

**Chapter 296-304 WAC**  
**Safety Standards for**  
**Ship Repairing, Shipbuilding and Ship-breaking**  
**(Form Number F414-025-000)**

This book contains rules for Safety Standards for ship repairing, shipbuilding, and ship breaking, as adopted under the Washington Industrial Safety and Health Act of 1973 (Chapter 49.17 RCW).

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**DOSH CONTACT INFORMATION:**

- **Physical address:**

7273 Linderson Way  
Tumwater, WA 98501-5414  
(Located off I-5 Exit 101 south of Tumwater.)

- **Mailing address:**

DOSH Standards and Information  
PO Box 44810  
Olympia, WA 98504-4810

- Telephone: 1-800-423-7233
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# Chapter 296-304 WAC

## Safety Standards for

### Ship Repairing, Shipbuilding and Ship-breaking

(Form Number F414-025-000)

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## **WAC 296-304-010 Scope and application.**

- (1) The provisions and standards of the general safety and health standards, chapters [296-24](#), [296-62](#), [296-800](#), and [296-880](#) WAC, and such other codes and standards as are promulgated by the department of labor and industries which are applicable to all industries, shall be applicable in the ship repairing, shipbuilding, or shipbreaking industries whenever the employees are covered under the Washington State Industrial Safety and Health Act, chapter [49.17](#) RCW. The rules of this chapter and the rules of the aforementioned chapters [296-24](#), [296-62](#), [296-800](#), and [296-880](#) WAC are applicable to all ship repairing, shipbuilding, and shipbreaking industries and operations, provided that such rules shall not be applicable to those operations under the exclusive safety jurisdiction of the federal government.
- (2) The responsibility for compliance with these regulations is placed upon “employers” as defined in WAC 296-304-01001.
- (3) It is not the intent of these regulations to place additional responsibilities or duties on owners, operators, agents or masters of vessels unless such persons are acting as employers, nor is it the intent of these regulations to relieve such owners, operators, agents or masters of vessels from responsibilities or duties now placed upon them by law, regulation or custom.
- (4) The responsibilities placed upon the competent person herein shall be deemed to be the responsibilities of the employer.

## **WAC 296-304-01001 Definitions.**

- (1) **Additional safety measure.** A component of the tags-plus system that provides an impediment (in addition to the energy-isolating device) to the release of energy or the generalization or start-up of the machinery, equipment, or system being serviced. Examples of additional safety measures include, but are not limited to, removing an isolating circuit element; blocking a controlling switch; blocking, blanking, or bleeding lines; removing a valve handle or wiring it in place; opening an extra disconnecting device.
- (2) **Affected employee.** An employee who normally operates or uses the machinery, equipment, or system that is going to be serviced under lockout/tags-plus or who is working in the area where servicing is being performed under lockout/tags-plus. An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.
- (3) **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. At some shipyards, this may be called an “incident” or a “call for service.”
- (4) **Alarm system.** A system that warns employees at the worksite of danger.
- (5) **Anchorage.** A secure point of attachment for lifelines, lanyards, or deceleration devices which is capable of withstanding the forces specified in this chapter.

- (6) **Authorized employee:**
- (a) An employee who performs one or more of the following lockout/tags-plus responsibilities:
    - (i) Executes the lockout/tags-plus procedures;
    - (ii) Installs a lock or tags-plus system on machinery, equipment, or systems; or
    - (iii) Services any machine, equipment, or system under lockout/tags-plus application.
  - (b) An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.
- (7) **Auto-darkening helmet.** A welding helmet which is equipped with a light sensor, ultra-violet filter/infra-red filter and a series of liquid crystal and aluminized or silver layers; which is capable of adjusting the lens to an appropriate shade automatically upon initiating welding arc, without input from the wearer.
- (8) **Body belt.** A strap with means to both secure it around the waist and to attach it to a lanyard, lifeline, or deceleration device. Body belts may be used only in fall restraint or positioning device systems and may not be used for fall arrest. Body belts must be at least one and five-eighths inches (4.13 cm) wide.
- (9) **Body harness.** Straps to secure around an employee so that fall arrest forces are distributed over at least the thighs, shoulders, chest and pelvis with means to attach it to other components of a personal fall arrest system.
- (10) **Capable of being locked out.** An energy-isolating device is capable of being locked out if it has a locking mechanism built into it, or it has a hasp or other means of attachment to which, or through which, a lock can be affixed. Other energy-isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy-control capability.
- (11) **Class II standpipe system.** A one and one-half inch (3.8 cm) hose system which provides a means for the control or extinguishment of incipient stage fires.
- (12) **Cold work.** Work that does not involve riveting, welding, burning, or other fire-producing or spark-producing operations.
- (13) **Contract employer.** An employer, such as a painter, joiner, carpenter, or scaffolding subcontractor, 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. This excludes employers who provide incidental services that are not directly related to shipyard employment (such as mail delivery or office supply and food vending services).

- (14) **Competent person.** A person who can recognize and evaluate employee exposure to hazardous substances or to other unsafe conditions and can specify the necessary protection and precautions necessary to ensure the safety of employees as required by these standards.
- (15) **Confined space.** A small compartment with limited access such as a double bottom tank, cofferdam, or other small, confined space that can readily create or aggravate a hazardous exposure.
- (16) **Connector.** A device used to connect parts of a personal fall arrest system or parts of a positioning device system together. It may be:
  - (a) An independent component of the system (such as a carabiner); or
  - (b) An integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness or a snaphook spliced or sewn to a lanyard or self-retracting lanyard).
- (17) **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).
- (18) **Deceleration device.** A mechanism, such as a rope grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard, that serves to dissipate a substantial amount of energy during a fall arrest, or to limit the energy imposed on an employee during fall arrest.
- (19) **Deceleration distance.** The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured from the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, to the location of that attachment point after the employee comes to a full stop.
- (20) **Designated area.** An area established for hot work after an inspection that is free of fire hazards.
- (21) **Director.** The director of the department of labor and industries or a designated representative.
- (22) **Drop test.** A method utilizing gauges to ensure the integrity of an oxygen fuel gas burning system. The method requires that the burning torch is installed to one end of the oxygen and fuel gas lines and then the gauges are attached to the other end of the hoses. The manifold or cylinder supply valve is opened and the system is pressurized. The manifold or cylinder supply valve is then closed and the gauges are watched for at least 60 seconds. Any drop in pressure indicates a leak.
- (23) **Dummy load.** A device used in place of an antenna to aid in the testing of a radio transmitter that converts transmitted energy into heat to minimize energy radiating outward or reflecting back to its source during testing.

- (24) **Emergency operations.** Activities performed by fire response organizations that are related to: Rescue, fire suppression, emergency medical care, and special operations or activities that include responding to the scene of an incident and all activities performed at that scene.
- (25) **Employee.** Any person engaged in ship repairing, ship building, or ship breaking or related employment as defined in these standards.
- (26) **Employer.** An employer with employees who are employed, in whole or in part, in ship repair, ship building and ship breaking, or related employment as defined in these standards.
- (27) **Enclosed space.** A space, other than a confined space, that is enclosed by bulkheads and overhead. It includes cargo holds, tanks, quarters, and machinery and boiler spaces.
- (28) **Energy-isolating device.** A mechanical device that, when utilized or activated, physically prevents the release or transmission of energy. Energy-isolating devices include, but are not limited to, manually operated electrical circuit breakers; disconnect switches; line valves; blocks; and any similar device used to block or isolate energy. Control-circuit devices (for example, push buttons, selector switches) are not considered energy isolating devices.
- (29) **Equivalent.** Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate and will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in this standard.
- (30) **Fire hazard.** A condition or material that may start or contribute to the spread of fire.
- (31) **Fire protection.** Methods of providing fire prevention, response, detection, control, extinguishment, and engineering.
- (32) **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.
- (33) **Fire response employee.** A shipyard employee who carries out the duties and responsibilities of shipyard firefighting in accordance with the fire safety plan.
- (34) **Fire response organization.** An organized group knowledgeable, trained, and skilled in shipyard firefighting operations that responds to shipyard fire emergencies, including: Fire brigades, shipyard fire departments, private or contractual fire departments, and municipal fire departments.
- (35) **Fire suppression.** The activities involved in controlling and extinguishing fires.
- (36) **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.

- (37) **Fixed extinguishing system.** A permanently installed fire protection system that either extinguishes or controls fire occurring in the space it protects.
- (38) **Flammable liquid.** Means any liquid having a flashpoint at or below 199.4°F (93°C). Flammable liquids are divided into four categories as follows:
- (a) Category 1 shall include liquids having flashpoints below 73.4°F (23°C) and having a boiling point at or below 95°F (35°C).
  - (b) Category 2 shall include liquids having flashpoints below 73.4°F (23°C) and having a boiling point above 95°F (35°C).
  - (c) Category 3 shall include liquids having flashpoints at or above 73.4°F (23°C) and at or below 140°F (60°C). When a Category 3 liquid with a flashpoint at or above 100°F (37.8°C) is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint below 100°F (37.8°C).
  - (d) Category 4 shall include liquids having flashpoints above 140°F (60°C) and at or below 199.4°F (93°C). When a Category 4 flammable liquid is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint at or above 100°F (37.8°C).
  - (e) When liquid with a flashpoint greater than 199.4°F (93°C) is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 4 flammable liquid.
- (39) **Free fall.** To fall before a personal fall arrest system begins to apply force to arrest the fall.
- (40) **Free fall distance.** The vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before the device operates and fall arrest forces occur.
- (41) **Gangway.** A ramp-like or stair-like means to board or leave a vessel including accommodation ladders, gangplanks and brows.
- (42) **Hazardous energy.** Any energy source, including mechanical (for example, power transmission apparatus, counterbalances, springs, pressure, gravity), pneumatic, hydraulic, electrical, chemical, and thermal (for example, high or low temperature) energies, that could cause injury to employees.
- (43) **Hazardous substance.** A substance likely to cause injury, illness or disease, or otherwise harm an employee because it is explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful.
- (44) **Health care professional.** A physician or any other health care professional whose legally permitted scope of practice allows the provider to independently provide, or be delegated the responsibility to provide, some or all of the advice or consultation this subpart requires.
- (45) **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.

- (46) **Host employer.** An employer who is in charge of coordinating work or who hires other employers to perform work at a multiemployer workplace.
- (47) **Hot work.** Riveting, welding, burning or other fire or spark producing operations.
- (48) **Incident management system.** A system that defines the roles and responsibilities to be assumed by personnel and the operating procedures to be used in the management and direction of emergency operations; the system is also referred to as an “incident command system (ICS).”
- (49) **Incipient stage fire.** A fire, in the initial or beginning stage, 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.
- (50) **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.
- (51) **Interior structural firefighting operations.** The physical activity of fire response, rescue, or both involving a fire beyond the incipient stage inside of buildings, enclosed structures, vessels, and vessel sections.
- (52) **Isolated location.** An area in which employees are working alone or with little assistance from others due to the type, time, or location of their work. Such locations include remote locations or other work areas where employees are not in close proximity to others.
- (53) **Lanyard.** A flexible line of webbing, rope, or cable used to secure a positioning harness or full body harness to a lifeline or an anchorage point usually two, four, or six feet long.
- (54) **Lifeline.** A vertical line from a fixed anchorage or between two horizontal anchorages, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up safety for an elevated worker or as a restraint for workers on a flat or sloped surface.
- (55) **Lock.** A device that utilizes a positive means, either a key or combination lock, to hold an energy isolating device in a “safe” position that prevents the release of energy and the start-up or energization of the machinery, equipment, or system to be serviced.
- (56) **Lockout.** The placement of a lock on an energy-isolating device in accordance with an established procedure, thereby ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lock is removed.
- (57) **Lockout/tags-plus coordinator.** An employee whom the employer designates to coordinate and oversee all lockout and tags-plus applications on vessels or vessel sections and at landside work areas when employees are performing multiple servicing operations on the same machinery, equipment, or systems at the same time, and when employees are servicing multiple machinery, equipment, or systems on the same vessel or vessel section at the same time. The lockout/tags-plus coordinator also maintains the lockout/tags-plus log.
- (58) **Lockout/tags-plus materials and hardware.** Locks, chains, wedges, blanks, key blocks, adapter pins, self-locking fasteners, or other hardware used for isolating, blocking, or securing machinery, equipment, or systems to prevent the release of energy or the start-up or energization of machinery, equipment, or systems to be serviced.

- (59) **Lower levels.** Those areas or surfaces to which an employee can fall. Such areas or surfaces include but are not limited to ground levels, floors, ramps, tanks, materials, water, excavations, pits, vessels, structures, or portions thereof.
- (60) **Motor vehicle.** Any motor-driven vehicle operated by an employee that is used to transport employees, material, or property. For the purposes of this subpart, motor vehicles include passenger cars, light trucks, vans, motorcycles, all-terrain vehicles, small utility trucks, powered industrial trucks, and other similar vehicles. Motor vehicles do not include boats, or vehicles operated exclusively on a rail or rails.
- (61) **Motor vehicle safety equipment.** Systems and devices integral to or installed on a motor vehicle for the purpose of effecting the safe operation of the vehicle, and consisting of such systems or devices as safety belts, airbags, headlights, tail lights, emergency/hazard lights, windshield wipers, defogging or defrosting devices, brakes, horns, mirrors, windshields and other windows, and locks.
- (62) **Multiemployer workplace.** A workplace where there is a host employer and at least one contract employer.
- (63) **Normal production operations.** The use of machinery or equipment, including, but not limited to, punch presses, bending presses, shears, lathes, keel press rollers, and automated burning machines, to perform a shipyard-employment production process.
- (64) **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.
- (65) **Personal fall arrest system.** A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, a deceleration device, a lifeline, or a suitable combination.
- (66) **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.
- (67) **Physically isolated.** Positive isolation of the supply from the distribution piping of a fixed extinguishing system. Examples of ways to physically isolate 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.
- (68) **Portable toilet.** A nonsewered portable facility for collecting and containing urine and feces. A portable toilet may be either flushable or nonflushable. For purposes of this section, portable toilets do not include privies.
- (69) **Portable unfired pressure vessel.** A pressure container or vessel used aboard ship, other than the ship's equipment, containing liquids or gases under pressure. This does not include pressure vessels built to Department of Transportation regulations under 49 C.F.R. Part 178, Subparts C and H.
- (70) **Positioning device system.** A full body harness or positioning harness that is worn by an employee, and is rigged to allow an employee to be supported on an elevated vertical or inclined surface, such as a wall, pole or column, and work with both hands free from the body support.



- (71) **Potable water.** Water that meets the standards for drinking purposes of the state or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Water Regulations (40 C.F.R. part 141).
- (72) **Powder actuated fastening tool.** A tool or machine that drives a stud, pin, or fastener by means of an explosive charge.
- (73) **Protected space.** Any space into which a fixed extinguishing system can discharge.
- (74) **Proximity firefighting.** Specialized firefighting 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.
- (75) **Qualified instructor.** A person with specific knowledge, training, and experience in fire response or fire watch activities to cover the material found in WAC 296-304-01019 (2) or (3).
- (76) **Qualified person.** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work or the project.
- (77) **Readily accessible/available.** Capable of being reached quickly enough to ensure, for example, that emergency medical services and first-aid intervention are appropriate or that employees can reach sanitation facilities in time to meet their health and personal needs.
- (78) **Related employment.** Any employment related to or performed in conjunction with ship repairing, ship building or ship breaking work, including, but not limited to, inspecting, testing, and serving as a watchman.
- (79) **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.
- (80) **Restraint line.** A line from a fixed anchorage or between two anchorages to which an employee is secured in such a way as to prevent the employee from falling to a lower level.

**Note:** A restraint line is not necessarily designed to withstand forces resulting from a fall.

- (81) **Rope grab.** A fall arrester designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the full body harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for all restraint applications. See WAC [296-880-40025](#).

- (82) **Sanitation facilities.** Facilities, including supplies, maintained for employee personal and health needs such as potable drinking water, toilet facilities, hand-washing and hand-drying facilities, showers (including quick-drenching or flushing) and changing rooms, eating and drinking areas, first-aid stations, and on-site medical-service areas. Sanitation supplies include soap, waterless cleaning agents, single-use drinking cups, drinking water containers, toilet paper, and towels.
- (83) **Serviceable condition.** The state or ability of supplies or goods, or of a tool, machine, vehicle, or other device, to be used or to operate in the manner prescribed by the manufacturer.
- (84) **Servicing.** Workplace activities that involve the construction, installation, adjustment, inspection, modification, testing, or repair of machinery, equipment, or systems. Servicing also includes maintaining machines, equipment, or systems when performing these activities would expose the employee to harm from the start-up or energization of the system being serviced, or the release of hazardous energy.
- (85) **Sewered toilet.** A fixture maintained for the purpose of urination and defecation that is connected to a sanitary sewer, septic tank, holding tank (bilge), or on-site sewage-disposal treatment facility, and that is flushed with water.
- (86) **Shall or must.** Mandatory.
- (87) **Shield.** To install a covering, protective layer, or other effective measure on or around steam hoses or temporary steam-piping systems, including metal fittings and couplings, to protect employees from contacting hot surfaces or elements.
- (88) **Ship breaking.** Breaking down a vessel's structure to scrap the vessel, including the removal of gear, equipment or any component part of a vessel.
- (89) **Ship building.** Construction of a vessel, including the installation of machinery and equipment.
- (90) **Ship repairing.** Repair of a vessel including, but not limited to, alterations, conversions, installations, cleaning, painting, and maintenance.
- (91) **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.
- (92) **Short bight.** A loop created in a line or rope that is used to tie back or fasten objects such as hoses, wiring, and fittings.
- (93) **Small hose system.** A system of hoses ranging in diameter from 5/8" (1.6 cm) up to 1 1/2" (3.8 cm) which is for the use of employees and which provides a means for the control and extinguishment of incipient stage fires.
- (94) **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.
- (95) **Tag.** A prominent warning device that includes a means of attachment that can be securely fastened to an energy-isolating device in accordance with an established procedure to indicate that the energy-isolating device and the equipment being controlled must not be operated until the tag is removed by an authorized employee.

- (96) **Tags-plus system.** A system to control hazardous energy that consists of an energy-isolating device with a tag affixed to it, and at least one additional safety measure.
- (97) **Verification of isolation.** The means necessary to detect the presence of hazardous energy, which may involve the use of a test instrument (for example, a voltmeter), and, for other than electric shock protection, a visual inspection, or a deliberate attempt to start-up the machinery, equipment, or system.
- (98) **Vermin.** Insects, birds, and other animals, such as rodents, that may create safety and health hazards for employees.
- (99) **Vessel.** Every watercraft for use as a means of transportation on water, including special purpose floating structures not primarily designed for or used as a means of transportation on water.
- (100) **Vessel section.** A subassembly, module, or other component of a vessel being built or repaired.
- (101) **Walkway.** Any surface, whether vertical, slanted, or horizontal, on which employees walk, including areas that employees pass through, to perform their job tasks. Walkways include, but are not limited to, access ways, designated walkways, aisles, exits, gangways, ladders, ramps, stairs, steps, passageways, and scaffolding. If an area is, or could be, used to gain access to other locations, it is to be considered a walkway.
- (102) **Work area.** A specific area, such as a machine shop, engineering space, or fabrication area, where one or more employees are performing job tasks.
- (103) **Working surface.** Any surface where work is occurring, or areas where tools, materials, and equipment are being staged for performing work.
- (104) **Worksite.** A general work location where one or more employees are performing work, such as a shipyard, pier, barge, vessel, or vessel section.

### **WAC 296-304-01003 Reference specifications, standards, and codes.**

Specifications, standards, and codes of agencies of the U.S. government, to the extent specified in the text, form a part of these regulations. In addition, the specifications, standards, and codes of organizations which are not agencies of the U.S. government, in effect on the date of the promulgation of these regulations as listed below, to the extent specified in the text, form a part of these standards:

National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110,  
Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, Ill. 60611,  
United States of America Standard Safety Code for Portable Wood Ladders, A14.1-1975,  
United States of America Standards Institute, Inc., 10 East 40th Street, New York, N.Y. 10016,  
United States of America Standard Safety Code for Portable Metal Ladders, A14.2-1972,  
United States of America Standards Institute, Inc., 10 East 40th Street, New York, N.Y. 10016,  
United States of America Standard Safety Code for Head, Eye, and Respiratory Protection, Z2.1-1959, United States of America Standards Institute, Inc., 10 East 40th Street, New York, N.Y. 10016,

American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section VIII, Rules for Construction of Unfired Pressure Vessels, American Society of Mechanical Engineers, 345 East 47th Street, New York, N.Y. 10017,  
Threshold Limit Values, American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati, Ohio 45202,  
United States of America Standards Safety Code for the Use, Care, and Protection of Abrasive Wheels, B7.1-1964, United States of America Standards Institute, Inc., 10 East 40th Street, New York, N.Y. 10016.

### **WAC 296-304-01006 Fire protection in shipyards.**

- (1) **Purpose.** The purpose of this section is to require you to protect all employees from fire hazards in shipyard employment, including employees engaged in fire response activities.
- (2) **Scope.** This section covers employers with employees engaged in shipyard employment aboard vessels and vessel sections, and on land-side operations regardless of geographic location.
- (3) **Employee participation.** You must provide ways for employees or employee representatives, or both to participate in developing and periodically reviewing programs and policies adopted to comply with this section.
- (4) **Multiemployer worksites.**
  - (a) 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, and emergency procedures;
    - (ii) Make sure the safety and health responsibilities for fire protection are assigned as appropriate to other employees at the worksite; and
    - (iii) If there is more than one host employer, each host employer must communicate relevant information about fire-related hazards to other host employers. When a vessel owner or operator (temporarily) becomes a host shipyard employer by directing the work of the ships' crews on repair or repair or modification of the vessel or by hiring other contractors directly, the vessel owner or operator must also comply with these provisions for host employers.
  - (b) 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.

**WAC 296-304-01007 Fire safety plan.**

- (1) **Employer responsibilities.** You 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. (See Appendix A to this section for a model fire safety plan.)
- (2) **Plan elements.** You must include the following information in the fire safety plan:
  - (a) Identification of the significant fire hazards;
  - (b) Procedures for recognizing and reporting unsafe conditions;
  - (c) Alarm procedures;
  - (d) Procedures for notifying employees of a fire emergency;
  - (e) Procedures for notifying fire response organizations of a fire emergency;
  - (f) Procedures for evacuation;
  - (g) Procedures to account for all employees after an evacuation; and
  - (h) Names, job titles, or departments for individuals who can be contacted for further information about the plan.
- (3) **Reviewing the plan with employees.** You must review the plan with each employee at the following times:
  - (a) By March 1, 2006, for employees who are currently working;
  - (b) Upon initial assignment for new employees; and
  - (c) When the actions the employee must take under the plan change because of a change in duties or a change in the plan.
- (4) **Additional employer requirements.** You must also:
  - (a) Keep the plan accessible to employees, employee representatives, and WISHA;
  - (b) Review and update the plan whenever necessary, but at least annually;
  - (c) Document that affected employees have been informed about the plan as required by this subsection; and
  - (d) Ensure any outside fire response organization that the employer expects to respond to fires at the employer's worksite has been given a copy of the current plan.
- (5) **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.

