that employees have been trained as required by paragraphs (a), (b), and (c) of this section.

(1) The records must include:

(i) The employee's name;

(ii) The trainer's name;

(iii) The type of training; and

(iv) The date(s) on which the training took place.

(2) The employer must keep each training record for one year from the time it was made or until it is replaced with a new training record, whichever is shorter, and make it available for inspection and copying by OSHA personnel on request.

§ 1915.509 Definitions applicable to this subpart.

Affected employee—an employee whose job requires him or her to perform hot work or to work in an area or space exposed to hazards associated with the hot work that is being performed.

Alarm—a signal or message from a person or device that indicates that there is a fire, medical emergency, or other situation that requires emergency response or evacuation. This may be called an "incident" or a "call for service."

Alarm system—a system that warns all employees at the worksite of danger.

Body harness—straps that may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, shoulders, chest, and pelvis, with means for attaching it to other components of a personal fall arrest system.

Contract employer—an employer, such as a painter, joiner, carpenter, or scaffolding sub-contractor, who performs work under contract to the host employer or to another employer under contract to the host employer at the host employer's worksite. Excludes employers who provide incidental services that do not influence shipyard employment (such as mail delivery or office supply services).

Dangerous atmosphere—an atmosphere that may expose employees to the risk of death, incapacitation, injury, acute illness, or impairment of ability to self-rescue (*i.e.*, escape unaided from a confined or enclosed space).

Designated area—an area established for hot work after an assessment of fire hazard potential of facilities, vessels, or vessel sections such as a fabrication shop.

Emergency operations—activities performed by a fire response organization that are related to:

(1) Rescue;

(2) Fire suppression;

(3) Emergency medical care; and

(4) Special operations such as hazardous materials response

(HAZMAT), HAZMAT release mitigation, standby for flight operations where needed, protection of structures exposed to nearby, off-site fires, mutual-aid at other workplaces, etc. These activities include responding to the scene of an incident, and all activities performed at that scene.

Fire hazard—a condition or material that may start or contribute to the spread of fire.

Fire protection—methods of providing fire prevention, response, detection, control, extinguishment, and engineering.

Fire response—the activity taken by the employer at the time of an emergency incident involving a fire at the worksite, including fire suppression activities carried out by internal or external resources or a combination of both, or total or partial employee evacuation of the area exposed to the fire.

Fire response employee—a shipyard employee who performs shipyard employment firefighting.

Fire response organization—an organized group knowledgeable, trained, and skilled in shipyard firefighting operations who respond to shipyard fire emergencies, including:

- (1) Fire brigades;
- (2) Shipyard fire departments;
- (3) Private or contractual fire departments; and
- (4) Municipal fire departments.

Fire suppression—the activities involved in controlling and extinguishing fires. Fire suppression includes all activities performed at the scene of a fire incident or training exercise that expose fire response employees to the following dangers:

- (1) Heat;
- (2) Flame;
- (3) Smoke;
- (4) Other products of combustion;
- (5) Explosion;
- (6) Structural collapse; or
- (7) Hazardous materials.

Fire watch—the activity of observing and responding to the fire hazards associated with hot work in shipyard employment, and the employees designated to do so.

Fixed extinguishing system—a permanently installed fire protection system that either extinguishes or controls fire occurring in the space it protects.

Flammable liquid—any liquid having a flashpoint below 100°F. (37.8°C.), except any mixture having components with flashpoints of 100°F. (37.8°C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

Hazardous atmosphere—an atmosphere that may expose employees

to the risk of death, incapacitation, injury, acute illness, or impairment of ability to self-rescue (that is, escape unaided from a permit space), from one or more of the following causes:

- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL;
- (3) Atmospheric oxygen concentration below 19.5 percent or above 22.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in 29 CFR 1910, subpart G, *Occupational Health and Environmental Control*, or in 29 CFR 1915, subpart Z, *Toxic and Hazardous Substances* of this part, and that could result in employee exposure in excess of its dose or permissible exposure limit;

(5) Any other atmospheric condition that is immediately dangerous to life or health (IDLH). **Hazardous substance**—a substance likely to cause injury by reason of being explosive, flammable, poisonous, corrosive, oxidizing, an irritant, or otherwise harmful.

Hose systems—fire protection systems consisting of a water supply, approved fire hose, and a means to control the flow of water at the output end of the hose.

Host employer—an employer who is in charge of coordinating work or hiring other employers to perform work at a multi-employer workplace.