**WAC 296-304-01009 Precautions for hot work.**

- (1) **General requirements.**
  - (a) Designated areas. You may designate areas for hot work in sites such as vessels, vessel sections, fabricating shops, and subassembly areas that are free of fire hazards.

- (b) Nondesignated areas.
  - (i) Before authorizing hot work in a nondesignated area, you must visually inspect the area where hot work is to be performed, including adjacent spaces, to ensure the area is free of fire hazards, unless a marine chemist's certificate or shipyard competent person's log is used for authorization.
  - (ii) You must 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:** The requirements of (b) of this subsection apply to all hot work operations in shipyard employment except those covered by WAC 296-304-02007.

(2) **Specific requirements.**

- (a) Maintaining fire hazard-free conditions. You must keep all hot work areas free of new hazards that may cause or contribute to the spread of fire. Unexpected energizing and energy release are covered by WAC 296-304-120. Exposure to toxic and hazardous substances is covered in chapter [296-841](#) WAC, Airborne contaminants; chapter [296-802](#) WAC, Employee medical and exposure records; and WAC [296-901-140](#), Hazard communication.
- (b) Fuel gas and oxygen supply lines and torches. You 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 an enclosed space for more than fifteen minutes;
  - (iii) All fuel gas and oxygen hose lines are disconnected at the supply manifold at the end of each shift; and
  - (iv) All disconnected fuel gas and oxygen hose lines are rolled back to the supply manifold or to open air to disconnect the torch; or 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 are first connected and the lines are tested using a drop test or other positive means to ensure the integrity of fuel gas and oxygen burning systems.

**WAC 296-304-01011 Fire watches.**

- (1) **Written fire watch policy.** You must create and keep current a written policy that specifies the following requirements for employees performing fire watch in the workplace:
  - (a) The training employees must be given (WAC 296-304-01019(3) contains detailed fire watch training requirements);
  - (b) The duties employees are to perform;

- (c) The equipment employees must be given; and
  - (d) The personal protective equipment (PPE) that must be made available and worn as required by WAC 296-304-090.
- (2) **Posting fire watches.** You must post a fire watch if during hot work any of the following conditions are present:
- (a) Slag, weld splatter, or sparks might pass through an opening and cause a fire;
  - (b) Fire-resistant guards or curtains are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads;
  - (c) Combustible material closer than thirty-five feet (10.7 m) 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;
  - (d) The hot work is carried out on or near insulation, combustible coatings, or sandwich-type construction that cannot be shielded, cut back, or removed, or in a space within a sandwich-type construction that cannot be inerted;
  - (e) Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or sandwich-type construction may be ignited by conduction or radiation;
  - (f) 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;
  - (g) The work is close enough to unprotected combustible pipe or cable runs to cause ignition; or
  - (h) A marine chemist, a Coast Guard-authorized person, or a shipyard competent person, as defined in WAC 296-304-020, requires that a fire watch be posted.
- (3) **Assigning employees to fire watch duty.**
- (a) You must not assign other duties to a fire watch while the hot work is in progress.
  - (b) You 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;
    - (iii) Are authorized to stop work if necessary and restore safe conditions within the hot work area;
    - (iv) Remain in the hot work area for at least thirty minutes after completion of the hot work, unless the employer or its representative surveys the exposed area and makes a determination that there is not further fire hazard;

- (v) Are trained to detect fires that occur in areas exposed to hot work;
  - (vi) 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 WAC 296-304-01019;
  - (vii) Alert employees of any fire beyond the incipient stage; and
  - (viii) If unable to extinguish fire in the areas exposed to the hot work, activate the alarm.
- (c) You must ensure that employees assigned to fire watch are physically capable of performing these duties.

### **WAC 296-304-01013 Fire response.**

(1) **Employer responsibilities.** You must:

- (a) Decide what type of response will be provided and who will provide it; and
- (b) Create, maintain, and update a written policy that:
  - (i) Describes the internal and outside fire response organizations that you will use; and
  - (ii) Defines what evacuation procedures employees must follow, if you choose to require a total or partial evacuation of the worksite at the time of a fire.

(2) **Required written policy information.**

- (a) Internal fire response. If an internal fire response is to be used, you must include the following information in your written policy:
  - (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 apparatuses, 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 procedures for using protective clothing and equipment.
- (b) Outside fire response. If an outside fire response organization is used, you must include the following information in the written policy:
  - (i) The types of fire suppression incidents to which the fire response organization is expected to respond at your facility or worksite;
  - (ii) The liaisons between you and the outside fire response organization; and



- (iii) A plan for fire response functions that:
  - (A) Addresses procedures for obtaining assistance from the outside fire response organization;
  - (B) Familiarizes the outside fire response organization with the layout of your 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 you will not allow the use of incompatible hose connections.
- (c) A combination of internal and outside fire response. If a combination of internal and outside fire response is to be used, you must include the following information, in addition to the requirements in (a) and (b) of this subsection, in the written policy:
  - (i) The basic organizational structure of the combined fire response
  - (ii) The number of combined trained fire responders;
  - (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 apparatuses, 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
  - (v) The type, amount, and frequency of joint training with outside fire response organizations if given to fire response employees.
- (d) Employee evacuation. You must include the following information in your written policy:
  - (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.
- (e) Rescue and emergency response. You must include the following information in your written policy:
  - (i) A description of the emergency rescue procedures;
  - (ii) Names or job titles of the employees who are assigned to perform them.

- (3) **Medical requirements for shipyard fire response employees.** You must ensure that:
- (a) All fire response employees receive medical examinations to ensure that they are physically and medically fit for the duties they are expected to perform;
  - (b) Fire response employees, who are required to wear respirators in performing their duties, meet the medical requirements of chapter [296-842](#) WAC, Respirators;
  - (c) Each fire response employee has an annual medical examination; and
  - (d) The medical records of fire response employees are kept in accordance with chapter [296-802](#) WAC, Employee medical and exposure records.
- (4) **Organization of internal fire response functions.** You must:
- (a) Organize fire response functions to ensure enough resources to conduct emergency operations safely;
  - (b) Establish lines of authority and assign responsibilities to ensure that the components of the internal fire response are accomplished;
  - (c) Set up an incident management system 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; and
  - (d) Provide the information required in this subsection to the outside fire response organization to be used.
- (5) **Personal protective clothing and equipment for fire response employees.**
- (a) General requirements. You 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) Ensure that the fire response employees wear the appropriate personal protective clothing and use the equipment, when necessary, to protect them from hazardous exposures.
  - (b) Thermal stability and flame resistance. You must:
    - (i) Ensure 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 that:

- (A) The fabric will withstand the flammability hazard that may be encountered; or
  - (B) The clothing will be worn in such a way to eliminate the flammability hazard that may be encountered.
- (c) Respiratory protection. You 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 SCBA to fire response employees performing emergency operations during hazardous chemical emergencies that will expose them to known hazardous chemicals in vapor form or to unknown chemicals;
  - (iii) Provide fire response employees who perform or support emergency operations that will expose them to hazardous chemicals in liquid form either:
    - (A) SCBA; or
    - (B) Respiratory protective devices certified by the National Institute for Occupational Safety and Health (NIOSH) under 42 C.F.R. 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 C.F.R. Part 84;
  - (v) Provide only SCBA that meet the requirements of NFPA 1981-2002 Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service (incorporated by reference, see WAC 296-304-01003); and
  - (vi) Ensure that the respiratory protection program and all respiratory protection equipment comply with chapter [296-842](#) WAC, Respiratory protection.
- (d) Interior structural firefighting operations. You must:
  - (i) Supply at no cost to all fire response employees exposed to the hazards of shipyard fire response, a helmet, gloves, footwear, and protective hoods, and either a protective coat and trousers or a protective coverall; and
  - (ii) Ensure that this equipment meets the applicable recommendations in NFPA 1971-2000 Standard on Protective Ensemble for Structural Firefighting (incorporated by reference, see WAC 296-304-01003).
- (e) Proximity firefighting operations. You must provide, at no cost, to all fire response employees who are exposed to the hazards of proximity firefighting, appropriate protective proximity clothing that meets the applicable recommendations in NFPA 1976-2000 Standard on Protective Ensemble for Proximity Firefighting (incorporated by reference, see WAC 296-304-01003).
- (f) Personal alert safety system (PASS) devices. You must:

- (i) Provide each fire response employee involved in firefighting operations with a PASS device; and
  - (ii) Ensure that each PASS device meets the recommendations in NFPA 1982-1998 Standard on Personal Alert Safety Systems (PASS) (incorporated by reference, see WAC 296-304-01003).
- (g) Life safety ropes, body harnesses, and hardware. You must ensure that:
- (i) All life safety ropes, body harnesses, and hardware used by fire response employees for emergency operations meet the applicable recommendations in NFPA 1983-2001, Standard on Fire Service Life Safety Rope and System Components (incorporated by reference, see WAC 296-304-01003);
  - (ii) Fire response employees use only Class I body harnesses to attach to ladders and aerial devices; and
  - (iii) Fire response employees use only Class II and Class III body harnesses for fall arrest and rappelling operations.

**(6) Equipment maintenance.**

- (a) Personal protective equipment. You must inspect and maintain personal protective equipment used to protect fire response employees to ensure that it provides the intended protection.
- (b) Fire response equipment. You 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 response equipment within a facility or vessel or vessel section.

**WAC 296-304-01015 Hazards of fixed extinguishing systems on board vessels and vessel sections.**

- (1) **Employer responsibilities.** You must comply with the provisions of this section whenever employees are exposed to fixed extinguishing systems that could create a dangerous atmosphere when activated in vessels and vessel sections, regardless of geographic location.
- (2) **Requirements for automatic and manual systems.** Before any work is done in a space equipped with fixed extinguishing systems, you must either:
  - (a) Physically isolate the systems or use other positive means to prevent the systems' discharge; or

- (b) Ensure employees are trained to recognize:
  - (i) Systems' discharge and evacuation alarms and the appropriate escape routes; and
  - (ii) 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.
- (3) **Sea and dock trials.** During trials, you must ensure that all systems shall remain operational.
- (4) **Doors and hatches.** You must:
  - (a) Take protective measures 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
  - (b) Ensure that all inward opening doors, hatches, scuttles, and other potential barriers to safe exit are removed, locked open, braced, or otherwise secured so that they remain open and accessible for escape if the systems' activation could result in a positive pressure in the protected spaces sufficient to impede escape.
- (5) **Testing the system.**
  - (a) When testing a fixed extinguishing system involves a total discharge of extinguishing medium into a space, you must evacuate all employees from the space and ensure that no employees remain in the space during the discharge. You must retest the atmosphere in accordance with WAC 296-304-02003 to ensure that the oxygen levels are safe for employees to enter.
  - (b) When testing a fixed extinguishing system does not involve a total discharge of the system's extinguishing medium, you must make sure that the system's extinguishing medium is physically isolated and that all employees not directly involved in the testing are evacuated from the protected space.
- (6) **Conducting system maintenance.** Before conducting maintenance on a fixed extinguishing system, you must ensure that the system is physically isolated.
- (7) **Using fixed manual extinguishing systems for fire protection.** If fixed manual extinguishing systems are used to provide fire protection for spaces in which the employees are working, you must ensure that:
  - (a) Only authorized employees are allowed to activate the system;
  - (b) Authorized employees are trained to operate and activate the systems; and
  - (c) All employees are evacuated from the protected spaces, and accounted for, before the fixed manual extinguishing system is activated.

**WAC 296-304-01017 Land-side fire protection systems.**

- (1) **Employer responsibilities.** You must ensure all fixed and portable fire protection systems needed to meet WISHA standards for employee safety or employee protection from fire hazards in land-side facilities, including, but not limited to, buildings, structures, and equipment, meet the requirements of this section.
- (2) **Portable fire extinguishers and hose systems.**
  - (a) You must select, install, inspect, maintain, and test all portable fire extinguishers according to NFPA 10-2002 Standard for Portable Fire Extinguishers (incorporated by reference, see WAC 296-304-01003).
  - (b) You are permitted to use Class II or Class III hose systems, in accordance with NFPA 10-2002, as portable fire extinguishers if you select, install, inspect, maintain, and test those systems according to the specific recommendations in NFPA 14-2003 Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems (incorporated by reference, see WAC 296-304-01003).
- (3) **General requirements for fixed extinguishing systems.** You must:
  - (a) Ensure that any fixed extinguishing system component or extinguishing agent is approved by an OSHA nationally recognized testing laboratory for use on the specific hazards the employer expects it to control or extinguish;
  - (b) Notify employees and take the necessary precautions to ensure employees are safe from fire if for any reason a fire extinguishing system stops working, until the system is working again;
  - (c) Ensure all repairs to fire extinguishing systems and equipment are done by a qualified technician or mechanic;
  - (d) Provide and ensure employees use proper personal protective equipment when entering discharge areas in which the atmosphere remains hazardous to employee safety or health, or provide safeguards to prevent employees from entering those areas. See WAC 296-304-02003 for additional requirements applicable to safe entry into spaces containing dangerous atmospheres;
  - (e) 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
  - (f) Select, install, inspect, maintain, and test all automatic fire detection systems and emergency alarms according to NFPA 72-2002 National Fire Alarm Code (incorporated by reference, see WAC 296-304-01003).
- (4) **Fixed extinguishing systems.** You must select, install, maintain, inspect, and test all fixed systems required by WISHA as follows:
  - (a) Standpipe and hose systems according to NFPA 14-2003 Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems (incorporated by reference, see WAC 296-304-01003);

- (b) Automatic sprinkler systems according to NFPA 25-2002 Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems, and either NFPA 13-2002 Standard for the Installation of Sprinkler Systems or NFPA 750-2003 Standard on Water Mist Fire Protection Systems (incorporated by reference, see WAC 296-304-01003);
- (c) 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 11-2005 Standard for Low, Medium, and High-Expansion Foam Systems; (incorporated by reference, see WAC 296-304-01003);
- (d) Fixed extinguishing systems using dry chemical as the extinguishing agent according to NFPA 17-2002 Standard for Dry Chemical Extinguishing Systems (incorporated by reference, see WAC 296-304-01003); and
- (e) Fixed extinguishing systems using gas as the extinguishing agent according to NFPA 12-2005 Standard on Carbon Dioxide Extinguishing Systems; NFPA 12A-2004 Standard on Halon 1301 Fire Extinguishing Systems; and NFPA 2001-2004 Standard on Clean Agent Fire Extinguishing Systems (incorporated by reference, see WAC 296-304-01003).

#### **WAC 296-304-01019 Training.**

- (1) **You must train employees in the applicable requirements of this section:**
  - (a) By March 1, 2006, for employees currently working;
  - (b) Upon initial assignment for new employees; and
  - (c) When necessary to maintain proficiency for employees previously trained.
- (2) **Employee training.** You must ensure that all employees are trained on:
  - (a) The emergency alarm signals, including system discharge alarms and employee evacuation alarms; and
  - (b) The primary and secondary evacuation routes that employees must use in the event of a fire in the workplace. While all vessels and vessel sections must have a primary evacuation route, a secondary evacuation route is not required when impracticable.
- (3) **Additional training requirements for employees expected to fight incipient stage fires.** You must ensure that employees expected to fight incipient stage fires are trained on the following:
  - (a) The general principles of using fire extinguishers or hose lines, the hazards involved with incipient firefighting, and the procedures used to reduce these hazards;
  - (b) 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; and
  - (c) The activation and operation of fixed and portable fire protection systems that the employer expects employees to use in the workplace.

(4) **Additional training requirements for shipyard employees designated for fire response.**

You must:

- (a) Have a written training policy stating that fire response employees must be trained and capable of carrying out their duties and responsibilities at all times;
- (b) Keep written standard operating procedures that address anticipated emergency operations and update these procedures as necessary;
- (c) 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;
- (d) Provide training for fire response employees that ensures they are capable of carrying out their duties and responsibilities under your standard operating procedures;
- (e) Train new fire response employees before they engage in emergency operations;
- (f) At least quarterly, provide training on the written operating procedures to fire response employees who are expected to fight fires;
- (g) Use qualified instructors to conduct the training;
- (h) Conduct any training that involves live fire response exercises in accordance with NFPA 1403-2002 Standard on Live Fire Training Evolutions (incorporated by reference, see WAC 296-304-01003);
- (i) Conduct semiannual drills according to your written procedures for fire response employees that cover site-specific operations, occupancies, buildings, vessels and vessel sections, and fire-related hazards; and
- (j) Prohibit the use of smoke generating devices that create a dangerous atmosphere in training exercises.

(5) **Additional training requirements for fire watch duty.**

- (a) You must ensure that each fire watch is trained by an instructor with adequate fire watch knowledge and experience to cover the items 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 you have reason to believe that the fire watch's knowledge, skills, or understanding of the training previously provided is inadequate; and
  - (iv) Annually.
- (b) You 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) The use of PPE;
  - (viii) The selection and use of 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 you for fire watches;
  - (xi) When and how to start fire alarm procedures; and
  - (xii) Your evacuation plan.
- (c) You 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) You or a representative of yours orders an evacuation; or
  - (iv) An evacuation signal, such as an alarm, is activated.
- (6) **Records.** You must keep records that demonstrate that employees have been trained as required by subsections (1) through (5) of this section.
- (a) You must ensure that the records include the employee's name; the trainer's name; the type of training; and the date(s) on which the training took place.
  - (b) You 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 WISHA on request.

### **WAC 296-304-01021 Competent person.**

- (1) **Application.** This section applies to shipyard employment.
- (2) **Designation.**
  - (a) One or more competent persons must be designated by you in accordance with the applicable requirements of this section, unless the requirements of WAC 296-304-020 through 296-304-02011, WAC 296-304-030 through 296-304-03009, WAC 296-304-040 through 296-304-04013, and WAC 296-304-080 through 296-304-08011, are always carried out by a marine chemist.

**Exception:** The employer may designate any person who meets the applicable portions of the criteria set forth in subsection (3) of this section as a competent person who is limited to performing testing to the following situations:

1. Repair work on small craft in boat yards where only combustible gas indicator tests are required for fuel tank leaks or when using flammable paints below decks.
2. Building of wooden vessels where only knowledge of the precautions to be taken when using flammable paints is required.
3. The breaking of vessels where there is no fuel oil or other flammable hazards; and
4. Tests and inspections performed to comply with WAC 296-304-03007(2)(h) and 296-304-03009(1)(e).

- (b) You must maintain either a roster of designated competent persons or a statement that a marine chemist will perform the tests or inspections which require a competent person.
- (c) You must make the roster of designated persons or the statement available to employees, the employee's representative, or the director upon request.
- (d) The roster must contain, as a minimum, the following:
  - (i) The employer's name;
  - (ii) The designated competent person's name(s); and
  - (iii) The date the employee was trained as a competent person.
- (3) **Criteria:** You must ensure that each designated competent person has the following skills and knowledge:
  - (a) Ability to understand and carry out written or oral information or instructions left by marine chemists, Coast Guard-authorized persons and certified industrial hygienists;
  - (b) Knowledge of WAC 296-304-020 through 296-304-02011, WAC 296-304-030 through 296-304-03009, WAC 296-304-040 through 296-304-04013, and WAC 296-304-080 through 296-304-08011;
  - (c) Knowledge of the structure, location, and designation of spaces where work is done;
  - (d) Ability to calibrate and use testing equipment including, but not limited to, oxygen indicators, combustible gas indicators, carbon monoxide indicators, and carbon dioxide indicators, and to interpret accurately the test results of that equipment;
  - (e) Ability to perform all required tests and inspections which are or may be performed by a competent person as set forth in WAC 296-304-020 through 296-304-02011, WAC 296-304-030 through 296-304-03009, WAC 296-304-040 through 296-304-04013, and WAC 296-304-080 through 296-304-08011;

- (f) Ability to inspect, test, and evaluate spaces to determine the need for further testing by a marine chemist or a certified industrial hygienist; and
  - (g) Ability to maintain records required by this section.
- (4) **Recordkeeping.**
- (a) When tests and inspections are performed by a competent person, marine chemist, or certified industrial hygienist as required by any provisions of WAC 296-304-020 through 296-304-02011, WAC 296-304-030 through 296-304-03009, WAC 296-304-040 through 296-304-04013, or WAC 296-304-080 through 296-304-08011, ensure that the person performing the test and inspection records the location, time, date, location of inspected spaces, and the operations performed, as well as the test results and any instructions.
  - (b) You must ensure that the records are posted in the immediate vicinity of the affected operations while work in the spaces is in progress. The records must be kept on file for a period of at least three months from the completion date of the specific job for which they were generated.
  - (c) You must ensure that the records are available for inspection by the director, and employees and their representatives.

#### **WAC 296-304-01023 Appendix A-Model fire safety plan.**

**Note:** This appendix is nonmandatory and provides guidance to assist employers in establishing a fire safety plan as required in WAC 296-304-01007.

#### **Table of Contents**

1. Purpose.
2. Worksite fire hazards and how to properly control them.
3. Alarm systems and how to report fires.
4. How to evacuate in different emergency situations.
5. Employee awareness.

#### **1. 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.

#### **2. 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, vessel, or vessel section.
- (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.

**3. Alarm systems and how to report fires.**

- (a) A demonstration of alarm procedures, if more than one type exists.
- (b) The worksite emergency alarm system.
- (c) Procedures for reporting fires.

**4. 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) Helping physically impaired employees.

**(5) Employee awareness.**

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

## ***WAC 296-304-020 Confined and enclosed spaces and other dangerous atmospheres in shipyard employment.***

Scope, application and definitions applicable to this subsection:

- (1) **Scope and application.** This section applies to work in confined and enclosed spaces and other dangerous atmospheres in shipyard employment, including vessels, vessel sections, and on land-side operations regardless of geographic location.
- (2) **Definitions applicable to this section:**

**Adjacent spaces.** Those spaces bordering a subject space in all directions, including all points of contact, corners, diagonals, decks, tank tops, and bulkheads.

**Certified industrial hygienist (CIH).** An industrial hygienist who is certified by the American Board of Industrial Hygiene.

**Coast Guard authorized person.** An individual who meets the requirement of WAC 296-304-02015, Appendix C, for tank vessels, for passenger vessels, and for cargo and miscellaneous vessels.

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

**Director.** The director of the department of labor and industries or his/her designated representative.

**Enter with restrictions.** Denotes a space where entry for work is permitted only if engineering controls, personal protective equipment, clothing, and time limitations are as specified by the marine chemist, certified industrial hygienist, or the shipyard competent person.

**Entry.** The action by which a person passes through an opening into a space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

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

**Immediately dangerous to life or health (IDLH).** An atmosphere that poses an immediate threat to life or that is likely to result in acute or immediate severe health effects.

**Inert or inerted atmosphere.** An atmospheric condition where:

- (a) The oxygen content of the atmosphere in the space is maintained at a level equal to or less than 8.0 percent by volume or at a level at or below 50 percent of the amount required to support combustion, whichever is less; or
- (b) The space is flooded with water and the vapor concentration of flammable or combustible materials in the free space atmosphere above the water line is less than 10 percent of the lower explosive limit for the flammable or combustible material.

**Labeled.** Identified with a sign, placard, or other form of written communication, including pictograms, that provides information on the status or condition of the work space to which it is attached.

**Lower explosive limit (LEL).** The minimum concentration of vapor in air below which propagation of a flame does not occur in the presence of an ignition source.

**Marine chemist.** An individual who possesses a current marine chemist certificate issued by the National Fire Protection Association (NFPA).

**NFPA.** National Fire Protection Association.

**Nationally Recognized Testing Laboratory (NRTL).** An organization recognized by OSHA, in accordance with Appendix A of 29 C.F.R. 1910.7, which tests for safety and lists or labels or accepts equipment and materials that meet all the criteria found in Section 1910.7 (b)(1) through (b)(4)(ii).

**Not safe for hot work.** A space where hot work may not be performed because the conditions do not meet the criteria for "safe for hot work."

**Not safe for workers.** A space where an employee may not enter because the conditions do not meet the criteria for "safe for workers."

**Oxygen-deficient atmosphere.** An atmosphere having an oxygen concentration of less than 19.5 percent by volume.

**Oxygen-enriched atmosphere.** An atmosphere that contains 22.0 percent or more oxygen by volume.

**Safe for hot work.** A space that meets all of the following criteria:

- (a) The oxygen content of the atmosphere does not exceed 22.0 percent by volume;
- (b) The concentration of flammable vapors in the atmosphere is less than 10 percent of the lower explosive limit;
- (c) The residues or materials in the space are not capable of producing a higher concentration than permitted in (a) or (b) of the above, under existing atmospheric conditions in the presence of hot work and while maintained as directed by the marine chemist or competent person; and
- (d) All adjacent spaces have been cleaned, or inerted, or treated sufficiently to prevent the spread of fire.

**Safe for workers.** A space that meets the following criteria:

- (a) The oxygen content of the atmosphere is at least 19.5 percent and below 22.0 percent by volume;
- (b) The concentration of flammable vapors is below 10 percent of the lower explosive limit (LEL);
- (c) Any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, or inerting media are within permissible concentrations at the time of the inspection; and
- (d) Any residues or materials associated with the work authorized by the marine chemist, certified industrial hygienist, or competent person will not produce uncontrolled release of toxic materials under existing atmospheric conditions while maintained as directed.

**Space.** An area on a vessel or vessel section or within a shipyard such as, but not limited to: Cargo tanks or holds; pump or engine rooms; storage lockers; tanks containing flammable or combustible liquids, gases, or solids; rooms within buildings; crawl spaces; tunnels; or accessways. The atmosphere within a space is the entire area within its bounds.

**Upper explosive limit (UEL).** The maximum concentration of flammable vapor in air above which propagation of flame does not occur on contact with a source of ignition.

**Vessel section.** A subassembly, module, or other component of a vessel being built, repaired, or broken.

**Visual inspection.** The physical survey of the space, its surroundings and contents to identify hazards such as, but not limited to, restricted accessibility, residues, unguarded machinery, and piping or electrical systems.

**WAC 296-304-02001 Reserved.**

**WAC 296-304-02003 Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres.**

You must ensure that atmospheric testing is performed in the following sequence: Oxygen content, flammability, toxicity.

**(1) Oxygen content.**

- (a) You must ensure that the following spaces are visually inspected and tested by a competent person to determine the atmosphere's oxygen content prior to initial entry into the space by an employee:
  - (i) Spaces that have been sealed, such as, but not limited to, spaces that have been coated and closed up, and nonventilated spaces that have been freshly painted;
  - (ii) Spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases;
  - (iii) Spaces and adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive, or irritant;
  - (iv) Spaces and adjacent spaces that have been fumigated; and
  - (v) Spaces containing materials or residues of materials that create an oxygen-deficient atmosphere.
- (b) If the space to be entered contains an oxygen deficient atmosphere, the space must be labeled “not safe for workers” or, if oxygen-enriched, “not safe for workers—not safe for hot work.” If an oxygen-deficient or oxygen-enriched atmosphere is found, ventilation must be provided at volumes and flow rates sufficient to ensure that the oxygen content is maintained at or above 19.5 percent and below 22.0 percent by volume. The warning label may be removed when the oxygen content is equal to or greater than 19.5 and less than 22.0 percent by volume.
- (c) An employee may not enter a space where the oxygen content, by volume, is below 19.5 percent by volume.

<b>Exception:</b> An employee may enter for emergency rescue or for a short duration for installation of ventilation equipment necessary to start work in the space provided.
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- (i) The atmosphere in the space is monitored for oxygen content, by volume, continuously; and
- (ii) Respiratory protection and other appropriate personal protective equipment and clothing are provided in accordance with WAC 296-304-090 through 296-304-09007.

<b>Note to (a):</b> Other provisions for work in IDLH atmospheres are located in WAC 296-304-090 through 296-304-09007.
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**(2) Flammable atmospheres.**

- (a) You must ensure that spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases are:
  - (i) Inspected visually by the competent person to determine the presence of combustible or flammable liquids; and
  - (ii) Tested by a competent person prior to entry by an employee to determine the concentration of flammable vapors and gases within the space.
- (b) If the concentration of flammable vapors or gases in the space to be entered is equal to or greater than 10 percent of the lower explosive limit, the space must be labeled “not safe for workers” and “not safe for hot work.” Ventilation must be provided at volumes and flow rates sufficient to ensure that the concentration of flammable vapors is maintained below 10 percent of the lower explosive limit. The warning labels may be removed when the concentration of flammable vapors is below 10 percent of the lower explosive limit.
- (c) An employee may not enter a space where the concentration of flammable vapors or gases is equal to or greater than 10 percent of the lower explosive limit.

**Exception:** An employee may enter for emergency rescue or for a short duration for installation of ventilation equipment necessary to start work in the space, provided:

- (i) No ignition sources are present;
- (ii) The atmosphere in the space is monitored continuously;
- (iii) Atmospheres at or above the upper explosive limit are maintained; and
- (iv) Respiratory protection and other appropriate personal protective equipment and clothing are provided in accordance with WAC 296-304-090 through 296-304-09007.

**Note 1 to (2):** Additional provisions for work in IDLH atmospheres are located in WAC 296-304-090 through 296-304-09007.

**Note 2 to (2):** Additional provisions for work in spaces containing a flammable substance which also has a permissible exposure limit, are located in subsection (3) of this section and chapter [296-841](#) WAC.

**(3) Toxic, corrosive, irritant or fumigated atmospheres and residues.**

- (a) You must ensure that spaces or adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive or irritant are:



- (i) Inspected visually by the competent person to determine the presence of toxic, corrosive, or irritant residue contaminants; and
  - (ii) Tested by a competent person prior to initial entry by an employee to determine the air concentration of toxics, corrosives, or irritants within the space.
- (b) If a space contains an air concentration of a material which exceeds a chapter [296-841](#) WAC, permissible exposure limit (PEL) or is IDLH, the space must be labeled “not safe for workers.” Ventilation must be provided at volumes and flow rates which will ensure that air concentrations are maintained within the PEL or, in the case of contaminants for which there is no established PEL, below the IDLH. The warning label may be removed when the concentration of contaminants is maintained within the PEL or below IDLH level.
- (c) If a space cannot be ventilated to within the PELs or is IDLH, a marine chemist or CIH must retest until the space can be certified “enter with restrictions” or “safe for workers.”
- (d) An employee may not enter a space whose atmosphere exceeds a PEL or is IDLH.

**Exception:** An employee may enter for emergency rescue, or for a short duration for installation of ventilation equipment provided:

- (i) The atmosphere in the space is monitored continuously;
- (ii) Respiratory protection and other necessary and appropriate personal protective equipment and clothing are provided in accordance with WAC 296-304-090 through 296-304-09007.

**Note to (3):** Other provisions for work in IDLH atmospheres are located in WAC 296-304-090 through 296-304-09007.

- (4) **Training of employees entering confined and enclosed spaces or other dangerous atmospheres.**
- (a) You must ensure that each employee that enters a confined or enclosed space and other areas with dangerous atmospheres is trained to perform all required duties safely.
  - (b) You must ensure that each employee who enters a confined space, enclosed space, or other areas with dangerous atmospheres is trained to:
    - (i) Recognize the characteristics of the confined space;
    - (ii) Anticipate and be aware of the hazards that may be faced during entry;
    - (iii) Recognize the adverse health effects that may be caused by the exposure to a hazard;
    - (iv) Understand the physical signs and reactions related to exposures to such hazards;

- (v) Know what personal protective equipment is needed for safe entry into and exit from the space;
  - (vi) Use personal protective equipment; and
  - (vii) Where necessary, be aware of the presence and proper use of barriers that may be needed to protect an entrant from hazards.
- (c) You must ensure that each entrant into confined or enclosed spaces or other dangerous atmospheres is trained to exit the space or dangerous atmosphere whenever:
- (i) You or his or her representative orders evacuation;
  - (ii) An evacuation signal such as an alarm is activated; or
  - (iii) The entrant perceives that he or she is in danger.
- (d) You must provide each employee with training:
- (i) Before the entrant begins work addressed by this chapter; and
  - (ii) Whenever there is a change in operations or in an employee's duties that presents a hazard about which the employee has not previously been trained.
- (e) You must certify that the training required by (a) through (d) of this subsection has been accomplished.
- (i) The certification must contain the employee's name, the name of the certifier, and the date(s) of the certification.
  - (ii) The certification must be available for inspection by the director, employees, and their representatives.
- (5) **Rescue teams.** You must either establish a shipyard rescue team or arrange for an outside rescue team which will respond promptly to a request for rescue service.
- (a) Shipyard rescue teams must meet the following criteria:
- (i) Each employee assigned to the shipyard team must be provided with and trained to use the personal protective equipment he or she will need, including respirators and any rescue equipment necessary for making rescues from confined and enclosed spaces and other dangerous atmospheres.
  - (ii) Each employee assigned to the shipyard rescue team must be trained to perform his or her rescue functions including confined and enclosed and other dangerous atmosphere entry.
  - (iii) Shipyard rescue teams must practice their skills at least once every 12 months. Practice drills must include the use of mannequins and rescue equipment during simulated rescue operations involving physical facilities that approximate closely those facilities from which rescue may be needed.

<p><b>Note to (5)(a)(iii):</b> If a team performs an actual rescue during the 12 month period, an additional practice drill for that type of rescue is not required</p>
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- (iv) At least one person on each rescue team must maintain current certification in basic first aid which includes maintenance of an airway, control of bleeding, maintenance of circulation and cardiopulmonary resuscitation (CPR) skills.
- (b) You must inform outside rescue teams of the hazards that the team may encounter when called to perform confined and enclosed space or other dangerous atmosphere rescue at your facility so that the rescue team can be trained and equipped.

**Note to (5):** The criteria for in-house rescue, listed in (5)(a) can be used by the employer in evaluating outside rescue services.

- (6) **Exchanging hazard information between employers.** Each employer whose employees work in confined and enclosed spaces or other dangerous atmospheres must ensure that all available information on the hazards, safety rules, and emergency procedures concerning those spaces and atmospheres is exchanged with any other employer whose employees may enter the same spaces.

#### **WAC 296-304-02005 Cleaning and other cold work.**

- (1) **Locations covered by this section.** You must ensure that manual cleaning and other cold work are not performed in the following spaces unless the conditions of subsection (2) of this section have been met:
  - (a) Spaces containing or having last contained bulk quantities of combustible or flammable liquids or gases; and
  - (b) Spaces containing or having last contained bulk quantities of liquids, gases or solids that are toxic, corrosive or irritating.
- (2) **Requirements for performing cleaning or cold work.**
  - (a) Liquid residues of hazardous materials must be removed from work spaces as thoroughly as practicable before employees start cleaning operations or cold work in a space. Special care must be taken to prevent the spilling or the draining of these materials into the water surrounding the vessel, or for shore-side operations, onto the surrounding work area.
  - (b) Testing must be conducted by a competent person to determine the concentration of flammable, combustible, toxic, corrosive, or irritant vapors within the space prior to the beginning of cleaning or cold work.
  - (c) Continuous ventilation must be provided at volumes and flow rates sufficient to ensure that the concentration(s) of:
    - (i) Flammable vapor is maintained below 10 percent of the lower explosive limit; and

**Note to (2)(c)(i):** Spaces containing highly volatile residues may require additional ventilation to keep the concentration of flammable vapors below 10 percent of the lower explosive limit and within the permissible exposure limit.

- (ii) Toxic, corrosive, or irritant vapors are maintained within the permissible exposure limits and below IDLH levels.
- (d) Testing must be conducted by the competent person as often as necessary during cleaning or cold work to ensure that air concentrations are below 10 percent of the lower explosive limit and within the PELs and below IDLH levels. Factors such as, but not limited to, temperature, volatility of the residues and other existing conditions in and about the spaces are to be considered in determining the frequency of testing necessary to ensure a safe atmosphere.

**Note to (2)(d):** See WAC 296-304-02013-Appendix B, for additional information on frequency of testing.

- (e) Spills or other releases of flammable, combustible, toxic, corrosive, and irritant materials must be cleaned up as work progresses.
- (f) An employee may not enter a confined or enclosed space or other dangerous atmosphere if the concentration of flammable or combustible vapors in work spaces exceeds 10 percent of the lower explosive limit.

**Exception:** An employee may enter for emergency rescue or for a short duration for installation of ventilation equipment provided:

- (i) No ignition sources are present;
- (ii) The atmosphere in the space is monitored continuously;
- (iii) The atmosphere in the space is maintained above the upper explosive limit; and
- (iv) Respiratory protection, personal protective equipment, and clothing are provided in accordance with WAC 296-304-090 through 296-304-09007.

**Note to (2)(f):** Other provisions for work in IDLH and other dangerous atmospheres are located in WAC 296-304-090 through 296-304-09007.

- (g) A competent person must test ventilation discharge areas and other areas where discharged vapors may collect to determine if vapors discharged from the spaces being ventilated are accumulating in concentrations hazardous to employees.
- (h) If the tests required in (g) of this subsection indicate that concentrations of exhaust vapors that are hazardous to employees are accumulating, all work in the contaminated area must be stopped until the vapors have dissipated or been removed.
- (i) Only explosion-proof, self-contained portable lamps, or other electric equipment approved by a National Recognized Testing Laboratory (NRTL) for the hazardous location must be used in spaces described in subsection (1) of this section, until such spaces have been certified as “safe for workers.”

**Note to (2)(i):** Battery-fed, portable lamps or other electric equipment bearing the approval of a NRTL for the class, and the division of the location in which they are used are deemed to meet the requirements of (i) of this subsection.

- (j) You must prominently post signs that prohibit sources of ignition within or near a space that has contained flammable or combustible liquids or gases in bulk quantities:
  - (i) At the entrance to those spaces;
  - (ii) In adjacent spaces; and
  - (iii) In the open area adjacent to those spaces.
- (k) All air moving equipment and its component parts, including duct work, capable of generating a static electric discharge of sufficient energy to create a source of ignition, must be bonded electrically to the structure of a vessel or vessel section or, in the case of land-side spaces, grounded to prevent an electric discharge in the space.
- (l) Fans must have nonsparking blades, and portable air ducts shall be of nonsparking materials.

**Note to (2):** See WAC 296-304-02003(3) and applicable requirements of chapter [296-62](#) WAC, General occupational health standards, for other provisions affecting cleaning and cold work.

### **WAC 296-304-02007 Hot work.**

- (1) **Hot work requiring testing by a marine chemist or Coast Guard authorized person.**
  - (a) You must ensure that hot work is not performed in or on any of the following confined and enclosed spaces and other dangerous atmospheres, boundaries of spaces or pipelines until the work area has been tested and certified by a marine chemist or a U.S. Coast Guard authorized person as “safe for hot work”:
    - (i) Within, on, or immediately adjacent to spaces that contain or have contained combustible or flammable liquids or gases.
    - (ii) Within, on, or immediately adjacent to fuel tanks that contain or have last contained fuel; and
    - (iii) On pipelines, heating coils, pump fittings or other accessories connected to spaces that contain or have last contained fuel.
    - (iv) Exception: On dry cargo, miscellaneous and passenger vessels and in the landside operations within spaces which meet the standards for oxygen, flammability and toxicity in WAC 296-304-02003, but are adjacent to spaces containing flammable gases or liquids, as long as the gases or liquids with a flash point below 150 deg. F (65.6 deg. C) when the distance between such spaces and the work is 25 feet (7.62 m) or greater.

**Note to (1)(a):** For flammable liquids with flash points above 150 deg. F (65.6 deg. C), see subsection (2) of this section. The criteria for “safe for hot work” is located in the definition section, WAC 296-304-020(2)/

- (b) The certificate issued by the marine chemist or Coast Guard authorized person must be posted in the immediate vicinity of the affected operations while they are in progress and kept on file for a period of at least three months from the date of the completion of the operation for which the certificate was generated.
- (2) **Hot work requiring testing by a competent person.**
- (a) Hot work is not permitted in or on the following spaces or adjacent spaces or other dangerous atmospheres until they have been tested by a competent person and determined to contain no concentrations of flammable vapors equal to or greater than 10 percent of the lower explosive limit:
- (i) Dry cargo holds;
  - (ii) The bilges;
  - (iii) The engine room and boiler spaces for which a marine chemist or a Coast Guard authorized person certificate is not required under subsection (1)(a)(iv) of this section;
  - (iv) Vessels and vessel sections for which a marine chemist or Coast Guard authorized person certificate is not required under subsection (1)(a)(iv) of this section; and
  - (v) Land-side confined and enclosed spaces or other dangerous atmospheres not covered by subsection (1)(a) of this section.
- (b) If the concentration of flammable vapors or gases is equal to or greater than 10 percent of the lower explosive limit in the space or an adjacent space where the hot work is to be done, then the space must be labeled “not safe for hot work” and ventilation must be provided at volumes and flow rates sufficient to ensure that the concentration of flammable vapors or gases is below 10 percent by volume of the lower explosive limit. The warning label may be removed when the concentration of flammable vapors and gases are below 10 percent of the lower explosive limit.

**Note to WAC 296-304-02007:** See WAC 296-304-02013-Appendix B for additional information relevant to performing hot work safely.

**WAC 296-304-02009 Maintenance of safe conditions.**

- (1) **Preventing hazardous materials from entering.** Pipelines that could carry hazardous materials into spaces that have been certified “safe for workers” or “safe for hot work” must be disconnected, blanked off, or otherwise blocked by a positive method to prevent hazardous materials from being discharged into the space.
- (2) **Alteration of existing conditions.** When a change that could alter conditions within a tested confined or enclosed space or other dangerous atmosphere occurs, work in the affected space or area must be stopped. Work may not be resumed until the affected space or area is visually inspected and retested and found to comply with WAC 296-304-02003, 296-304-02005, and 296-304-02007, as applicable.

<p><b>Note to (2):</b> Examples of changes that would warrant the stoppage of work include: The opening of manholes or other closures or the adjusting of a valve regulating the flow of hazardous materials.</p>
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- (3) **Tests to maintain the conditions of a marine chemist's or Coast Guard authorized person's certificates.** A competent person must visually inspect and test each space certified as “safe for workers” or “safe for hot work,” as often as necessary to ensure that atmospheric conditions within that space are maintained within the conditions established by the certificate after the certificate has been issued.
- (4) **Change in the conditions of a marine chemist's or Coast Guard authorized person's certificate.** If a competent person finds that the atmospheric conditions within a certified space fail to meet the applicable requirements of WAC 296-304-02003, 296-304-02005, and 296-304-02007, work in the certified space must be stopped and may not be resumed until the space has been retested by a marine chemist or Coast Guard authorized person and a new certificate issued in accordance with WAC 296-304-02007(1).
- (5) **Tests to maintain a competent person's findings.** After a competent person has conducted a visual inspection and tests required in WAC 296-304-02003, 296-304-02005, and 296-304-02007 and determined a space to be safe for an employee to enter, he or she must continue to test and visually inspect spaces as often as necessary to ensure that the required atmospheric conditions within the tested space are maintained.
- (6) **Changes in conditions determined by competent person's findings.** After the competent person has determined initially that a space is safe for an employee to enter and he or she finds subsequently that the conditions within the tested space fail to meet the requirements of WAC 296-304-02003, 296-304-02005, and 296-304-02007, as applicable, work must be stopped until the conditions in the tested space are corrected to comply with WAC 296-304-02003, 296-304-02005, and 296-304-02007, as applicable.

**WAC 296-304-02011 Warning signs and labels.**

- (1) **Employee comprehension of signs and labels.** You must ensure that each sign or label posted to comply with the requirements of this section is presented in a manner that can be perceived and understood by all employees.

- (2) **Posting of large work areas.** A warning sign or label required by subsection (1) of this section need not be posted at an individual tank, compartment or work space within a work area if the entire work area has been tested and certified: “Not safe for workers,” “not safe for hot work,” and if the sign or label to this effect is posted conspicuously at each means of access to the work area.

### **WAC 296-304-02013 Appendix B-Compliance assistance guidelines for confined and enclosed spaces and other dangerous atmospheres.**

This appendix is a nonmandatory set of guidelines provided to assist employers in complying with the requirements of WAC 296-304-020 through 296-304-02011. This appendix neither creates additional obligations nor detracts from obligations otherwise contained in this chapter. It is intended to provide explanatory information and educational material to employers and employees to foster understanding of, and compliance with, this chapter.

WAC 296-304-020 through 296-304-02011. These standards are minimum safety standards for entering and working safely in vessel tanks and compartments.

WAC 296-304-020(2) Definition of “Hot work.” There are several instances in which circumstances do not necessitate that grinding, drilling, abrasive blasting be regarded as hot work. Some examples are:

- (1) Abrasive blasting of the external surface of the vessel (the hull) for paint preparation does not necessitate pumping and cleaning the tanks of a vessel.
- (2) Prior to hot work on any hollow structure, the void space should be tested and appropriate precautions taken.

WAC 296-304-020(2) Definition of “**Lower explosive limit.**” The terms lower flammable limit (LFL) and lower explosive limit (LEL) are used interchangeably in fire science literature.

WAC 296-304-020(2) Definition of “**Upper explosive limit.**” The terms upper flammable limit (UFL) and upper explosive limit (UEL) are used interchangeably in fire science literature.

WAC 296-304-02003(1) After a tank has been properly washed and ventilated, the tank should contain 20.8 percent oxygen by volume. This is the same amount found in our normal atmosphere at sea level. However, it is possible that the oxygen content will be lower. When this is the case, the reasons for this deficiency should be determined and corrective action taken.

An oxygen content of 19.5 percent can support life and is adequate for entry. However, any oxygen level less than 20.8 percent and greater than 19.5 percent level should also alert the competent person to look for the causes of the oxygen deficiency and to correct them prior to entry.

WAC 296-304-02003(2) Flammable atmospheres. Atmospheres with a concentration of flammable vapors at or above 10 percent of the lower explosive limit (LEL) are considered hazardous when located in confined spaces. However, atmospheres with flammable vapors below 10 percent of the LEL are not necessarily safe.

Such atmospheres are too lean to burn. Nevertheless, when a space contains or produces measurable flammable vapors below the 10 percent LEL, it might indicate that flammable vapors are being released or introduced into the space and could present a hazard in time. Therefore, the cause of the vapors should be investigated and, if possible, eliminated prior to entry.