Hot work—any activity involving riveting, welding, burning, using explosive actuated power tools, or similar fire-producing operations. Grinding, drilling, abrasive blasting, or similar spark-producing operations also are considered hot work, except when these operations are physically removed from any atmosphere containing more than 10 percent of the lower explosive limit of a flammable or combustible substance.

Incident management system—an organized system of roles, responsibilities, and standard operating procedures used to manage emergency operations. Such systems are often called "Incident Command Systems" (ICS).

Inerting—the displacement of the atmosphere in a permit space by noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen-deficient atmosphere.

Interior Structural Firefighting Operations—the physical activity of fire response, rescue, or both, inside of

buildings, enclosed structures, vessels, and vessel sections that are involved in a fire beyond the incipient stage.

Multi-employer workplace—a workplace where there is a host employer and at least one contract employer.

Personal Alert Safety System (PASS)—a device that sounds a loud signal if the wearer becomes immobilized or is motionless for 30 seconds or more.

Physical isolation—the elimination of a fire hazard by removing the hazard from the work area (at least 35 feet for combustibles), by covering or shielding the hazard with a fire-resistant material, or physically preventing the hazard from entering the work area.

Physically isolated—positive isolation of the supply from the distribution piping of a fixed extinguishing system. Examples of ways of physically isolating include: Removing a spool piece and installing a blank flange; providing a double block and bleed valve system; or completely disconnecting valves and piping from all cylinders or other pressure vessels containing extinguishing agents.

Protected space—any compartment where a fixed extinguishing system discharges.

Proximity firefighting—specialized fire-fighting operations that require specialized thermal protection and may include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of conductive, convective, and radiant heat such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Proximity firefighting operations usually are exterior operations but may be combined with structural firefighting operations. Proximity firefighting is not entry firefighting.

Qualified instructor—a person with specific knowledge, training, and experience in fire response organizations, operations, and deployment.

Rescue—locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and transporting the injured to an appropriate health care facility.

Shipyard employment—ship repairing, shipbuilding, shipbreaking, and related employments, including vessels, vessel sections, and on land-side operations regardless of geographic location.

Shipyard firefighting—the activity of rescue, fire suppression, and property conservation involving buildings, enclosed structures, vehicles, vessels, aircraft, or similar properties involved

in a fire or emergency situation. Shipyard firefighting includes any fire that requires a fire attack hose line of 1-½ inch diameter or larger to fight, and self-contained breathing apparatus by responders.

Standpipe—a fixed fire protection system consisting of piping and hose connections used to supply water to approved hose lines or sprinkler systems. The hose may or may not be connected to the system.

Appendix A to Subpart P—Model Fire Safety Plan

Model Fire Safety Plan

Table of Contents

- I. Purpose.
- II. Work site fire hazards and how to properly control them.
- III. The preferred way to report fires and other emergencies.
- IV. How to evacuate in different emergency situations.
- V. Rescue and medical duties for those employees who perform them.
- VI. Employee awareness.

I. Purpose

The purpose of this fire safety plan is to inform our employees of how we will control and reduce the possibility of fire in the workplace and to specify what equipment employees may use in case of fire.

II. Work Site Fire Hazards and How To Properly Control Them

- A. Measures to contain fires.
- B. Teaching selected employees how to use fire protection equipment.
- C. What to do if you discover a fire.
- D. Potential ignition sources for fires and how to control them.
- E. Types of fire protection equipment and systems that can control a fire.
- F. The level of firefighting capability present in the facility.
- G. Description of the personnel responsible for maintaining equipment, alarms and systems that are installed to prevent or control fire ignition sources, and to control fuel source hazards.

III. The Preferred Way To Report Fires and Other Emergencies

- A. A demonstration of alarm procedures, if more than one type exists.

- B. The work site emergency alarm system.
- C. Immediately notifying fire or police departments.

IV. How To Evacuate in Different Emergency Situations

- A. Emergency escape procedures and route assignments.
- B. Procedures to account for all employees after completing an emergency evacuation.
- C. What type of evacuation is needed and what the employee's role is in carrying out the plan.
- D. How to identify and recognize fire exits.
- E. Helping physically impaired employees.

V. Rescue and Medical Duties for Those Employees Who Perform Them

- A. Regular and after-hours work conditions.

VI. Employee Awareness

Names, job titles, or departments of individuals who can be contacted for further information about this plan.

[FR Doc. 02-30405 Filed 12-10-02; 8:45 am]

BILLING CODE 4510-26-P