Some situations that have produced measurable concentrations of flammable vapors that could exceed 10 percent of the LEL in time are:

- (1) Pipelines that should have been blanked or disconnected have opened, allowing product into the space.
- (2) The vessel may have shifted, allowing product not previously cleaned and removed during washing to move into other areas of the vessel.
- (3) Residues may be producing the atmosphere by releasing flammable vapor.

WAC 296-304-02003(2) Flammable atmospheres that are toxic. An atmosphere with a measurable concentration of a flammable substance below 10 percent of the LEL may be above the WISHA permissible exposure limit for that substance. In that case, refer to WAC 296-304-02003 (3)(b), (c), and (d).

WAC 296-304-02005 (2)(d), 296-304-02009(3), and 296-304-02009(5). The frequency with which a tank is monitored to determine if atmospheric conditions are being maintained is a function of several factors that are discussed below:

- (1) **Temperature.** Higher temperatures will cause a combustible or flammable liquid to vaporize at a faster rate than lower temperatures. This is important since hotter days may cause tank residues to produce more vapors and that may result in the vapors exceeding 10 percent of the LEL or an overexposure to toxic contaminants.
- (2) **Work in the tank.** Any activity in the tank could change the atmospheric conditions in that tank. Oxygen from a leaking oxyfuel hose or torch could result in an oxygen-enriched atmosphere that would more easily propagate a flame. Some welding operations use inert gas, and leaks can result in an oxygen-deficient atmosphere. Manual tank cleaning with high pressure spray devices can stir up residues and result in exposures to toxic contaminants. Simple cleaning or mucking out, where employees walk through and shovel residues and sludge, can create a change in atmospheric conditions.
- (3) **Period of time elapsed.** If a period of time has elapsed since a marine chemist or Coast Guard authorized person has certified a tank as safe, the atmospheric condition should be rechecked by the competent person prior to entry and starting work.
- (4) **Unattended tanks or spaces.** When a tank or space has been tested and declared safe, then subsequently left unattended for a period of time, it should be retested prior to entry and starting work. For example, when barges are left unattended at night, unidentified products from another barge are sometimes dumped into their empty tanks. Since this would result in a changed atmosphere, the tanks should be retested prior to entry and starting work.
- (5) **Work break.** When workers take a break or leave at the end of the shift, equipment sometimes is inadvertently left in the tanks. At lunch or work breaks and at the end of the shift are the times when it is most likely someone will leave a burning or cutting torch in the tank, perhaps turned on and leaking oxygen or an inert gas. Since the former can produce an oxygen-enriched atmosphere, and the latter an oxygen-deficient atmosphere, tanks should be checked for equipment left behind, and atmosphere, monitored if necessary prior to re-entering and resuming work. In an oxygen-enriched atmosphere, the flammable range is severely broadened. This means that an oxygen-enriched atmosphere can promote very rapid burning.

- (6) **Ballasting or trimming.** Changing the position of the ballast, or trimming or in any way moving the vessel so as to expose cargo that had been previously trapped, can produce a change in the atmosphere of the tank. The atmosphere should be retested after any such move and prior to entry or work.

WAC 296-304-02007 (1) and (2) hot work. This is a reminder that other sections of the WISHA shipyard safety and health standards in chapter 296-304 WAC should be reviewed prior to starting any hot work. Most notably, WAC 296-304-040 through 296-304-04013, welding, cutting and heating, places additional restrictions on hot work: The requirements of WAC 296-304-04001 and 296-304-04005 must be met before hot work is begun on any metal that is toxic or is covered by a preservative coating respectively; the requirements of WAC 296-304-04007 must be met before welding, cutting, or heating is begun on any structural voids.

WAC 296-304-02003 (1)(b). During hot work, more than 20.8 percent oxygen by volume can be unsafe since it extends the normal flammable range. The standard permits the oxygen level to reach 22.0 percent by volume in order to account for instrument error. However, the cause of excess oxygen should be investigated and the source removed.

WAC 296-304-02011(2). If the entire vessel has been found to be in the same condition, then employers shall be considered to be in compliance with this requirement when signs using appropriate warning language in accordance with WAC 296-304-02011(1) are posted at the gangway and at all other means of access to the vessel.

### **WAC 296-304-02015 Appendix C-Confined and enclosed spaces and other dangerous atmospheres in shipyard employment.**

This appendix provides a complete reprint of U.S. Coast Guard regulations as of October 1, 1993 referenced in WAC 296-304-020 for purposes of determining who is a Coast Guard authorized person.

- (1) Title 46 CFR 35.01-1 (a) through (c) covering hot work on tank vessels reads as follows:
- (a) The provisions of “Standard for the Control of Gas Hazards on Vessels to be Repaired,” NFPA No. 306, published by National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269, shall be used as a guide in conducting the inspections and issuance of certificates required by this chapter.
  - (b) Until an inspection has been made to determine that such operation can be undertaken with safety, no alterations, repairs, or other such operations involving riveting, welding, burning, or like fire-producing actions shall be made:
    - (i) Within or on the boundaries of cargo tanks that have been used to carry flammable or combustible liquid or chemicals in bulk, or within spaces adjacent to such cargo tanks; or
    - (ii) Within or on the boundaries of fuel tanks; or
    - (iii) To pipe lines, heating coils, pumps, fittings, or other appurtenances connected to such cargo or fuel tanks.
  - (c) Such inspections shall be made and evidenced as follows:

- (i) In ports or places in the United States or its territories and possessions, the inspection shall be made by a marine chemist certificated by the National Fire Protection Association; however, if the services of such certified marine chemists are not reasonably available, the Officer in Charge, Marine Inspection, upon the recommendation of the vessel owner and his/her contractor or their representative, shall select a person who, in the case of an individual vessel, shall be authorized to make such inspection.
  - (ii) If the inspection indicates that such operations can be undertaken with safety, a certificate setting forth the fact in writing and qualified as may be required, shall be issued by the certified marine chemist or the authorized person before the work is started.
  - (iii) Such qualifications shall include any requirements as may be deemed necessary to maintain, insofar as can reasonably be done, the safe conditions in the spaces certified, throughout the operation and shall include such additional tests and certifications as considered required.
  - (iv) Such qualifications and requirements shall include precautions necessary to eliminate or minimize hazards that may be present from protective coatings or residues from cargoes.
- (2) Title 46 CFR 71.60(c)(1) covering hot work on passenger vessels reads as follows:
- (a) The provisions of “Standard for the Control of Gas Hazards on Vessels to be Repaired,” NFPA No. 306, published by National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269, shall be used as a guide in conducting the inspections and issuance of certificates required by this chapter.
  - (b) Until an inspection has been made to determine that such operation can be undertaken with safety, no alterations, repairs, or other such operations involving riveting, welding, burning, or like fire-producing actions shall be made:
    - (i) Within or on the boundaries of cargo tanks which have been used to carry flammable or combustible liquid or chemicals in bulk, or within spaces adjacent to such cargo tanks; or
    - (ii) Within or on the boundaries of fuel tanks; or
    - (iii) To pipe lines, heating coils, pumps, fittings, or other appurtenances connected to such cargo or fuel tanks.
  - (c) Such inspections shall be made and evidenced as follows:
    - (i) In ports or places in the United States or its territories and possessions the inspection shall be made by a marine chemist certificated by the National Fire Protection Association; however, if the services of such certified marine chemist are not reasonably available, the Officer in Charge, Marine Inspection, upon the recommendation of the vessel owner and his/her contractor or their representative, shall select a person who, in the case of an individual vessel, shall be authorized to make such inspection.

- (ii) If the inspection indicated that such operations can be undertaken with safety, a certificate setting forth the fact in writing and qualified as may be required, shall be issued by the certified marine chemist or the authorized person before the work is started.
  - (iii) Such qualifications shall include any requirements as may be deemed necessary to maintain, insofar as can reasonably be done, the safe conditions in the spaces certified throughout the operation and shall include such additional tests and certifications as considered required.
  - (iv) Such qualifications and requirements shall include precautions necessary to eliminate or minimize hazards that may be present from protective coatings or residues from cargoes.
- (3) Title 46 CFR 91.50-1(c)(1) covering hot work on cargo and miscellaneous vessels as follows:
  - (a) The provisions of "Standard for the Control of Gas Hazards on Vessels to be Repaired," NFPA No. 306, published by National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269, shall be used as a guide in conducting the inspections and issuance of certificates required by this chapter.
  - (b) Until an inspection has been made to determine that such operation can be undertaken with safety, no alterations, repairs, or other such operations involving riveting, welding, burning, or like fire-producing actions shall be made:
    - (i) Within or on the boundaries of cargo tanks which have been used to carry flammable or combustible liquid or chemicals in bulk, or within spaces adjacent to such cargo tanks; or,
    - (ii) Within or on the boundaries of fuel tanks; or,
    - (iii) To pipe lines, heating coils, pumps, fittings, or other appurtenances connected to such cargo or fuel tanks.
  - (c) Such inspections shall be made and evidenced as follows:
    - (i) In ports or places in the United States or its territories and possessions the inspection shall be made by a marine chemist certificated by the National Fire Protection Association; however, if the services of such certified marine chemist are not reasonably available, the Officer in Charge, Marine Inspection, upon the recommendation of the vessel owner and his/her contractor or their representative, shall select a person who, in the case of an individual vessel, shall be authorized to make such inspection.
    - (ii) If the inspection indicated that such operations can be undertaken with safety, a certificate setting forth the fact in writing and qualified as may be required, shall be issued by the certified marine chemist or the authorized person before the work is started.
    - (iii) Such qualifications shall include any requirements as may be deemed necessary to maintain, insofar as can reasonably be done, the safe conditions in the spaces certified throughout the operation and shall include such additional tests and certifications as considered required.

- (iv) Such qualifications and requirements shall include precautions necessary to eliminate or minimize hazards that may be present from protective coatings or residues from cargoes.

### ***WAC 296-304-030 Surface preparation and preservation- Scope and application.***

All sections of this chapter which include WAC 296-304-030 in the section number apply to surface preparation and preservation and WAC 296-304-03001 to 296-304-03009 applies only to shipbuilding and ship repairing.

#### **WAC 296-304-03001 Toxic cleaning solvents.**

- (1) When toxic solvents are used, you must employ one or more of the following measures to safeguard the health of employees exposed to these solvents.
  - (a) The cleaning operation must be completely enclosed to prevent the escape of vapor into the working space.
  - (b) Either natural ventilation or mechanical exhaust ventilation must be used to remove the vapor at the source and to dilute the concentration of vapors in the working space to a concentration which is safe for the entire work period.
  - (c) You must ensure that employees are protected against:
    - (i) Toxic vapors by suitable respiratory protective equipment that meets the requirements of chapter [296-842](#) WAC; and
    - (ii) Exposure of skin and eyes to contact with toxic solvents and their vapors by suitable clothing and equipment.
- (2) The principles in the threshold limit values to which attention is directed in WAC 296-304-02005 and applicable sections in chapters [296-62](#) and [296-841](#) WAC will be used by the department of labor and industries in enforcement proceedings in defining a safe concentration of air contaminants.
- (3) When flammable solvents are used, precautions must be taken in accordance with the requirements of WAC 296-304-03009.

#### **WAC 296-304-03003 Chemical paint and preservative removers.**

- (1) You must ensure that employees are protected against:
  - (a) Skin contact during the handling and application of chemical paint and preservative removers; and
  - (b) Eye injury by goggles or face shields that meet the requirements of WAC 296-304-09005 (1) and (2).
- (2) When using flammable paint and preservative removers precautions must be taken in accordance with the requirements of WAC 296-304-03009.

- (3) When using chemical paint and preservative removers which contain volatile and toxic solvents, such as benzol, acetone and amyl acetate, the provisions of WAC 296-304-03001 must be applicable.
- (4) You must ensure that employees using paint and rust removers containing strong acids or alkalis are protected by suitable face shields to prevent chemical burns on the face and neck according to the requirements of WAC 296-304-09005 (1) and (2).
- (5) You must ensure that all employees working within range of a steam gun blast are protected by suitable face shields according to the requirements of WAC 296-304-09005 (1) and (2). Metal parts of the steam gun itself must be insulated to protect the operator against heat burns.

### **WAC 296-304-03005 Mechanical paint removers.**

#### **(1) Power tools.**

- (a) You must ensure that employees engaged in the removal of paints, preservatives, rusts or other coatings by means of power tools are protected against eye injury by goggles or face shields that meets the requirements of WAC 296-304-09005 (1) and (2).
- (b) All portable rotating tools used for the removal of paints, preservatives, rusts or other coatings must be adequately guarded to protect both the operator and nearby workers from flying missiles.
- (c) Portable electric tools must be grounded in accordance with the requirements of WAC 296-304-08003 (1) and (2).
- (d) In a confined space, you must provide mechanical exhaust ventilation sufficient to keep the dust concentration to a minimum, or must protect employees by respiratory protective equipment that meets the requirements of chapter [296-842](#) WAC.

#### **(2) Flame removal.**

- (a) You must ensure that when hardened preservative coatings are removed by flame in enclosed spaces, the employees exposed to fumes are protected by airline respirators that meet the requirements of chapter [296-842](#) WAC. Employees performing this operation in the open air, and those exposed to the resulting fumes, must be protected by a fume filter respirator that meets the requirements of chapter [296-842](#) WAC.
- (b) Flame or heat must not be used to remove soft and greasy preservative coatings.

#### **(3) Abrasive blasting.**

- (a) Equipment. Hoses and fittings used for abrasive blasting must meet the following requirements:
  - (i) Hoses of a type to prevent shocks from static electricity must be used.
  - (ii) Hose couplings. Hose lengths must be joined by metal couplings secured to the outside of the hose to avoid erosion and weakening of the couplings.

- (iii) Nozzles must be attached to the hose by fittings that will prevent the nozzle from unintentionally becoming disengaged. Nozzle attachments must be of metal and must fit onto the hose externally.
  - (iv) Dead man control. A dead man control device must be provided at the nozzle end of the blasting hose either to provide direct cutoff or to signal the pot tender by means of a visual and audible signal to cut off the flow, in the event the blaster loses control of the hose. The pot tender must be available at all times to respond immediately to the signal.
- (b) Replacement. Hoses and all fittings used for abrasive blasting must be inspected frequently to ensure timely replacement before an unsafe amount of wear has occurred.
- (c) Personal protective equipment.
- (i) You must ensure that abrasive blasters are protected by abrasive blasting respirators that meet the requirements of chapter [296-818](#) WAC, Abrasive blasting and chapter [296-842](#) WAC.

**Exception:**

Filter type respirators that meet the requirements of chapters [296-842](#) and [296-840](#) WAC may be used when:

1. The work is done in the open;
2. Proper eye, face, hearing, and head protection is used; and
3. Synthetic abrasives containing less than one percent free silica are used.  
“Free silica” includes amorphous silica and the crystalline forms that are not chemically combined with any other elements.

- (ii) You must ensure that employees, including machine tenders and abrasive recovery workers, working in areas where unsafe concentrations of abrasive materials and dusts are present are protected by eye and respiratory protective equipment that meets the requirements of WAC 296-304-09005 (1) and (2) and chapter [296-842](#) WAC.

**Exception:** This requirement does not apply to blasters.

- (iii) You must ensure that a blaster is protected against injury from exposure to the blast by appropriate protective clothing, including gloves that meet the requirements of WAC 296-304-09015(1).
- (iv) A surge from a drop in pressure in the hose line can throw a blaster off the staging. To protect against this hazard, you must ensure that a blaster is protected by a personal fall arrest system, that meets the requirements of chapter [296-880](#) WAC, Unified safety standards for fall protection. The personal fall arrest system must be tied off to the ship or other structure during blasting from elevations where adequate fall protection cannot be provided by railings.

**WAC 296-304-03007 Painting.**

All respirators required by this section must meet the requirements of chapter [296-842](#) WAC.

**(1) Paints mixed with toxic vehicles or solvents.**

- (a) When employees spray paints mixed with toxic vehicles or solvents, you must ensure that the following conditions are met:
  - (i) In confined spaces, employees continuously exposed to spraying are protected by airline respirators.
  - (ii) In tanks or compartments, employees continuously exposed to spraying are protected by airline respirators. Where mechanical ventilation is provided, employees are protected by respirators.
  - (iii) In large and well ventilated areas, employees exposed to spraying are protected by respirators.
- (b) You must ensure that where employees apply by brush paints with toxic solvents in confined spaces or other areas where lack of ventilation creates a hazard, the employees are protected by filter respirators.
- (c) When flammable paints or vehicles are used, precautions must be taken in accordance with the requirements of WAC 296-304-03009.
- (d) The metallic parts of air moving devices, including fans, blowers, and jet-type air movers, and all duct work must be electrically bonded to the vessel's structure.

**(2) Paints and tank coatings dissolved in highly volatile, toxic and flammable solvents.**

Several organic coatings, adhesives and resins are dissolved in highly toxic, flammable and explosive solvents with flash points below 80°F. Work involving such materials must be done only when all of the following special precautions have been taken:

- (a) Sufficient exhaust ventilation must be provided to keep the concentration of solvent vapors below ten percent of the lower explosive limit. Frequent tests must be made by a competent person to ascertain the concentration.
- (b) If the ventilation fails or if the concentration of solvent vapors reaches or exceeds ten percent of the lower explosive limit, painting must be stopped and the compartment must be evacuated until the concentration again falls below ten percent of the lower explosive limit. If the concentration does not fall when painting is stopped, additional ventilation to bring the concentration down to ten percent of the lower explosive limit must be provided.
- (c) Ventilation must be continued after the completion of painting until the space or compartment is gas free. The final determination as to whether the space or compartment is gas free must be made after the ventilating equipment has been shut off for a least ten minutes.
- (d) Exhaust ducts must discharge clear of working areas and away from sources of possible ignition. Periodic tests must be made to ensure that the exhausted vapors are not accumulating in other areas within or around the vessel or dry dock.



- (e) All motors and control equipment must be of the explosion-proof type. Fans must have nonferrous blades. Portable air ducts must also be of nonferrous materials. All motors and associated control equipment must be properly maintained and grounded.
- (f) Only nonsparking paint buckets, spray guns and tools must be used. Metal parts of paint brushes and rollers must be insulated. Staging must be erected in a manner which ensures that it is nonsparking.
- (g) Only explosion proof lights, approved by the Underwriters' Laboratories for use in Class I, Group D atmospheres, or approved as permissible by the U.S. Bureau of Mines or the U.S. Coast Guard, must be used.
- (h) A competent person must inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.
- (i) The face, eyes, head, hands and all other exposed parts of the bodies of employees handling highly volatile paints must be protected according to WAC 296-304-090. All footwear must be nonsparking, such as rubbers, rubber boots or rubber soled shoes without nails. Coveralls or other outer clothing must be made of cotton. Rubber gloves, instead of plastic gloves, must be used to protect against the danger of static sparks.
- (j) No matches, lighted cigarettes, cigars, or pipes, and no cigarette lighters or ferrous articles must be taken into the area where work is being done.
- (k) All solvent drums taken into the compartment must be placed on nonferrous surfaces and must be grounded to the vessel. Metallic contact must be maintained between containers and drums when materials are being transferred from one to another.
- (l) Spray guns, paint pots, and metallic parts of connecting tubing must be electrically bonded, and the bonded assembly must be grounded to the vessel.
- (m) You must ensure that all employees continuously in a compartment in which such painting is performed, are protected by airline respirators and by suitable protective clothing. Employees entering such compartments for a limited time must be protected by filter cartridge type respirators.
- (n) You must ensure that all employees doing exterior paint spraying with such paints are protected by suitable filter cartridge type respirators and by suitable protective clothing.

### **WAC 296-304-03009 Flammable liquids.**

In all cases when liquid solvents, paint and preservative removers, paints or vehicles, other than those covered by WAC 296-304-03007(2), are capable of producing a flammable atmosphere under the conditions of use the following precautions must be taken:

- (1) Smoking, open flames, arcs and spark-producing equipment must be prohibited in the area.

- (2) Ventilation must be provided in sufficient quantities to keep the concentration of vapors below ten percent of their lower explosive limit. Frequent tests must be made by a competent person to ascertain the concentration.
- (3) Scrapings and rags soaked with these materials must be kept in a covered metal container.
- (4) Only explosion proof lights, approved by the Underwriters' Laboratories for use in Class I, Group D atmospheres, or approved as permissible by the U.S. Bureau of Mines or the U.S. Coast Guard, must be used.
- (5) A competent person must inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.
- (6) Suitable fire extinguishing equipment must be immediately available in the work area and shall be maintained in a state of readiness for instant use.

### ***WAC 296-304-040 Welding, cutting and heating—Scope and application.***

All sections of this chapter which include WAC 296-304-040 in the section number apply to welding, cutting and heating.

You are also required to protect employees from exposure to hexavalent chromium during the stainless steel welding process. See WAC [296-62-08003](#), Hexavalent chromium for specific criteria.

#### **WAC 296-304-04001 Ventilation and protection in welding, cutting and heating.**

- (1) Mechanical ventilation requirements. For the purposes of this section, mechanical ventilation must meet the following requirements:
  - (a) Mechanical ventilation must consist of either general mechanical ventilation systems or local exhaust systems.
  - (b) General mechanical ventilation must be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits.
  - (c) Local exhaust ventilation must consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system must be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits.
  - (d) Contaminated air exhausted from a working space must be discharged into the open air or otherwise clear of the source of intake air.
  - (e) All air replacing that withdrawn must be clean and respirable.

- (f) Oxygen must not be used for ventilation purposes, comfort cooling, blowing dust or dirt from clothing, or for cleaning the work area.
- (2) **Welding, cutting and heating in confined spaces.**
- (a) Except as provided in (c) of this subsection and subsection (3)(b) of this section, either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section must be provided whenever welding, cutting or heating is performed in a confined space.
  - (b) The means of access must be provided to a confined space and ventilation ducts to this space must be arranged in accordance with WAC 296-304-05011 (2)(a) and (b).
  - (c) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space must be protected by airline respirators in accordance with the requirements of chapter [296-842](#) WAC, and an employee on the outside of such a confined space must be assigned to maintain communication with those working within it and to aid them in an emergency.
- (3) **Welding, cutting or heating of metals of toxic significance.**
- (a) Welding, cutting or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection must be performed with either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section.
    - (i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials.
    - (ii) Lead base metals.
    - (iii) Cadmium-bearing filler materials.
    - (iv) Chromium-bearing metals or metals coated with chromium-bearing materials.
  - (b) Welding, cutting, or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection must be performed with local exhaust ventilation in accordance with the requirements of subsection (1) of this section or employees must be protected by airline respirators in accordance with the requirements of chapter [296-842](#) WAC.
    - (i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials.
    - (ii) Cadmium-bearing or cadmium coated base metals.
    - (iii) Metals coated with mercury-bearing metals.
    - (iv) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium must be done with both local exhaust ventilation and air line respirators.
  - (c) Employees performing such operations in the open air must be protected by filter type respirators in accordance with the requirements of WAC 296-304-09003, except that employees performing such operations on beryllium-containing base or filler metals must be protected by airline respirators in accordance with the requirements of chapter [296-842](#) WAC.

- (d) Other employees exposed to the same atmosphere as the welders or burners must be protected in the same manner as the welder or burner.
- (4) **Inert-gas metal-arc welding.** Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of five to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees must not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:
- (a) The use of chlorinated solvents must be kept at least 200 feet from the exposed arc, and surfaces prepared with chlorinated solvents must be thoroughly dry before welding is permitted on such surfaces.
  - (b) Helpers and other employees in the area not protected from the arc by screening as provided in WAC 296-304-04011(5) must be protected by filter lenses meeting the requirements of Tables I-1A and B (see below). When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type meeting the requirements of WAC 296-304-09001 (1) and (3) must be worn under welding helmets or hand shields to protect the welder against flashes and radiant energy when either the helmet is lifted or the shield is removed.
  - (c) Welders and other employees who are exposed to radiation must be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields must be free of leaks and openings, and free of highly reflective surfaces.
  - (d) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of subsection (3)(b) of this section must be met to protect against dangerous concentrations of nitrogen dioxide.
- (5) **General welding, cutting and heating.**
- (a) Welding, cutting and heating not involving conditions or materials described in subsection (2), (3), or (4) of this section may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, suitable mechanical ventilation or respiratory protective equipment must be provided.
  - (b) Employees performing any type of welding, cutting or heating must be protected by suitable eye protective equipment in accordance with the requirements of Tables I-1A and B (see below).
- (6) Residues and cargos of metallic ores of toxic significance must be removed from the area or protected from the heat before welding, cutting or heating has begun.

**TABLE I-1A FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY**

<b>OPERATIONS</b>	<b>ELECTRODE SIZE 1/32 IN</b>	<b>ARC CURRENT</b>	<b>MINIMUM PROTECTIVE SHADE</b>
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Gas metal arc welding and flux cored arc welding		Less than 60	7
		60-160	10
		160-250	10
		250-500	10
Gas Tungsten arc welding		Less than 50	8
		50-150	8
		150-500	10
Air carbon	(Light)	Less than 500	10
Arc cutting	Heavy	500-1000	11
Plasma arc welding		Less than 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(Light)**	Less than 300	8
	(Medium)**	300-400	9
	(Heavy)**	400-800	10
Torch brazing	--	--	3
Torch soldering	--	--	2
Carbon arc welding	--	--	14

\*\*These values apply where the actual arc is clearly seen. Lighter filters may be used when the arc is hidden by the workplace.

**TABLE I-1B FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY**

<b>OPERATIONS</b>	<b>PLATE THICKNESS INCHES</b>	<b>PLATE THICKNESS MM</b>	<b>MINIMUM* PROTECTIVE SHADE</b>
Gas welding			
Light	Under 1/8	Under 3.2	4
Medium	1/8 to 1/2	3.2 to 12.7	5
Heavy	Over 1/2	Over 12.7	6
Oxygen cutting			
Light	Under 1	Under 25	3
	1 to 6	25 to 150	4
Medium	Over 6	Over 150	5
Heavy			

\*As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the viable light of the (spectrum) operation.

**Note:** A worker may use an auto-darkening helmet that allows for the selection of final filtration settings inside the appropriate range as described in the tables above. The auto-darkening helmet must be in good working order and maintained in accordance with the manufacturers recommendations and guidance.

### **WAC 296-304-04005 Welding, cutting and heating in way of preservative coatings.**

- (1) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test must be made by a competent person to determine its flammability. Preservative coatings must be considered to be highly flammable when scrapings burn with extreme rapidity.
- (2) Precautions must be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable they must be stripped from the area to be heated to prevent ignition. A 1 1/2-inch or larger fire hose with fog nozzle, which has been uncoiled and placed under pressure, must be immediately available for instant use in the immediate vicinity, consistent with avoiding freezing of the hose.
- (3) **Protection against toxic preservative coatings.**
  - (a) In enclosed spaces all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application or the employees must be protected by airline respirators meeting the requirements of chapter [296-842](#) WAC, Respirators.
  - (b) In the open air employees must be protected by a filter type respirator in accordance with the requirements of chapter [296-842](#) WAC, Respirators.
- (4) Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions must be taken:
  - (a) A competent person must test the atmosphere in the space to ensure that it does not contain explosive vapors, since there is a possibility that some soft and greasy preservatives may have flash points below temperatures which may be expected to occur naturally. If such vapors are determined to be present, no hot work must be commenced until such precautions have been taken that will ensure the welding, cutting or heating can be performed in safety.
  - (b) The preservative coatings must be removed for a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be cleaned. The prohibition contained in WAC 296-304-03005 (2)(b) must apply.

- (5) Immediately after welding, cutting or heating is commenced in enclosed spaces on metal covered by soft and greasy preservatives, and at frequent intervals thereafter, a competent person must make tests to ensure that no flammable vapors are being produced by the coatings. If such vapors are determined to be present, the operation must be stopped immediately and must not be resumed until such additional precautions have been taken as are necessary to ensure that the operation can be resumed safely.

**WAC 296-304-04007 Welding, cutting and heating of hollow metal containers and structures not covered by WAC 296-304-02003.**

- (1) Drums, containers, or hollow structures which have contained toxic or flammable substances must, before welding, cutting, or heating is undertaken on them, either be filled with water or thoroughly cleaned of such substances and ventilated and tested.
- (2) Before heat is applied to a drum, container, or hollow structure, a vent or opening must be provided for the release of any built-up pressure during the application of heat.
- (3) Before welding, cutting, heating or brazing is begun on structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, a competent person must inspect the object and, if necessary, test it for the presence of flammable liquids or vapors. If flammable liquids or vapors are present, the object must be made safe.
- (4) Objects such as those listed in (3) of this section must also be inspected to determine whether water or other nonflammable liquids are present which, when heated, would build up excessive pressure. If such liquids are determined to be present, the object must be vented, cooled, or otherwise made safe during the application of heat.
- (5) Jacketed vessels must be vented before and during welding, cutting or heating operations in order to release any pressure which may build up during the application of heat.

**WAC 296-304-04009 Gas welding and cutting.**

- (1) **Transporting, moving and storing compressed gas cylinders.**
  - (a) Valve protection caps must be in place and secure. Oil must not be used to lubricate protection caps.
  - (b) When cylinders are hoisted, they must be secured on a cradle, slingboard or pallet. They must not be hoisted by means of magnets or choker slings.
  - (c) Cylinders must be moved by tilting and rolling them on their bottom edges. They must not be intentionally dropped, struck, or permitted to strike each other violently.
  - (d) When cylinders are transported by vehicle, they must be secured in position.
  - (e) Valve protection caps must not be used for lifting cylinders from one vertical position to another. Bars must not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water must be used to thaw cylinders loose.
  - (f) Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators must be removed and valve protection caps put in place before cylinders are moved.

- (g) A suitable cylinder truck, chain, or other steadying device must be used to keep cylinders from being knocked over while in use.
- (h) When work is finished, when cylinders are empty or when cylinders are moved at any time, the cylinder valves must be closed.
- (i) Acetylene cylinders must be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

(2) **Placing cylinders.**

- (a) Cylinders must be kept far enough away from the actual welding or cutting operation so that sparks, hot slag or flame will not reach them. When this is impractical, fire resistant shields must be provided.
- (b) Cylinders must be placed where they cannot become part of an electrical circuit. Electrodes must not be struck against a cylinder to strike an arc.
- (c) Fuel gas cylinders must be placed with valve end up whenever they are in use. They must not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.
- (d) Cylinders containing oxygen or acetylene or other fuel gas must not be taken into confined spaces.

(3) **Treatment of cylinders.**

- (a) Cylinders, whether full or empty, must not be used as rollers or supports.
- (b) No person other than the gas supplier must attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by them must refill a cylinder. No one must use a cylinder's contents for purposes other than those intended by the supplier. Only cylinders bearing Interstate Commerce Commission identification and inspection markings must be used.
- (c) No damaged or defective cylinder must be used.

(4) **Use of fuel gas.** You must thoroughly instruct employees in the safe use of fuel gas, as follows:

- (a) Before connecting a regulator to a cylinder valve, the valve must be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve must stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder must not be cracked where the gas would reach welding work, sparks, flame or other possible sources of ignition.
- (b) The cylinder valve must always be opened slowly to prevent damage to the regulator. To permit quick closing, valves on fuel gas cylinders must not be opened more than 1 1/2 turns. When a special wrench is required, it must be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off



quickly in case of emergency. In the case of a manifolded or coupled cylinders, at least one such wrench must always be available for immediate use. Nothing must be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

- (c) Fuel gas must not be used from cylinders through torches or other devices which are equipped with shut-off valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.
- (d) Before a regulator is removed from a cylinder valve, the cylinder valve must always be closed and the gas released from the regulator.
- (e) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve must be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder must be discontinued, and it must be properly tagged and removed from the vessel. In the event that fuel gas should leak from the cylinder valve rather than from the valve stem and the gas cannot be shut off, the cylinder must be properly tagged and removed from the vessel. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat the cylinder need not be removed from the vessel.
- (f) If a leak should develop at a fuse plug or other safety device, the cylinder must be removed from the vessel.

(5) **Fuel gas and oxygen manifolds.**

- (a) Fuel gas and oxygen manifolds must bear the name of the substance they contain in letters at least one (1) inch high which must either be painted on the manifold or on a sign permanently attached to it.
- (b) Fuel gas and oxygen manifolds must be placed in safe and accessible locations in the open air. They must not be located within enclosed spaces.
- (c) Manifold hose connections, including both ends of the supply hose that lead to the manifold, must be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters must not be used to permit the interchange of hose. Hose connections must be kept free of grease and oil.
- (d) When not in use, manifold and header hose connections must be capped.
- (e) Nothing must be placed on top of a manifold, when in use, which will damage the manifold or interfere with the quick closing of the valves.

(6) **Hose.**

- (a) Fuel gas hose and oxygen hose must be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses must not be interchangeable. A single hose having more than one gas passage, a wall failure of which would permit the flow of one gas into the other gas passage, must not be used.

- (b) When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 8 inches must be covered by tape.
  - (c) All hose carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion or be in any way harmful to employees, must be inspected at the beginning of each shift. Defective hoses must be removed from service.
  - (d) Hose which has been subjected to flashback or which shows evidence of severe wear or damage must be tested to twice the normal pressure to which it is subject, but in no case less than two hundred psi. Defective hose or hose in doubtful condition must not be used.
  - (e) Hose couplings must be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.
  - (f) Boxes used for the stowage of gas hose must be ventilated.
- (7) **Torches.**
- (a) Clogged torch tip openings must be cleaned with suitable cleaning wires, drills or other devices designed for such purpose.
  - (b) Torches must be inspected at the beginning of each shift for leaking shut-off valves, hose couplings, and tip connections. Defective torches must not be used.
  - (c) Torches must be lighted by friction lighters or other approved devices, and not by matches or from hot work.
- (8) **Pressure regulators.** Oxygen and fuel gas pressure regulators including their related gauges must be in proper working order while in use.

### **WAC 296-304-04011 Arc welding and cutting.**

- (1) **Manual electrode holders.**
- (a) Only manual electrode holders which are specifically designed for arc welding and cutting and are of a capacity capable of safely handling the maximum rated current required by the electrodes must be used.
  - (b) Any current carrying parts passing through the portion of the holder which the arc welder or cutter grips in his hand, and the outer surfaces of the jaws of the holder, must be fully insulated against the maximum voltage encountered to ground.
- (2) **Welding cables and connectors.**
- (a) All arc welding and cutting cables must be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress, taking into account the duty cycle under which the arc welder or cutter is working.
  - (b) Only cable free from repair or splices for a minimum distance of ten feet from the cable end to which the electrode holder is connected must be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

- (c) When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable must be used. If connections are effected by means of cable lugs, they must be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs must be completely insulated.
  - (d) Cables in poor repair must not be used. When a cable, other than the cable lead referred to in (b), becomes worn to the extent of exposing bare conductors, the portion thus exposed must be protected by means of rubber and friction tapes or other equivalent insulation.
- (3) **Ground returns and machine grounding.**
- (a) A ground return cable must have a safe current carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current carrying capacity must equal or exceed the total specified maximum output capacities of all the units which it services.
  - (b) Structures or pipe lines, except pipelines containing gases or flammable liquids or conduits containing electrical circuits, may be used as part of the ground return circuit, provided that the pipe or structure has a current carrying capacity equal to that required by (2).
  - (c) When a structure or pipe line is employed as a ground return circuit, it must be determined that the required electrical contact exists at all joints. The generation of an arc, sparks or heat at any point must cause rejection of the structure as a ground circuit.
  - (d) When a structure or pipe line is continuously employed as a ground return circuit, all joints must be bonded, and periodic inspections must be conducted to ensure that no condition of electrolysis or fire hazard exists by virtue of such use.
  - (e) The frames of all arc welding and cutting machines must be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the vessel's structure, must be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.
  - (f) All ground connections must be inspected to ensure that they are mechanically strong and electrically adequate for the required current.
- (4) **Operating instructions.** You must instruct employees in the safe means of arc welding and cutting as follows:
- (a) When electrode holders are to be left unattended, the electrodes must be removed and the holders must be so placed or protected that they cannot make electrical contact with employees or conducting objects.
  - (b) Hot electrode holders must not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

- (c) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment must be opened.
  - (d) Any faulty or defective equipment must be reported to the supervisor.
- (5) **Shielding.** Whenever practicable, all arc welding and cutting operations must be shielded by noncombustible or flame-proof screens which will protect employees and other persons working in the vicinity from the direct rays of the arc.

### **WAC 296-304-04013 Uses of fissionable material in ship-breaking, shipbuilding and ship repairing.**

- (1) In ship-breaking, shipbuilding and ship repairing and related activities involving the use of and exposure to sources of ionizing radiation not only on conventionally powered but also on nuclear powered vessels, the applicable provisions of the Atomic Energy Commission's Standards for Protection Against Radiation (10 C.F.R. Part 20), relating to protection against occupational radiation exposure, must apply.
- (2) Any activity which involves the use of radioactive material, whether or not under license from the Atomic Energy Commission, must be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, must perform such work.

### **WAC 296-304-050 Scaffolds, ladders and other working surfaces-Scope and application**

All sections of this chapter which include WAC 296-304-050 in the section number apply to scaffolds, ladders and other working surfaces.

#### **WAC 296-304-05001 Scaffolds or staging.**

- (1) **General requirements.**
  - (a) All scaffolds and their supports whether of lumber, steel or other material, must be capable of supporting the load they are designed to carry with a safety factor of not less than four.
  - (b) All lumber used in the construction of scaffolds must be spruce, fir, long leaf yellow pine, Oregon pine or wood of equal strength. The use of hemlock, short leaf yellow pine, or short fiber lumber is prohibited.
  - (c) Lumber dimensions as given are nominal except where given in fractions of an inch.
  - (d) All lumber used in the construction of scaffolds must be sound, straight-grained, free from cross grain, shakes and large, loose or dead knots. It must also be free from dry rot, large checks, worm holes or other defects which impair its strength or durability.

- (e) Scaffolds must be maintained in a safe and secure condition. Any component of the scaffold which is broken, burned or otherwise defective must be replaced.
  - (f) Barrels, boxes, cans, loose bricks, or other unstable objects must not be used as working platforms or for the support of planking intended as scaffolds or working platforms.
  - (g) No scaffold must be erected, moved, dismantled or altered except under the supervision of competent persons.
  - (h) No welding, burning, riveting or open flame work must be performed on any staging suspended by means of fiber rope.
  - (i) Lifting bridles on working platforms suspended from cranes must consist of four legs so attached that the stability of the platform is assured.
  - (j) Unless the crane hook has a safety latch or is moused, the lifting bridles on working platforms suspended from cranes must be attached by shackles to the lower lifting block or other positive means must be taken to prevent them from becoming accidentally disengaged from the crane hook.
- (2) **Independent pole wood scaffolds.**
- (a) All pole uprights must be set plumb. Poles must rest on a foundation of sufficient size and strength to distribute the load and to prevent displacement.
  - (b) In light-duty scaffolds not more than 24 feet in height, poles may be spliced by overlapping the ends not less than four feet and securely nailing them together. A substantial cleat must be nailed to the lower section to form a support for the upper section except when bolted connections are used.
  - (c) All other poles to be spliced must be squared at the ends of each splice, abutted, and rigidly fastened together by not less than two cleats securely nailed or bolted thereto. Each cleat must overlap each pole end by at least 24 inches and must have a width equal to the face of the pole to which it is attached. The combined cross sectional area of the cleats must be not less than the cross sectional area of the pole.
  - (d) Ledgers must extend over two consecutive pole spaces and must overlap the poles at each end by not less than four inches. They must be left in position to brace the poles as the platform is raised with the progress of the work. Ledgers must be level and must be securely nailed or bolted to each pole and must be placed against the inside face of each pole.
  - (e) All bearers must be set with their greater dimension vertical and must extend beyond the ledgers upon which they rest.
  - (f) Diagonal bracing must be provided between the parallel poles, and cross bracing must be provided between the inner and outer poles or from the outer poles to the ground.
  - (g) Minimum dimensions and spacing of members must be in accordance with Table E-1 in WAC 296-304-07011.

- (h) Platform planking must be in accordance with the requirements of subsection (8) of this section.
- (i) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(3) **Independent pole metal scaffolds.**

- (a) Metal scaffold members must be maintained in good repair and free of corrosion.
- (b) All vertical and horizontal members must be fastened together with a coupler or locking device which will form a positive connection. The locking device must be of a type which has no loose parts.
- (c) Posts must be kept plumb during erection and the scaffold must be subsequently kept plumb and rigid by means of adequate bracing.
- (d) Posts must be fitted with bases supported on a firm foundation to distribute the load. When wooden sills are used, the bases must be fastened thereto.
- (e) Bearers must be located at each set of posts, at each level, and at each intermediate level where working platforms are installed.
- (f) Tubular bracing must be applied both lengthwise and crosswise as required.
- (g) Platform planking must be in accordance with the requirements of subsection (8) of this section.
- (h) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(4) **Wood trestle and extension trestle ladders.**

- (a) The use of trestle ladders, or extension sections or base sections of extension trestle ladders longer than 20 feet is prohibited. The total height of base and extension may, however, be more than 20 feet.
- (b) The minimum dimensions of the side rails of the trestle ladder, or the base sections of the extension trestle ladder, must be as follows:
  - (i) Ladders up to and including those 16 feet long must have side rails of not less than 1 5/16 x 2 3/4 inch lumber.
  - (ii) Ladders over 16 feet long and up to and including those 20 feet long must have side rails of not less than 1 5/16 x 3 inch lumber.
- (c) The side rails of the extension section of the extension trestle ladder must be parallel and must have minimum dimensions as follows:
  - (i) Ladders up to and including 12 feet long must have side rails of not less than 1 5/16 x 2 1/4 inch lumber.
  - (ii) Ladders over 12 feet long and up to and including those 16 feet long must have side rails of not less than 1 5/16 x 2 1/2 inch lumber.

- (iii) Ladders over 16 feet long and up to and including those 20 feet long must have side rails of not less than 1 5/16 x 3 inch lumber. (Rev. 2-17-76)
  - (d) Trestle ladders and base sections of extension trestle ladders must be so spread that when in an open position the spread of the trestle at the bottom, inside to inside, must not be less than 5 1/2 inches per foot of the length of the ladder.
  - (e) The width between the side rails at the bottom of the trestle ladder or of the base section of the extension trestle ladder must not be less than 21 inches for all ladders and sections six feet or less in length. For longer lengths of ladder the width must be increased at least one inch for each additional foot of length. The width between the side rails of the extension section of the trestle ladder must be not less than 12 inches.
  - (f) In order to limit spreading, the top ends of the side rails of both the trestle ladder and of the base section of the extension trestle ladder must be beveled, or of equivalent construction, and must be provided with a metal hinge.
  - (g) A metal spreader or locking device to hold the front and back sections in an open position, and to hold the extension section securely in the elevated position, must be a component of each trestle ladder or extension trestle ladder.
  - (h) Rungs must be parallel and level. On the trestle ladder, or on the base section of the extension trestle ladder, rungs must be spaced not less than eight inches nor more than 18 inches apart; on the extension section of the extension trestle ladder, rungs must be spaced not less than six inches nor more than 12 inches apart.
  - (i) Platform planking must be in accordance with the requirements of subsection (8) of this section, except that the width of the platform planking must not exceed the distance between the side rails.
  - (j) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.
- (5) **Painters' suspended scaffolds.**
- (a) The supporting hooks of swinging scaffolds must be constructed to be equivalent in strength to mild steel or wrought iron, must be forged with care, must not be less than 7/8 inch in diameter, and must be secured to a safe anchorage at all times.
  - (b) The ropes supporting a swinging scaffold must be equivalent in strength to first-grade 3/4 inch diameter manila rope properly rigged into a set of standard six inch blocks consisting of at least one double and one single block.
  - (c) Manila and wire must be carefully examined before each operation and thereafter as frequently as may be necessary to ensure their safe condition.
  - (d) Each end of the scaffold platform must be supported by a wrought iron or mild steel stirrup or hanger, which in turn is supported by the suspension ropes.
  - (e) Stirrups must be constructed so as to be equivalent in strength to wrought iron 3/4 inch in diameter.

- (f) The stirrups must be formed with a horizontal bottom member to support the platform, must be provided with means to support the guardrail and midrail and must have a loop or eye at the top for securing the supporting hook on the block.
- (g) Two or more swinging scaffolds must not at any time be combined into one by bridging the distance between them with planks or any other form of platform.
- (h) No more than two persons must be permitted to work at one time on a swinging scaffold built to the minimum specifications contained in this section. Where heavier construction is used, the number of persons permitted to work on the scaffold must be determined by the size and the safe working load of the scaffold.
- (i) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.
- (j) The swinging scaffold platform must be one of the three types described in (k), (l), and (m) of this subsection.
- (k) The ladder-type platform consists of boards upon a horizontal ladder-like structure, referred to herein as the ladder, the side rails of which are parallel. If this type of platform is used the following requirements must be met:
  - (i) The width between the side rails must be no more than 20 inches.
  - (ii) The side rails of ladders in ladder-type platforms must be equivalent in strength to a beam of clear straight-grained spruce of the dimensions contained in Table E-2 in WAC 296-304-07011.
  - (iii) The side rails must be tied together with tie rods. The tie rods must not be less than 5/16 inch in diameter, located no more than five feet apart, pass through the rails, and be riveted up tight against washers at both ends.
  - (iv) The rungs must be of straight-grained oak, ash, or hickory, not less than 1 1/8 inches diameter, with 7/8 inch tenons mortised into the side rails not less than 7/8 inch and must be spaced no more than 18 inches on centers.
  - (v) Flooring strips must be spaced no more than 5/8 inch apart except at the side rails, where one inch spacing is permissible.
  - (vi) Flooring strips must be cleated on their undersides.
- (l) The plank-type platform consists of planks supported on the stirrups or hangers. If this type of platform is used, the following requirements must be met:
  - (i) The planks of plank-type platforms must not be less than 2 x 10 inch lumber.
  - (ii) The platform must not be more than 24 inches in width.
  - (iii) The planks must be tied together by cleats of not less than 1 x 6 inch lumber, nailed on their undersides at intervals of not more than four feet.
  - (iv) The planks must extend not less than six inches nor more than 18 inches beyond the supporting stirrups.
  - (v) A cleat must be nailed across the platform on the underside at each end outside the stirrup to prevent the platform from slipping off the stirrup.



- (vi) Stirrup supports must not be more than 10 feet apart.
- (m) The beam-type platform consists of longitudinal side stringers with cross beams set on edge and spaced not more than four feet apart on which longitudinal platform planks are laid. If this type platform is used the following requirements must be met:
  - (i) The side stringers must be of sound, straight-grained lumber, free from knots, and of not less than 2 x 6 inch lumber, set on edge.
  - (ii) The stringers must be supported on the stirrups with a clear span between stirrups of not more than 16 feet.
  - (iii) The stringers must be bolted to the stirrups by U-bolts passing around the stirrups and bolted through the stringers with nuts drawn up tight on the inside face.
  - (iv) The ends of the stringers must extend beyond the stirrups not less than six inches nor more than 12 inches at each end of the platform.
  - (v) The platform must be supported on cross beams of 2 x 6 inch lumber between the side stringers securely nailed thereto and spaced not more than four feet on centers.
  - (vi) The platform must not be more than 24 inches wide.
  - (vii) The platform must be formed of boards 7/8 inch in thickness by not less than six inches in width, nailed tightly together, and extending to the outside face of the stringers.
  - (viii) The ends of all platform boards must rest on the top of the cross beams, must be securely nailed, and at no intermediate points in the length of the platform must there be any cantilever ends.
- (6) **Horse scaffolds.**
  - (a) The minimum dimensions of lumber used in the construction of horses must be in accordance with Table E-3 in WAC 296-304-07011.
  - (b) Horses constructed of materials other than lumber must provide the strength, rigidity and security required of horses constructed of lumber.
  - (c) The lateral spread of the legs must be equal to not less than one-third of the height of the horse.
  - (d) All horses must be kept in good repair, and must be properly secured when used in staging or in locations where they may be insecure.
  - (e) Platform planking must be in accordance with the requirements of subsection (8) of this section.
  - (f) Backrails and toeboards must be in accordance with subsection (9) of this section.
- (7) **Other types of scaffolds.** Scaffolds of a type for which specifications are not contained in this section must meet the general requirements of subsection (1), (8) and (9) of this section, must be in accordance with recognized principles of design and must be constructed in accordance with accepted standards covering such equipment.

**(8) Scaffold or platform planking.**

- (a) Except as otherwise provided in subsection (5)(k) and (m) of this section, platform planking must not be less than 2 x 10 inch lumber. Platform planking must be straight-grained and free from large or loose knots and may be either rough or dressed.
- (b) Platforms of staging must not be less than two 10 inch planks in width except in such cases as the structure of the vessel or the width of the trestle ladders make it impossible to provide such a width.
- (c) Platform planking must project beyond the supporting members at either end by at least six inches but in no case must it project more than 12 inches unless the planks are fastened to the supporting members.
- (d) Table E-4 in WAC 296-304-07011 must be used as a guide in determining safe loads for scaffold planks.

**(9) Backrails and toeboards.**

- (a) Scaffolding, staging, runways, or working platforms which are supported or suspended more than five feet above a solid surface, or at any distance above the water, must be provided with a railing which has a top rail whose upper surface is from 42 to 45 inches above the upper surface of the staging, platform, or runway and a midrail located halfway between the upper rail and the staging, platform, or runway.
- (b) Rails must be of 2 x 4 inch lumber, flat bar or pipe. When used with rigid supports, taut wire or fiber rope of adequate strength may be used. If the distance between supports is more than eight feet, rails must be equivalent in strength to 2 x 4 inch lumber. Rails must be firmly secured. Where exposed to hot work or chemicals, fiber rope rails must not be used.
- (c) Rails may be omitted where the structure of the vessel prevents their use. When rails are omitted employees working more than five feet above solid surfaces must be protected by safety belts and life lines meeting the requirements of WAC chapter [296-880](#) WAC, Unified safety standards for fall protection, and employees working over water must be protected by personal flotation devices meeting the requirements of WAC 296-304-09017(1).
- (d) Employees working from swinging scaffolds which are triced out of a vertical line below their supports or from scaffolds on paint floats subject to surging, must be protected against falling toward the vessel by a railing or a safety belt and line attached to the backrail.
- (e) When necessary, to prevent tools and materials from falling on men below, toeboards of not less than 1 x 4 inch lumber must be provided.

**(10) Access to staging.**

- (a) Access from below to staging more than five feet above a floor, deck or the ground must consist of well secured stairways, cleated ramps, fixed or portable ladders meeting the applicable requirements of WAC 296-304-05003 or rigid type noncollapsible trestles with parallel and level rungs.
- (b) Ramps and stairways must be provided with 36-inch handrails with midrails.
- (c) Ladders must be so located or other means must be taken so that it is not necessary for employees to step more than one foot from the ladder to any intermediate landing or platform.
- (d) Ladders forming integral parts of prefabricated staging are deemed to meet the requirements of these regulations.
- (e) Access from above to staging more than three feet below the point of access must consist of a straight, portable ladder meeting the applicable requirements of WAC 296-304-05003 or a Jacob's ladder properly secured, meeting the requirements of WAC 296-304-05007(4).

**WAC 296-304-05003 Ladders.****(1) General requirements.**

- (a) The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited. When ladders with such defects are discovered, they must immediately be withdrawn from service. Inspection of metal ladders must include checking for corrosion of interiors of open end, hollow rungs.
- (b) When sections of ladders are spliced, the ends must be abutted, and not fewer than 2 cleats must be securely nailed or bolted to each rail. The combined cross sectional area of the cleats must not be less than the cross sectional area of the side rail. The dimensions of side rails for their total length must be those specified in (2) or (3) of this section.
- (c) Portable ladders must be lashed, blocked or otherwise secured to prevent their being displaced. The side rails of ladders used for access to any level must extend not less than 36 inches above that level. When this is not practical, grab rails which will provide a secure grip for an employee moving to or from the point of access must be installed.
- (d) Portable metal ladders must be of strength equivalent to that of wood ladders. Manufactured portable metal ladders provided by you must be in accordance with the provisions of the United States of America Standard Safety Code for Portable Metal Ladders, A14.2-1972.
- (e) Portable metal ladders must not be used near electrical conductors nor for electric arc welding operations.

- (f) Manufactured portable wood ladders provided by the employer must be in accordance with the provisions of the United States of America Standard Safety Code for Portable Wood Ladders, A-14.1-1968.
- (2) **Construction of portable wood cleated ladders up to 30 feet in length.**
- (a) Wood side rails must be made from west coast hemlock, eastern spruce, Sitka spruce, or wood of equivalent strength. Material must be seasoned, straight-grained wood, and free from shakes, checks, decay or other defects which will impair its strength. The use of low density woods is prohibited.
  - (b) Side rails must be dressed on all sides, and kept free of splinters.
  - (c) All knots must be sound and hard. The use of material containing loose knots is prohibited. Knots must not appear on the narrow face of the rail and, when in the side face, must be not more than 1/2 inch in diameter or within 1/2 inch of the edge of the rail or nearer than 3 inches to a tread or rung.
  - (d) Pitch pockets not exceeding 1/8 inch in width, 2 inches in length and 1/2 inch in depth are permissible in wood side rails, provided that not more than one such pocket appears in each 4 feet of length.
  - (e) The width between side rails at the base must not be less than 11 1/2 inches for ladders 10 feet or less in length. For longer ladders, this width must be increased at least 1/4 inch for each additional 2 feet in length.
  - (f) Side rails must be at least 1 5/8 x 3 5/8 inches in cross section.
  - (g) Cleats (meaning rungs rectangular in cross section with the wide dimension parallel to the rails) must be of the material used for side rails, straight-grained and free from knots. Cleats must be mortised into the edges of the side rails 1/2 inch, or filler blocks must be used on the rails between the cleats. The cleats must be secured to each rail with three 10d common wire nails or fastened with through bolts or other fasteners of equivalent strength. Cleats must be uniformly spaced not more than 12 inches apart.
  - (h) Cleats 20 inches or less in length must be at least 25/32 x 3 inches in cross section. Cleats over 20 inches but not more than 30 inches in length must be at least 25/32 x 3 3/4 inches in cross section.
- (3) **Construction of portable wood cleated ladders from 30 to 60 feet in length.** Ladders from 30 to 60 feet in length must be in accordance with the specifications of (2) of this section with the following exceptions:
- (a) Rails must not be less than 2 x 6 inch lumber.
  - (b) Cleats must not be less than 1 x 4 inch lumber.
  - (c) Cleats must be nailed to each rail with five 10d common wire nails or fastened with through bolts or other fastenings of equivalent strength.

### **WAC 296-304-05005 Guarding of deck openings and edges.**

See chapter [296-880](#) WAC, Unified safety standards for fall protection.

**WAC 296-304-05007 Access to vessels.**

**Barge.** An unpowered, flat bottom, shallow draft vessel including scows, carfloats and lighters, but not ship-shaped or deep-draft barges.

**River towboat.** A shallow draft, low free board, self-propelled vessel designed to tow river barges by pushing ahead.

- (1) **Access to vessels afloat.** You must not permit employees to board or leave any vessel, except a barge or river towboat, until the following requirements have been met:
  - (a) Whenever practicable, a gangway of not less than 20 inches walking surface, of adequate strength, maintained in safe repair and safely secured must be used. If a gangway is not practicable, a substantial straight ladder, extending at least 36 inches above the upper landing surface and adequately secured against shifting or slipping must be provided. When conditions are such that neither a gangway nor a straight ladder can be used, a Jacob's ladder meeting the requirements of (4)(a) and (b) of this section may be used.
  - (b) Each side of such gangway, and the turntable if used, must have a railing with a minimum height of approximately 33 inches measured perpendicularly from rail to walking surface at the stanchion, with a midrail. Rails must be of wood, pipe, chain, wire or rope and must be kept taut at all times.
  - (c) Gangways on vessels inspected and certificated by the U.S. Coast Guard are deemed to meet the foregoing requirements, except in cases where the vessel's regular gangway is not being used.
  - (d) The gangway must be kept properly trimmed at all times.
  - (e) When a fixed tread accommodation ladder is used, and the angle is low enough to require employees to walk on the edge of the treads, cleated duckboards must be laid over and secured to the ladder.
  - (f) When the lower end of a gangway overhangs the water between the ship and the dock in such a manner that there is danger of employees falling between the ship and the dock, a net or other suitable protection must be rigged at the foot of the gangway in such a manner as to prevent employees from falling from the end of the gangway.
  - (g) If the foot of the gangway is more than one foot away from the edge of the apron, the space between them must be bridged by a firm walkway equipped with railings, with a minimum height of approximately 33 inches with midrails on both sides.
  - (h) Supporting bridles must be kept clear so as to permit unobstructed passage for employees using the gangway.
  - (i) When the upper end of the means of access rests on or flush with the top of the bulwark, substantial steps properly secured and equipped with at least one substantial handrail approximately 33 inches in height must be provided between the top of the bulwark and the deck.
  - (j) Obstructions must not be laid on or across the gangway.

- (k) The means of access must be adequately illuminated for its full length.
  - (l) Unless the construction of the vessel makes it impossible, the means of access must be located so that drafts of cargo do not pass over it. In any event loads must not be passed over the means of access while employees are on it.
- (2) **Access to vessels in drydock or between vessels.** Gangways meeting the requirements of (1)(a), (b), (i), (j) and (l) of this section must be provided for access from wing wall to vessel or, when two or more vessels, other than barges or river towboats, are lying abreast, from one vessel to another.
- (3) **Access to barges and river towboats.**
- (a) Ramps for access of vehicles to or between barges must be of adequate strength, provided with side boards, well maintained and properly secured.
  - (b) Unless employees can step safely to or from the wharf, float, barge, or river towboat, either a ramp in accordance with the requirements of (a) of this section or a safe walkway in accordance with the requirements of (1)(g) of this section must be provided. When a walkway is impracticable, a substantial straight ladder, extending at least 36 inches above the upper landing surface and adequately secured against shifting or slipping must be provided. When conditions are such that neither a walkway nor a straight ladder can be used, a Jacob's ladder in accordance with the requirements of (4) of this section may be used.
  - (c) The means of access must be in accordance with the requirements of (1)(i), (j) and (k) of this section.
- (4) **Jacob's ladders.**
- (a) Jacob's ladders must be of the double rung or flat tread type. They must be well maintained and properly secured.
  - (b) A Jacob's ladder must either hang without slack from its lashings or be pulled up entirely.

**WAC 296-304-05009 Access to and guarding of dry docks and marine railways.**

- (1) A gangway, ramp or permanent stairway of not less than 20 inches walking surface, of adequate strength, maintained in safe repair and securely fastened, must be provided between a floating dry dock and the pier or bulkhead.
- (2) Each side of such gangway, ramp or permanent stairway, including those which are used for access to wing walls from dry dock floors, must have a railing with a midrail. Such railings on gangways or ramps must be approximately 42 inches in height; and railings on permanent stairways must not be less than approximately 30 or more than approximately 34 inches in height. Rails must be of wood, pipe, chain, wire, or rope and must be kept taut at all times.
- (3) Railings meeting the requirements of (2) of this section must be provided on the means of access to and from the floors of graving docks.

- (4) Railings approximately 42 inches in height, with a midrail, must be provided on the edges of wing walls of floating dry docks and on the edges of graving docks. Sections of the railings may be temporarily removed where necessary to permit line handling while a vessel is entering or leaving the dock.
- (5) When employees are working on the floor of a floating dry dock where they are exposed to the hazard of falling into the water, the end of the dry dock must be equipped with portable stanchions and 42 inch railings with a midrail. When such a railing would be impracticable or ineffective, other effective means must be provided to prevent employees from falling into the water.
- (6) Access to wingwalls from floors of dry docks must be by ramps, permanent stairways or ladders meeting the applicable requirements of WAC 296-304-05003.
- (7) Catwalks on stiles of marine railways must be no less than 20 inches wide and must have on at least one side a guardrail and midrail meeting the requirements of WAC 296-304-05001 (9)(a) and (b).

### **WAC 296-304-05011 Access to cargo spaces and confined spaces.**

#### **(1) Cargo spaces.**

- (a) There must be at least one safe and accessible ladder in any cargo space which employees must enter.
- (b) When any fixed ladder is visibly unsafe, you must prohibit its use by employees.
- (c) Straight ladders of adequate strength and suitably secured against shifting or slipping must be provided as necessary when fixed ladders in cargo spaces do not meet the requirements of (a) of this section. When conditions are such that a straight ladder cannot be used, a Jacob's ladder meeting the requirements of WAC 296-304-0500(4) may be used.
- (d) When cargo is stowed within 4 inches of the back of ladder rungs, the ladder must be deemed "unsafe" for the purpose of this section.
- (e) Fixed ladders or straight ladders provided for access to cargo spaces must not be used at the same time that cargo drafts or other loads are entering or leaving the hold. Before using these ladders to enter or leave the hold, the employee must be required to inform the winchman or crane signalman of his intention.

#### **(2) Confined spaces.**

- (a) More than one means of access must be provided to a confined space in which employees are working and in which the work may generate a hazardous atmosphere in the space except where the structure or arrangement of the vessel makes this provision impractical.
- (b) When the ventilation ducts required by these regulations must pass through these means of access, the ducts must be of such a type and so arranged as to permit free passage of an employee through at least two of these means of access.

**WAC 296-304-05013 Working surfaces.**

- (1) When firebox floors present tripping hazards of exposed tubing or of missing or removed refractory, sufficient planking to afford safe footing must be laid while work is being carried on within the boiler.
- (2) You must provide and ensure the use of fall protection when employees work aloft or elsewhere at elevations more than 5 feet above a solid surface.
  - (a) Employees must be protected by the use of scaffolds, ladders, or personal protection equipment according to chapter [296-880](#) WAC, Unified safety standards for fall protection.
  - (b) Employees must work from scaffolds when visually restricted by:
    - (i) Blasting hoods;
    - (ii) Welding helmets; and
    - (iii) Burning goggles; except:
      - (A) For the initial and final welding or burning operation to start or complete a job such as the erection and dismantling of hung scaffolding; or
      - (B) Other similar, nonrepetitive jobs of brief duration.
- (3) For work performed in restricted quarters, such as behind boilers and in between congested machinery units and piping, work platforms at least 20 inches wide meeting the requirements of WAC 296-304-05001 (8)(b) must be used. Backrails may be omitted if bulkheading, boilers, machinery units, or piping afford proper protection against falling.
- (4) When employees are boarding, leaving, or working from small boats or floats, they must be protected by personal flotation devices meeting the requirements of WAC 296-304-09017(1).

**WAC 296-304-060 General working conditions—Scope and application.**

All sections of this chapter which include WAC 296-304-060 in the section number apply to general working conditions in shipyard employment, including work on vessels, on vessel sections, and at landside operations.

**WAC 296-304-06001 Housekeeping.**

- (1) **Good housekeeping conditions must be maintained at all times.** Adequate aisles and passageways must be maintained in all work areas. All staging platforms, ramps, stairways, walkways, aisles, and passageways on vessels or dry docks must be kept clear of all tools, materials, and equipment except that which is in use, and all debris such as welding rod tips, bolts, nuts, and similar material. Hose and electric conductors must be elevated over or placed under the walkway or working surfaces or covered by adequate crossover planks. While a walkway is being used as a working surface, that portion must be cordoned off to prevent it from being used as a walkway.



- (2) **All working areas on vessels and dry docks must be:**
  - (a) Cleared of tools, materials, and equipment that are not necessary to perform the job in progress;
  - (b) Cleared of debris, including solid and liquid wastes, at the end of each workshift or job, whichever occurs first;
  - (c) Maintained, so far as practicable, in a dry condition. When a wet process is used, the employer shall maintain drainage and provide false floors, platforms, mats, or other dry standing places. When the employer demonstrates that this procedure is not practicable, the employer must provide each employee working in the wet process with protective footwear, in accordance with WAC 296-304-09013.
- (3) Slippery conditions on walkways or working surfaces must be eliminated as they occur. If it is not practicable for you to remove slippery conditions, you must either:
  - (a) Restrict employees to designated walkways and working surfaces where you have eliminated slippery conditions; or
  - (b) Provide slip-resistant footwear in accordance with WAC 296-304-09013.
- (4) Free access must be maintained at all times to all exits and to all fire-alarm boxes or fire-extinguishing equipment.
- (5) All oils, paints, thinners, solvents waste, rags, or other flammable substances must be disposed of or kept in fire resistant covered containers when not in use.

#### **WAC 296-304-06002 Sanitation.**

- (1) **General requirements.**
  - (a) You must provide adequate and readily accessible sanitation facilities.
  - (b) You must establish and implement a schedule for servicing, cleaning, and supplying each facility to ensure it is maintained in a clean, sanitary, and serviceable condition.
- (2) **Potable water.** You must provide potable water for all employee health and personal needs and ensure that only potable water is used for these purposes.
  - (a) You must provide potable drinking water in amounts that are adequate to meet the health and personal needs of each employee.
  - (b) You must dispense drinking water from a fountain, a covered container with single-use drinking cups stored in a sanitary receptacle, or single-use bottles. You must prohibit the use of shared drinking cups, dippers, and water bottles.
- (3) **Nonpotable water.**
  - (a) You may use nonpotable water for other purposes such as firefighting and cleaning outdoor premises so long as it does not contain chemicals, fecal matter, coliform, or other substances at levels that may create a hazard for employees.
  - (b) You must clearly mark nonpotable water supplies and outlets as “not safe for health or personal use.”

(4) **Toilets.**

- (a) General requirements. You must ensure that seweried and portable toilets:
- (i) Provide privacy at all times. When a toilet facility contains more than one toilet, each toilet must occupy a separate compartment with a door and walls or partitions that are sufficiently high to ensure privacy; and
  - (ii) Are separate for each sex, except as provided in (a)(ii)(B) of this subsection;
    - (A) The number of toilets provided for each sex must be based on the maximum number of employees of that sex present at the worksite at any one time during a workshift. A single occupancy toilet room must be counted as one toilet regardless of the number of toilets it contains; and
    - (B) You do not have to provide separate toilet facilities for each sex when they will not be occupied by more than one employee at a time, can be locked from the inside, and contain at least one toilet.
  - (iii) You must establish and implement a schedule to ensure that each seweried and portable toilet is maintained in a clean, sanitary, and serviceable condition.
- (b) Minimum number of toilets. You must provide at least the following number of toilets for each sex. Portable toilets that meet the requirements in (c) of this subsection may be included in the minimum number of toilets.

**Table F-1 Minimum Number of Toilets**

Number of employees of each sex	Minimum number of toilets per sex
1 to 15	1
16 to 35	2
36 to 55	3
56 to 80	4
81 to 110	5
111 to 150	6
Over 150	1 additional toilet for each additional 40 employees

**Note to Table F-1:** When toilets will only be used by men, urinals may be provided instead of toilets, except that the number of toilets in such cases must not be reduced to less than two-thirds of the minimum specified.

- (c) Portable toilets.

- (i) You must provide portable toilets, pursuant to paragraph (4)(b) of this section and Table F-1, only when you demonstrate that it is not feasible to provide sewerated toilets, or when there is a temporary increase in the number of employees for a short duration of time.
    - (ii) You must ensure that each portable toilet is vented and equipped, as necessary, with lighting.
  - (d) Exception for normally unattended worksites and mobile work crews. The requirement to provide toilets does not apply to normally unattended worksites and mobile work crews, provided that you ensure that employees have immediately available transportation to readily accessible sanitation facilities that are maintained in a clean, sanitary, and serviceable condition and meet the other requirements of this section.
- (5) **Handwashing facilities.**
- (a) You must provide handwashing facilities at or adjacent to each toilet facility.
  - (b) You must ensure that each handwashing facility:
    - (i) Is equipped with either hot and cold or lukewarm running water and soap, or with waterless skin-cleansing agents that are capable of disinfecting the skin or neutralizing the contaminants to which the employee may be exposed; and
    - (ii) If the facility uses soap and water, it is supplied with clean, single-use hand towels stored in a sanitary container and a sanitary means for disposing of them, clean individual sections of continuous cloth toweling, or a hand-drying air blower.
  - (c) You must inform each employee engaged in the application of paints or coatings or in other operations in which hazardous or toxic substances can be ingested or absorbed about the need for removing surface contaminants from their skin's surface by thoroughly washing their hands and face at the end of the workshift and prior to eating, drinking, or smoking.
- (6) **Showers.**
- (a) When showers are required by an OSHA standard, you must provide one shower for each ten, or fraction of ten, employees of each sex who are required to shower during the same workshift.
  - (b) You must ensure that each shower is equipped with soap, hot and cold water, and clean towels for each employee who uses the shower.
- (7) **Changing rooms.** When you provide protective clothing to prevent employee exposure to hazardous or toxic substances, you must provide the following:
- (a) Changing rooms that provide privacy for each sex; and
  - (b) Storage facilities for street clothes, as well as separate storage facilities for protective clothing.

- (8) **Eating, drinking, and break areas.** You must ensure that food, beverages, and tobacco products are not consumed or stored in any area where employees may be exposed to hazardous or toxic substances.
- (9) **Waste disposal.**
- (a) You must provide waste receptacles that meet the following requirements:
    - (i) Each receptacle is constructed of materials that are corrosion resistant, leak-proof, and easily cleaned or disposable;
    - (ii) Each receptacle is equipped with a solid tight-fitting cover, unless it can be kept in clean, sanitary, and serviceable condition without the use of a cover;
    - (iii) Receptacles are provided in numbers, sizes, and locations that encourage their use; and
    - (iv) Each receptacle is emptied as often as necessary to prevent it from overflowing and in a manner that does not create a hazard for employees. Waste receptacles for food must be emptied at least every day, unless unused.
  - (b) You must not permit employees to work in the immediate vicinity of uncovered garbage that could endanger their safety and health.
  - (c) You must ensure that employees working beneath or on the outboard side of a vessel are not contaminated by drainage or waste from overboard discharges.
- (10) **Vermin control.**
- (a) To the extent reasonably practicable, you must clean and maintain the workplace in a manner that prevents vermin infestation.
  - (b) Where vermin are detected, you must implement and maintain an effective vermin-control program.

**WAC 296-304-06003 Illumination.**

- (1) All means of access and walkways leading to working areas as well as the working areas themselves must be adequately illuminated.
- (a) For landside areas, you must provide illumination that meets the levels set forth in Table F-2.

**Table F-2 Minimum Lighting Intensities in Foot-Candles**

Lumens (foot-candles)	Area or operation
3	General areas on vessels and vessel sections such as accessways, exits, gangways, stairs, and walkways.
5	General landside areas such as corridors, exits, stairs, and walkways.
5	All assigned work areas on any vessel or vessel section.
5	Landside tunnels, shafts, vaults, pumping stations, and underground work areas.
10	Landside work areas such as machine shops, electrical equipment rooms, carpenter shops, lofts, tool rooms, warehouses, and outdoor work areas.
10	Changing rooms, showers, sewer toilets, and eating, drinking, and break areas.
30	First-aid stations, infirmaries, and offices.

**Note to Table F-2:** The required illumination levels in this table do not apply to emergency or portable lights.

- (b) For vessels and vessel sections, you must provide illumination that meets the levels set forth in the table to (a) of this subsection or meet ANSI/IESNA RP-7-01.
  - (c) When adequate illumination is not obtainable by permanent lighting sources, temporary lighting may be used as supplementation.
  - (d) You must ensure that neither matches nor open-flame devices are used for lighting.
- (2) **Temporary lights must meet the following requirements:**
- (a) Temporary lights must be equipped with guards to prevent accidental contact with the bulb, except that guards are not required when the construction of the reflector is such that the bulb is deeply recessed;
  - (b) Temporary lights must be equipped with heavy duty electric cords with connections and insulation maintained in safe condition. Temporary lights must not be suspended by their electric cords unless cords and lights are designed for this means of suspension. Splices must have insulation with a capacity that exceeds that of the original insulation of the cord; and
  - (c) Cords must be kept clear of working spaces and walkways or other locations in which they are readily exposed to damage.
- (3) Exposed noncurrent-carrying metal parts of temporary lights furnished by you must be grounded either through a third wire in the cable containing the circuit conductors or through a separate wire which is grounded at the source of the current. Grounding must be in accordance with the requirements of WAC 296-304-08003(2).

- (4) Where temporary lighting from sources outside the vessel is the only means of illumination, portable emergency lighting equipment must be available to provide illumination for safe movement of employees. If natural sunlight provides sufficient illumination, portable or emergency lights are not required.
- (5) Employees must not be permitted to enter dark spaces without a suitable portable light. The use of matches and open flame lights is prohibited. In nongas free spaces, portable lights must meet the requirements of WAC 296-304-02005 (2)(i).
- (6) Temporary lighting stringers or streamers must be so arranged as to avoid overloading of branch circuits. Each branch circuit must be equipped with overcurrent protection of capacity not exceeding the rated current carrying capacity of the cord used.
- (7) Explosion-proof, self-contained lights. You must provide and ensure that each employee uses only explosion-proof, self-contained temporary and portable lights, approved for hazardous conditions by a nationally recognized testing laboratory (NRTL), in any area that the atmosphere is determined to contain a concentration of flammable vapors that are at or above ten percent of the lower explosive limit (LEL).

#### **WAC 296-304-06005 Utilities.**

##### **(1) Steam supply and hoses.**

- (a) Prior to supplying a vessel with steam from a source outside the vessel, you must ascertain from responsible vessel's representatives, having knowledge of the condition of the plant, the safe working pressure of the vessel's steam system. You must install a pressure gauge and a relief valve of proper size and capacity at the point where the temporary steam hose joins the vessel's steam piping system or systems. The relief valve must be set and capable of relieving at a pressure not exceeding the safe working pressure of the vessel's system in its present condition, and there must not be any means of isolating the relief valve from the system which it protects. The pressure gauge and relief valve must be located so as to be visible and readily accessible, and each relief valve is to be positioned so it is not likely to cause injury if steam is released.
  - (b) Steam hose and fittings must have a safety factor of not less than five, and must be used in accordance with the manufacturer's specifications.
  - (c) When steam hose is hung in a bight or bights, the weight must be relieved by appropriate lines to reduce tension on the hose and its fittings. The hose must be protected against chafing.
  - (d) Steam hose must be protected from damage and hose and temporary piping must be shielded where passing through normal work areas as to prevent accidental contact by employees.
- (2) **Electric power.** When the vessel is supplied with electric power from a source outside the vessel, the following precautions must be taken prior to energizing the vessel's circuits:
- (a) If in dry dock, the vessel must be adequately grounded.

- (b) You must ascertain from responsible vessel's representatives, having a knowledge of the condition of the vessel's electrical system, that all circuits to be energized are in a safe condition.
  - (c) All circuits to be energized must be equipped with overcurrent protection of capacity not exceeding the rated current carrying capacity of the cord used.
- (3) **Infrared electrical heat lamps.** All infrared electrical heat lamps must be equipped with guards that surround the lamps with the exception of the face, to minimize accidental contact with the lamps.

**WAC 296-304-06007 Work in confined or isolated spaces.**

When any work is performed in a confined space, except as provided in WAC 296-304-04001 (2)(c), or when an employee is working alone in an isolated location, the employee must be checked, by sight or verbal communication:

- (1) Throughout each workshift at regular intervals appropriate to the job assignment to ensure the employee's safety and health; and
- (2) At the end of the job assignment or at the end of the workshift, whichever occurs first.

**WAC 296-304-06009 Work on or in the vicinity of radar and radio.**

- (1) You must service each vessel's radar and communication systems in accordance with WAC 296-304-06016, Control of hazardous energy.
- (2) You must secure each vessel's radar and communication system so it is incapable of energizing or emitting radiation before any employee begins work:
  - (a) On or in the vicinity of the system;
  - (b) On or in the vicinity of a system equipped with a dummy load; or
  - (c) Aloft, such as on a mast or king post.
- (3) When a vessel's radar or communication system is operated, serviced, repaired, or tested, you must ensure that:
  - (a) There is no other work in progress aloft; and
  - (b) No employee is closer to the system's antenna or transmitter than the manufacturer's specified safe minimum distance for the type, model, and power of the equipment.
- (4) You must ensure that no employee enters an area designated as hazardous by manufacturers' specifications while a radar or communication system is capable of emitting radiation.
- (5) The requirements of this section do not apply when a radar or communication system is incapable of emitting radiation at levels that could injure workers in the vicinity of the system, or if the radar or communication system is incapable of energizing in a manner than could injure workers working on or in the vicinity of the system.

**WAC 296-304-06011 Work in or on lifeboats.**

- (1) Before employees are permitted to work in or on a lifeboat, either stowed or in a suspended position, you must ensure that the boat is secured independently of the releasing gear to prevent the boat from falling due to accidental tripping of the releasing gear and movement of the davits or capsizing of a boat in chocks.
- (2) Employees must not be permitted to remain in boats while the boats are being hoisted or lowered, except when you demonstrate that it is necessary to conduct operational tests or drills over water, or in the event of an emergency.
- (3) Employees must not be permitted to work on the outboard side of lifeboats stowed on their chocks unless the boats are secured by gripes or otherwise secured to prevent them from swinging outboard.

**WAC 296-304-06013 Hazardous materials.**

Definition.

**Hazardous material.** A material with one or more of the following characteristics:

- (a) Has a flash point below 140 F, closed cup, or is subject to spontaneous heating;
  - (b) Has a threshold limit value below 500 p.p.m. in the case of a gas or vapor, below 500 mg./m.<sup>3</sup> for fumes, and below 25 m.p.p.c.f. in case of a dust;
  - (c) Has a single dose oral LD50 below 500 mg./kg.;
  - (d) Is subject to polymerization with the release of large amounts of energy;
  - (e) Is a strong oxidizing or reducing agent;
  - (f) Causes first degree burns to skin in short time exposure, or is systematically toxic by skin contact; or
  - (g) In the course of normal operations, may produce dusts, gases, fumes, vapors, mists, or smokes that have one or more of the above characteristics.
- (1) No chemical product, such as a solvent or preservative; no structural material, such as cadmium or zinc coated steel, or plastic material; and no process material, such as welding filler metal; which is a hazardous material may be used until you have ascertained the potential fire, toxic, or reactivity hazards which are likely to be encountered in the handling, application, or utilization of such a material.
  - (2) In order to ascertain the hazards, as required by subsection (1) of this section, you must obtain the following items of information which are applicable to a specific product or material to be used:
    - (a) The name, address, and telephone number of the source of the information specified in this section preferably those of the manufacturer of the product or material.
    - (b) The trade name and synonyms for a mixture of chemicals, a basic structural material, or for a process material; and the chemical name and synonyms, chemical family, and formula for a single chemical.



- (c) Chemical names of hazardous ingredients, including, but not limited to, those in mixtures, such as those in: (i) Paints, preservatives, and solvents; (ii) alloys, metallic coatings, filler metals and their coatings or core fluxes; and (iii) other liquids, solids, or gases (e.g., abrasive materials).
  - (d) An indication of the percentage, by weight or volume, which each ingredient of a mixture bears to the whole mixture, and of the threshold limit value of each ingredient, in appropriate units.
  - (e) Physical data about a single chemical or a mixture of chemicals, including boiling point, in degrees Fahrenheit; vapor pressure, in millimeters of mercury; vapor density of gas or vapor (air=1); solubility in water, in percent by weight; specific gravity of material (water=1); percentage volatile, by volume, at 70°F.; evaporation rate for liquids (either butyl acetate or ether may be taken as 1); and appearance and odor.
  - (f) Fire and explosion hazard data about a single chemical or a mixture of chemicals, including flashpoint, in degrees Fahrenheit; flammable limits, in percent by volume in air; suitable extinguishing media or agents; special firefighting procedures; and unusual fire and explosion hazard information.
  - (g) Health hazard data, including threshold limit value, in appropriate units, for a single hazardous chemical or for the individual hazardous ingredients of a mixture as appropriate, effects of overexposure; and emergency and first-aid procedures.
  - (h) Reactivity data, including stability, incompatibility, hazardous decomposition products, and hazardous polymerization.
  - (i) Procedures to be followed and precautions to be taken in cleaning up and disposing of materials leaked or spilled.
  - (j) Special protection information, including use of personal protective equipment, such as respirators, eye protection, and protective clothing, and of ventilation, such as local exhaust, general, special, or other types.
  - (k) Special precautionary information about handling and storing.
  - (l) Any other general precautionary information.
- (3) The pertinent information required by subsection (2) of this section must be recorded either on United States Department of Labor Form LSB 00S-4, Safety Data Sheet, or on an essentially similar form which has been approved by the department of labor and industries. Copies of Form LSB 00S-4 may be obtained at any of the following regional offices of the occupational safety and health administration:
- (a) Pacific region. (Arizona, California, Hawaii, and Nevada.) 10353 Federal Building, 450 Golden Gate Avenue, Box 36017, San Francisco, Calif. 94102.
  - (b) Region X, OSHA, (Alaska, Washington, Idaho, and Oregon), 300 Fifth Avenue, Suite 1280, Seattle, Washington 98104-2397.

A completed SDS form must be preserved and available for inspection for each hazardous chemical on the worksite.

- (4) You must instruct employees who will be exposed to the hazardous materials as to the nature of the hazards and the means of avoiding them.
- (5) You must provide all necessary controls, and the employees must be protected by suitable personal protective equipment against the hazards identified under subsection (1) of this section and those hazards for which specific precautions are required in WAC 296-304-020 through 296-304-04013.
- (6) You provide adequate washing facilities for employees engaged in the application of paints or coatings or in other operations where contaminants can, by ingestion or absorption, be detrimental to the health of the employees. You must encourage good personal hygiene practices by informing the employees of the need for removing surface contaminants by thorough washing of hands and face prior to eating or smoking.
- (7) You must not permit eating or smoking in areas undergoing surface preparation or preservation or where ship repairing, shipbuilding, or shipbreaking operations produce atmospheric contamination.
- (8) You must not permit employees to work in the immediate vicinity of uncovered garbage and must ensure that employees working beneath or on the outboard side of a vessel are not subject to contamination by drainage or waste from overboard discharges.
- (9) Requirements of WAC [296-901-140](#), Hazard communication, will apply to ship repairing, shipbuilding, and shipbreaking when potential hazards of chemicals and communicating information concerning hazards and appropriate protective equipment is applicable to an operation.

#### **WAC 296-304-06015 First aid.**

- (1) You must ensure that emergency medical services and first aid are readily accessible.
- (2) You ensure that health care professionals are readily available for advice and consultation on matters of workplace health.
- (3) **First-aid providers.**
  - (a) You must ensure that there is an adequate number of employees trained as first-aid providers at each worksite during each workshift unless:
    - (i) There is an on-site clinic or infirmary with first-aid providers during each workshift; or
    - (ii) You can demonstrate that outside first-aid providers (i.e., emergency medical services) can reach the worksite within five minutes of a report of injury or illness. You must take appropriate steps to ascertain that emergency medical assistance will be readily available promptly if an injury or illness occurs.
  - (b) You ensure that a first-aid provider is able to reach an injured/ill employee within five minutes of a report of a serious injury, illness, or accident such as one involving cardiac arrest, acute breathing problems, uncontrolled bleeding, suffocation, electrocution, or amputation.
  - (c) You must use the following factors in determining the number and location of employees who must have first-aid training:

- (i) Size and location of each worksite;
  - (ii) The number of employees at each worksite;
  - (iii) The hazards present at each worksite; and
  - (iv) The distance of each worksite from hospitals, clinics, and rescue squads.
- (d) You must ensure that first-aid providers are trained to render first aid, including cardiopulmonary resuscitation (CPR).
- (e) You must ensure that each first-aid provider maintains current first aid and CPR certifications, such as issued by the Red Cross, American Heart Association, or other equivalent organization.
- (4) **First-aid supplies.**
- (a) You must provide and maintain adequate first-aid supplies that are readily accessible to each worksite. Your on-site infirmary or clinic containing first-aid supplies that are readily accessible to each worksite complies with this requirement.
  - (b) You must ensure that the placement, content, and amount of first-aid supplies are adequate for the size and location of each worksite, the number of employees at each worksite, the hazards present at each worksite, and the distance of each worksite from hospitals, clinics, and rescue squads.
  - (c) You must ensure that first-aid supplies are placed in a weatherproof container.
  - (d) You must maintain first-aid supplies in a dry, sterile, and serviceable condition.
  - (e) You must replenish first-aid supplies as necessary to ensure that there is an adequate supply when needed.
  - (f) You must inspect first-aid supplies at sufficient intervals to ensure that they are adequate and in a serviceable condition.
- (5) **Quick-drenching and flushing facilities.** Where the potential exists for an employee to be splashed with a substance that may result in an acute or serious injury, you must provide facilities for quick-drenching or flushing the eyes and body. You must ensure that such a facility is located for immediate emergency use within close proximity to operations where such substances are being used.
- (6) **Basket stretchers.**
- (a) You provide an adequate number of basket stretchers, or the equivalent, readily accessible to where work is being performed on a vessel or vessel section. You are not required to provide basket stretchers or the equivalent where emergency response services have basket stretchers or the equivalent that meet the requirements of this subsection (6)(a).
  - (b) You must ensure each basket stretcher, or the equivalent, is equipped with:
    - (i) Permanent lifting bridles that enable the basket stretcher, or the equivalent, to be attached to hoisting gear capable of lifting at least five thousand pounds (2,270 kg);

- (ii) Restraints that are capable of securely holding the injured/ill employee while the basket stretcher, or the equivalent, is lifted or moved; and
  - (iii) A blanket or other suitable covering for the injured/ill employee.
- (c) You store basket stretchers, or the equivalent, and related equipment (i.e., restraints, blankets) in a clearly marked location in a manner that prevents damage and protects the equipment from environmental conditions.
  - (d) You must inspect stretchers, or the equivalent, and related equipment at intervals that ensure the equipment remains in a safe and serviceable condition, but at least once a year.

### **Appendix A to WAC 296-304-06015 - First-aid kits and automated external defibrillators (nonmandatory)**

1. First-aid supplies are required to be adequate and readily accessible under WAC 296-304-06015 (1) and (4). An example of the minimal contents of a generic first-aid kit for workplace settings is described in ANSI/ISEA Z308.1-2009, "Minimum Requirements for Workplace First Aid Kits and Supplies." The contents of the kit listed in this ANSI standard should be adequate for small worksites. When larger operations or multiple operations are being conducted at the same worksite, employers should determine the need for additional first-aid kits, additional types of first-aid equipment and supplies, and additional quantities and types of supplies and equipment in the first-aid kits.
2. In a similar fashion, employers that have unique or changing first-aid needs at their worksite may need to enhance their first-aid kits. The employer can use the OSHA 300 Log, OSHA 301 Incident Report form, or other reports to identify these unique problems. Consultation from the local fire or rescue department, appropriate health care professional or local emergency room may be helpful to employers in these circumstances. By assessing the specific needs of their worksite, employers can ensure that reasonably anticipated supplies are available. Employers should assess the specific needs of their worksite periodically, and augment first-aid kits appropriately.
3. If it is reasonably anticipated that employees will be exposed to blood or other potentially infectious materials while using first-aid supplies, employers must provide appropriate personal protective equipment (PPE) in compliance with the provisions of chapter [296-823](#) WAC, bloodborne pathogens. This standard lists appropriate PPE for this type of exposure, such as gloves, gowns, face shields, masks, and eye protection.
4. Employers who provide automated external defibrillators (AEDs) at their workplaces should designate who will use AEDs and train those employees so they know how to correctly use the AEDs. Although a growing number of AEDs are now designed to be used by any person, even without training, training reinforces proper use and promotes the usefulness of AEDs as part of an effective cardiopulmonary resuscitation plan. For AEDs to be effective, employers should:
  - a. Ensure that AEDs are located so they can be utilized within three to five minutes of a report of an accident or injury;

- b. Ensure that employees use AEDs in accordance with manufacturers' specifications; and
- c. Inspect, test, and maintain AEDs in accordance with manufacturers' specifications.

### **WAC 296-304-06016 Control of hazardous energy (lockout/tags-plus).**

**Definition.** A system to control hazardous energy that consists of an energy-isolating device with a tag affixed to it, and at least one additional safety measure.

#### **(1) Scope, application, and effective dates.**

- (a) **Scope.** This section covers the servicing of machinery, equipment, and systems when the energization or start-up of machinery, equipment, or systems, or the release of hazardous energy, could endanger an employee.
- (b) **Application.**
  - (i) This section applies to the servicing of any machinery, equipment, or system that employees use in the course of shipyard employment work and that is conducted:
    - (A) In any landside facility that performs shipyard employment work; and
    - (B) On any vessel or vessel section.
  - (ii) This section applies to such servicing conducted on a vessel by any employee including, but not limited to, the ship's officers and crew unless such application is preempted by the regulations of another agency.
- (c) When other standards in this chapter require the use of a lock or tag, you must use and supplement them with the procedural and training requirements specified in this section.
- (d) **Exceptions.** This section does not apply to:
  - (i) Work on cord-and plug-connected machinery, equipment, or system, provided the employer ensures that the machinery, equipment, or system is unplugged and the plug is under the exclusive control of the employee performing the servicing;
  - (ii) Minor servicing activities performed during normal production operations, including minor tool changes and adjustments, that are routine, repetitive, and integral to the use of the machinery, equipment, or system, provided you ensure that the work is performed using measures that provide effective protection from energization, start-up, or the release of hazardous energy.

#### **(2) Lockout/tags-plus program.** You must establish and implement a written program and procedures for lockout and tags-plus systems to control hazardous energy during the servicing of any machinery, equipment, or system in shipyard employment. The program must cover:

- (a) Procedures for lockout/tags-plus systems while servicing machinery, equipment, or systems in accordance with subsection (3) of this section;

- (b) Procedures for protecting employees involved in servicing any machinery, equipment, or system in accordance with subsections (4) through (13) of this section;
- (c) Specifications for locks and tags-plus hardware in accordance with subsection (14) of this section;
- (d) Employee information and training in accordance with subsection (15) of this section;
- (e) Incident investigations in accordance with subsection (16) of this section; and
- (f) Program audits in accordance with subsection (17) of this section.

(3) **General requirements.**

- (a) You must ensure that, before any authorized employee performs servicing when energization or start-up, or the release of hazardous energy, may occur, all energy sources are identified and isolated, and the machinery, equipment, or system is rendered inoperative.
- (b) If an energy-isolating device is capable of being locked, you must ensure the use of a lock to prevent energization or start-up, or the release of hazardous energy, before any servicing is started, unless you can demonstrate that the utilization of a tags-plus system will provide full employee protection as set forth in (f) of this subsection.
- (c) If an energy-isolating device is not capable of being locked, you must ensure the use of a tags-plus system to prevent energization or start-up, or the release of hazardous energy, before any servicing is started.
- (d) Each tags-plus system shall consist of:
  - (i) At least one energy-isolating device with a tag affixed to it; and
  - (ii) At least one additional safety measure that, along with the energy isolating device and tag required in (d)(i) of this subsection, will provide the equivalent safety available from the use of a lock.
- (e) After the effective date of this section, you must ensure that each energy-isolating device for any machinery, equipment, or system is designed to accept a lock whenever the machinery, equipment, or system is extensively repaired, renovated, modified, or replaced, or whenever new machinery, equipment, or systems are installed. This requirement does not apply when a shipyard employer:
  - (i) Does not own the machinery, equipment, or system; or
  - (ii) Builds or services a vessel or vessel section according to customer specifications.
- (f) Full employee protection.
  - (i) When a tag is used on an energy-isolating device that is capable of being locked out, the tag must be attached at the same location that the lock would have been attached; and

- (ii) You must demonstrate that the use of a tags-plus system will provide a level of safety equivalent to that obtained by using a lock. In demonstrating that an equivalent level of safety is achieved, you must:
  - (A) Demonstrate full compliance with all tags-plus related provisions of this standard; and
  - (B) Implement such additional safety measures as are necessary to provide the equivalent safety available from the use of a lock.
- (g) Lockout/tags-plus coordination.
  - (i) You must establish and implement lockout/tags-plus coordination when:
    - (A) Employees on vessels and in vessel sections are servicing multiple machinery, equipment, or systems at the same time; or
    - (B) Employees on vessels, in vessel sections, and at landside facilities are performing multiple servicing operations on the same machinery, equipment, or system at the same time.
  - (ii) The coordination process must include a lockout/tags-plus coordinator and a lockout/tags-plus log. Each log must be specific to each vessel, vessel section, and landside work area.
  - (iii) You must designate a lockout/tags-plus coordinator who is responsible for overseeing and approving:
    - (A) The application of each lockout and tags-plus system;
    - (B) The verification of hazardous energy isolation before the servicing of any machinery, equipment, or system begins; and
    - (C) The removal of each lockout and tags-plus system.
  - (iv) You must ensure that the lockout/tags-plus coordinator maintains and administers a continuous log of each lockout and tags-plus system. The log must contain:
    - (A) Location of machinery, equipment, or system to be serviced;
    - (B) Type of machinery, equipment, or system to be serviced;
    - (C) Name of the authorized employee applying the lockout/tags-plus system;
    - (D) Date that the lockout/tags-plus system is applied;
    - (E) Name of authorized employee removing the lock or tags-plus system; and
    - (F) Date that lockout/tags-plus system is removed.
- (4) **Lockout/tags-plus written procedures.**
  - (a) You must establish and implement written procedures to prevent energization or start-up, or the release of hazardous energy, during the servicing of any machinery, equipment, or system. Each procedure must include:

- (i) A clear and specific outline of the scope and purpose of the lockout/tags-plus procedure;
- (ii) The means you will use to enforce compliance with the lockout/tags-plus program and procedures; and
- (iii) The steps that must be followed for:
  - (A) Preparing for shutting down and isolating of the machinery, equipment, or system to be serviced, in accordance with subsection (5) of this section;
  - (B) Applying the lockout/tags-plus system, in accordance with subsection (6) of this section;
  - (C) Verifying isolation, in accordance with subsection (7) of this section;
  - (D) Testing the machinery, equipment, or system, in accordance with subsection (8) of this section;
  - (E) Removing lockout/tags-plus systems, in accordance with subsection (9) of this section;
  - (F) Starting up the machinery, equipment, or system that is being serviced, in accordance with subsection (10) of this section;
  - (G) Applying lockout/tags-plus systems in group servicing operations, in accordance with subsection (11) of this section;
  - (H) Addressing multiemployer worksites involved in servicing any machinery, equipment, or system, in accordance with subsection (12) of this section; and
  - (I) Addressing shift or personnel changes during servicing operations, in accordance with subsection (13) of this section.

**Note to (a) of this subsection:** You need only develop a single procedure for a group of similar machines, equipment, or systems if the machines, equipment, or systems have the same type and magnitude of energy and the same or similar types of controls, and if a single procedure can satisfactorily address the hazards and the steps to be taken to control these hazards.

- (b) Your lockout procedures do not have to be in writing for servicing machinery, equipment, or systems, provided that all of the following conditions are met:
  - (i) There is no potential for hazardous energy to be released (or to reaccumulate) after shutting down, or restoring energy to, the machinery, equipment, or system;
  - (ii) The machinery, equipment, or system has a single energy source that can be readily identified and isolated;
  - (iii) The isolation and lock out of that energy source will result in complete deenergization and deactivation of the machinery, equipment, or system, and there is no potential for reaccumulation of energy;



- (iv) The energy source is isolated and secured from the machinery, equipment, or system during servicing;
- (v) Only one lock is necessary for isolating the energy source;
- (vi) The lock is under the exclusive control of the authorized employee performing the servicing;
- (vii) The servicing does not create a hazard for any other employee; and
- (viii) You, in utilizing this exception, have not had any accidents or incidents involving the activation or reenergization of this type of machinery, equipment, or system during servicing.

**(5) Procedures for shutdown and isolation.**

- (a) Before an authorized employee shuts down any machinery, equipment, or system, you must:
  - (i) Ensure that the authorized employee has knowledge of:
    - (A) The source, type, and magnitude of the hazards associated with energization or start-up of the machine, equipment, or system;
    - (B) The hazards associated with the release of hazardous energy; and
    - (C) The means to control these hazards; and
  - (ii) Notify each affected employee that the machinery, equipment, or system will be shut down and deenergized prior to servicing, and that a lockout/tags-plus system will be implemented.
- (b) You must ensure that the machinery, equipment, or system is shutdown according to the written procedures the employer established.
- (c) You must use an orderly shutdown to prevent exposing any employee to risks associated with hazardous energy.
- (d) You must ensure that the authorized employee relieves, disconnects, restrains, or otherwise renders safe all potentially hazardous energy that is connected to the machinery, equipment, or system.

**(6) Procedures for applying lockout/tags-plus systems.**

- (a) You must ensure that only an authorized employee applies a lockout/tags-plus system.
- (b) When using lockout systems, you must ensure that the authorized employee affixes each lock in a manner that will hold the energy isolating device in a safe or off position.
- (c) When using tags-plus systems, you must ensure that the authorized employee affixes a tag directly to the energy-isolating device that clearly indicates that the removal of the device from a safe or off position is prohibited.

- (d) When the tag cannot be affixed directly to the energy-isolating device you must ensure that the authorized employee locates it as close as safely possible to the device, in a safe and immediately obvious position.
  - (e) You must ensure that each energy-isolating device that controls energy to the machinery, equipment, or system is effective in isolating the machinery, equipment, or system from all potentially hazardous energy source(s).
- (7) **Procedures for verification of deenergization and isolation.**
- (a) Before servicing machinery, equipment, or a system that has a lockout/tags-plus system, you must ensure that the authorized employee, or the primary authorized employee in a group lockout/tags-plus application, verifies that the machinery, equipment, or system is deenergized and all energy sources isolated.
  - (b) You must ensure that the authorized employee, or the primary authorized employee in a group lockout/tags-plus application, continues verifying deenergization and isolation while servicing the machinery, equipment, or system.
  - (c) Each authorized employee in a group lockout/tags-plus application who will be servicing the machinery, equipment, or system must be given the option to verify that the machinery, equipment, or system is deenergized and all energy sources isolated, even when verification is performed by the primary authorized employee.
- (8) In each situation in which a lockout/tags-plus system must be removed temporarily and the machinery, equipment, or system restarted to test it or to position a component, you must ensure that the authorized employee does the following in sequence:
- (a) Clears tools and materials from the work area;
  - (b) Removes nonessential employees from the work area;
  - (c) Removes each lockout/tags-plus system in accordance with subsection (9) of this section;
  - (d) Restarts the machinery, equipment, or system and then proceeds with testing or positioning; and
  - (e) After completing testing or positioning, deenergizes and shuts down the machinery, equipment, or system and reapplies all lockout/tags-plus systems in accordance with subsections (5) through (7) of this section to continue servicing.
- (9) **Procedures for removal of lockout and tags-plus systems.**
- (a) Before removing any lockout/tags-plus system and restoring the machinery, equipment, or system to use, you must ensure that the authorized employee does the following:
    - (i) Notifies all other authorized and affected employees that the lockout/tags-plus system will be removed;
    - (ii) Ensures that all employees in the work area have been safely positioned or removed; and

- (iii) Inspects the work area to ensure that nonessential items have been removed and machinery, equipment, or system components are operationally intact.
  - (b) You ensure that each lock or tags-plus system is removed by the authorized employee who applied it.
  - (c) When the authorized employee who applied the lockout/tags-plus system is not available to remove it, you may direct removal by another authorized employee, provided you develop and incorporate into the lockout/tags-plus program the specific procedures and training that address such removal, and demonstrate that the specific procedures used provide a level of employee safety that is at least as effective in protecting employees as removal of the system by the authorized employee who applied it. After meeting these requirements, you must do the following in sequence:
    - (i) Verify that the authorized employee who applied the lockout/tags-plus system is not in the facility;
    - (ii) Make all reasonable efforts to contact the authorized employee to inform him/her that the lockout/tags-plus system has been removed; and
    - (iii) Ensure that the authorized employee who applied the lock or tags-plus system has knowledge of the removal before resuming work on the affected machinery, equipment, or system.
- (10) **Procedures for start-up.**
- (a) Before an authorized employee turns on any machinery, equipment, or system after servicing is completed, you must ensure that the authorized employee has knowledge of the source, type, and magnitude of the hazards associated with energization or start-up, and the means to control these hazards.
  - (b) You must execute an orderly start-up to prevent or minimize any additional or increased hazard(s) to employees. You must perform the following tasks before starting up the machinery, equipment, or system:
    - (i) Clear tools and materials from the work area;
    - (ii) Remove any nonessential employees from the work area; and
    - (iii) Start-up the machinery, equipment, or system according to the detailed procedures you established for that machinery, equipment, or system.
- (11) **Procedures for group lockout/tags-plus.** When more than one authorized employee services the same machinery, equipment, or system at the same time, the following procedures must be implemented:
- (a) Primary authorized employee. You must
    - (i) Assign responsibility to one primary authorized employee for each group of authorized employees performing servicing on the same machinery, equipment, or system;

- (ii) Ensure that the primary authorized employee determines the safe exposure status of each authorized employee in the group with regard to the lockout/tags-plus system;
  - (iii) Ensure that the primary authorized employee obtains approval from the lockout/tags-plus coordinator to apply and remove the lockout/tags-plus system; and
  - (iv) Ensure that the primary authorized employee coordinates the servicing operation with the coordinator when required by subsection (3)(g)(i) of this section.
- (b) Authorized employees. You must either:
- (i) Have each authorized employee apply a personal lockout/tags-plus system; or
  - (ii) Use a procedure that you can demonstrate affords each authorized employee a level of protection equivalent to the protection provided by having each authorized employee apply a personal lockout/tags-plus system. Such procedures must incorporate a means for each authorized employee to have personal control of, and accountability for, his or her protection such as, but not limited to, having each authorized employee:
    - (A) Sign a group tag (or a group tag equivalent), attach a personal identification device to a group lockout device, or performs a comparable action before servicing is started; and
    - (B) Sign off the group tag (or the group tag equivalent), remove the personal identification device, or perform a comparable action when servicing is finished.

**(12) Procedures for multiemployer worksites.**

- (a) The host employer must establish and implement procedures to protect employees from hazardous energy in multiemployer worksites. The procedures must specify the responsibilities for host and contract employers.
- (b) Host employer responsibilities. The host employer must carry out the following responsibilities in multiemployer worksites:
  - (i) Inform each contract employer about the content of the host employer's lockout/tags-plus program and procedures;
  - (ii) Instruct each contract employer to follow the host employer's lockout/tags-plus program and procedures; and
  - (iii) Ensure that the lockout/tags-plus coordinator knows about all servicing operations and communicates with each contract employer who performs servicing or works in an area where servicing is being conducted.
- (c) Contract employer responsibilities. Each contract employer must perform the following duties when working in a multiemployer worksite:

- (i) Follow the host employer's lockout/tags-plus program and procedures;
- (ii) Ensure that the host employer knows about the lockout/tags-plus hazards associated with the contract employer's work and what the contract employer is doing to address these hazards; and
- (iii) Inform the host employer of any previously unidentified lockout/tags-plus hazards that the contract employer identifies at the multiemployer worksite.

**Note to subsection (12) of this section:** The host employer may include provisions in its contract with the contract employer for the contract employer to have more control over the lockout/tags-plus program if such provisions will provide an equivalent level of protection for the host employer's and contract employer's employees as provided by subsection (1) of this section.

**(13) Procedures for shift or personnel changes.**

- (a) You must establish and implement specific procedures for shift or personnel changes to ensure the continuity of lockout/tags-plus protection.
- (b) You must establish and implement provisions for the orderly transfer of lockout/tags-plus systems between authorized employees when they are starting and ending their work shifts, or when personnel changes occur during a work shift, to prevent energization or start-up of the machinery, equipment, or system being serviced or the release of hazardous energy.

**(14) Lockout/tags-plus materials and hardware.**

- (a) You must provide locks and tags-plus system hardware used for isolating, securing, or blocking machinery, equipment, or systems from all hazardous energy sources.
- (b) You must ensure that each lock and tag is uniquely identified for the purpose of controlling hazardous energy and is not used for any other purpose.
- (c) You must ensure that each lock and tag meets the following requirements:
  - (i) Durable.
    - (A) Each lock and tag is capable of withstanding the existing environmental conditions for the maximum period of time that servicing is expected to last;
    - (B) Each tag is made so that weather conditions, wet or damp conditions, corrosive substances, or other conditions in the work area where the tag is used or stored will not cause it to deteriorate or become illegible;
  - (ii) Standardized.
    - (A) Each lock and tag is standardized in at least one of the following areas: Color, shape, or size; and
    - (B) Each tag is standardized in print and format;

- (iii) Substantial.
  - (A) Each lock is sturdy enough to prevent removal without the use of extra force or unusual techniques, such as bolt cutters or other metal-cutting tools;
  - (B) Each tag and tag attachment is sturdy enough to prevent inadvertent or accidental removal;
  - (C) Each tag attachment has the general design and basic safety characteristics of a one-piece, all environment-tolerant nylon tie;
  - (D) Each tag attachment is nonreusable, attachable by hand, self-locking, and nonreleasable, and has a minimum unlocking strength of fifty pounds;
- (iv) Identifiable. Each lock and tag indicates the identity of the authorized employee applying it; and
- (v) Each tag warns of hazardous conditions that could arise if the machinery, equipment, or system is energized and includes a legend such as one of the following: "Do Not Start," "Do Not Open," "Do Not Close," "Do Not Energize," or "Do Not Operate."

**(15) Information and training.**

- (a) Initial training. You must train each employee in the applicable requirements of this section no later than the effective date of this section.
- (b) General training content. You must train each employee who is, or may be, in an area where lockout/tags-plus systems are being used so they know:
  - (i) The purpose and function of your lockout/tags-plus program and procedures;
  - (ii) The unique identity of the locks and tags to be used in the lockout/tags-plus system, as well as the standardized color, shape or size of these devices;
  - (iii) The basic components of the tags-plus system: An energy-isolating device with a tag affixed to it and an additional safety measure;
  - (iv) The prohibition against tampering with or removing any lockout/tags-plus system; and
  - (v) The prohibition against restarting or reenergizing any machinery, equipment, or system being serviced under a lockout/tags-plus system.
- (c) Additional training requirements for affected employees. In addition to training affected employees in the requirements in (b) of this subsection, you must also train each affected employee so he/she knows:
  - (i) The use of your lockout/tags-plus program and procedures;
  - (ii) That affected employees are not to apply or remove any lockout/tags-plus system; and

- (iii) That affected employees are not to bypass, ignore, or otherwise defeat any lockout/tags-plus system.
- (d) Additional training requirements for authorized employees. In addition to training authorized employees in the requirements in (b) and (c) of this subsection, you must also train each authorized employee so he/she knows:
  - (i) The steps necessary for the safe application, use, and removal of lockout/tags-plus systems to prevent energization or start-up or the release of hazardous energy during servicing of machinery, equipment, or systems;
  - (ii) The type of energy sources and the magnitude of the energy available at the worksite;
  - (iii) The means and methods necessary for effective isolation and control of hazardous energy;
  - (iv) The means for determining the safe exposure status of other employees in a group when the authorized employee is working as a group's primary authorized employee;
  - (v) The requirement for tags to be written so they are legible and understandable to all employees;
  - (vi) The requirement that tags and their means of attachment be made of materials that will withstand the environmental conditions encountered in the workplace;
  - (vii) The requirement that tags be securely attached to energy-isolating devices so they cannot be accidentally removed while servicing machinery, equipment, or systems;
  - (viii) That tags are warning devices, and alone do not provide physical barriers against energization or start-up, or the release of hazardous energy, provided by locks, and energy-isolating devices; and
  - (ix) That tags must be used in conjunction with an energy-isolating device to prevent energization or start-up or the release of hazardous energy.
- (e) Additional training for lockout/tags-plus coordinator. In addition to training lockout/tags-plus coordinators in the requirements in (b), (c), and (d) of this subsection, you must train each lockout/tags-plus coordinator so he/she knows:
  - (i) How to identify and isolate any machinery, equipment, or system that is being serviced; and
  - (ii) How to accurately document lockout/tags-plus systems and maintain the lockout/tags-plus log.
- (f) Employee retraining.
  - (i) You must retrain each employee, as applicable, whenever:

- (A) There is a change in his/her job assignment that presents new hazards or requires a greater degree of knowledge about your lockout/tags-plus program or procedures;
  - (B) There is a change in machinery, equipment, or systems to be serviced that presents a new energy-control hazard;
  - (C) There is a change in your lockout/tags-plus program or procedures; or
  - (D) It is necessary to maintain the employee's proficiency.
- (ii) You must also retrain each employee, as applicable, whenever an incident investigation or program audit indicates that there are:
    - (A) Deviations from, or deficiencies in, the employer's lockout/tags-plus program or procedures; or
    - (B) Inadequacies in an employee's knowledge or use of the lockout/tags-plus program or procedures.
  - (iii) You must ensure that retraining establishes the required employee knowledge and proficiency your lockout/tags-plus program and procedures and in any new or revised energy-control procedures.
- (g) Upon completion of employee training, you must keep a record that the employee accomplished the training, and that this training is current. The training record must contain at least the employee's name, date of training, and the subject of the training.

**(16) Incident investigation.**

- (a) You must investigate each incident that resulted in, or could reasonably have resulted in, energization or start-up, or the release of hazardous energy, while servicing machinery, equipment, or systems.
- (b) Promptly but not later than twenty-four hours following the incident you must initiate an incident investigation and notify each employee who was, or could reasonably have been, affected by the incident.
- (c) You must ensure that the incident investigation is conducted by at least one employee who has the knowledge of, and experience in, your lockout/tags-plus program and procedures, and in investigating and analyzing incidents involving the release of hazardous energy. You may also use additional individuals to participate in investigating the incident.
- (d) You must ensure that the individual(s) conducting the investigation prepare(s) a written report of the investigation that includes:
  - (i) The date and time of the incident;
  - (ii) The date and time the incident investigation began;
  - (iii) Location of the incident;
  - (iv) A description of the incident;



- (v) The factors that contributed to the incident;
  - (vi) A copy of any lockout/tags-plus log that was current at the time of the incident; and
  - (vii) Any corrective actions that need to be taken as a result of the incident.
- (e) You review the written incident report with each employee whose job tasks are relevant to the incident investigation findings, including contract employees when applicable.
  - (f) You must ensure that the incident investigation and written report are completed, and all corrective actions implemented, within thirty days following the incident.
  - (g) If you demonstrate that it is infeasible to implement all of the corrective actions within thirty days you must prepare a written abatement plan that contains an explanation of the circumstances causing the delay, a proposed timetable for the abatement, and a summary of the steps you are taking in the interim to protect employees from hazardous energy while servicing machinery, equipment, or systems.

**(17) Program audits.**

- (a) You must conduct an audit of the lockout/tags-plus program and procedures currently in use at least annually to ensure that the procedures and the requirements of this section are being followed and to correct any deficiencies.
- (b) You must ensure that the audit is performed by:
  - (i) An authorized employee other than the one(s) currently using the energy control procedure being reviewed; or
  - (ii) Individuals other than an authorized employee who are knowledgeable about your lockout/tags-plus program and procedures and the machinery, equipment, or systems being audited.
- (c) You must ensure that the audit includes:
  - (i) A review of the written lockout/tags-plus program and procedures;
  - (ii) A review of the current lockout/tags-plus log;
  - (iii) Verification of the accuracy of the lockout/tags-plus log;
  - (iv) A review of incident reports since the last audit;
  - (v) A review conducted between the auditor and authorized employees regarding the authorized employees' responsibilities under the lockout systems being audited; and
  - (vi) A review conducted between the auditor and affected and authorized employees regarding their responsibilities under the tags-plus systems being audited.
- (d) You must ensure that, within fifteen days after completion of the audit, the individual(s) who conducted the audit prepare and deliver to you a written audit report that includes at least:

- (i) The date of the audit;
  - (ii) The identity of the individual(s) who performed the audit;
  - (iii) The identity of the procedure and machinery, equipment, or system that were audited;
  - (iv) The findings of the program audit and recommendations for correcting deviations or deficiencies identified during the audit;
  - (v) Any incident investigation reports since the previous audit; and
  - (vi) Descriptions of corrective actions you have taken in response to the findings and recommendations of any incident investigation reports prepared since the previous audit.
- (e) You must promptly communicate the findings and recommendations in the written audit report to each employee having a job task that may be affected by such findings and recommendations.
  - (f) You must correct the deviations or inadequacies in the lockout/tags-plus program within fifteen days after receiving the written audit report.

(18) **Recordkeeping.**

- (a) Table R-1 specifies what records you must retain and how long you must retain them:

***Table R-1 Retention of Records Required by WAC 296-304-06016***

The employer must keep the following records	For at least
Current lockout/tags-plus program and procedures	Until replaced by updated program and procedures
Training records	Until replaced by updated records for each type of training
Incident investigation reports	Until the next program audit is completed
Program audit report	12 months after being replaced by the next audit report

- (b) You must make all records required by this section available to employees, their representatives, and the director.

(19) **Appendices.**

Nonmandatory Appendix A to this section is a guideline to assist employers and employees in complying with the requirements of this section, and to provide them with other useful information. The information in Appendix A does not add to, or in any way revise, the requirements of this section.

**Appendix A to WAC 296-304-06016 (Nonmandatory) - Typical minimal lockout/tags-plus procedures general lockout/tags-plus procedure.**

Lockout/tags-plus procedure for (name of company for single procedure or identification of machinery, equipment, or system if multiple procedures used).

**Purpose**

This procedure establishes the minimum requirements for the lockout/tags-plus application of energy-isolating devices on vessels and vessel sections, and for landside facilities whenever servicing is done on machinery, equipment, or systems in shipyards. This procedure shall be used to ensure that all potentially hazardous energy sources have been isolated and the machinery, equipment, or system to be serviced has been rendered inoperative through the use of lockout or tags-plus procedures before employees perform any servicing when the energization or start-up of the machinery, equipment, or system, or the release of hazardous energy could cause injury.

**Compliance with this program**

All employees are required to comply with the restrictions and limitations imposed on them during the use of lockout or tags-plus applications. Authorized employees are required to perform each lockout or tags-plus application in accordance with this procedure. No employee, upon observing that machinery, equipment, or systems are secured using lockout or tags-plus applications, shall attempt to start, open, close, energize, or operate that machinery, equipment, or system.

**Procedures for lockout/tags-plus systems**

- (1) Notify each affected employee that servicing is required on the machinery, equipment, or system, and that it must be isolated and rendered inoperative using a lockout or tags-plus system.
- (2) The authorized employee shall refer to shipyard employer's procedures to identify the type and magnitude of the energy source(s) that the machinery, equipment, or system uses, shall understand the hazards of the energy, and shall know the methods to control the energy source(s).
- (3) If the machinery, equipment, or system is operating, shut it down in accordance with the written procedures (depress the stop button, open switch, close valve, etc.) established by the employer.
- (4) Secure each energy-isolating device(s) through the use of a lockout or tags-plus system (for instance, disconnecting, blanking, and affixing tags) so that the energy source is isolated and the machinery, equipment, or system is rendered inoperative.
- (5) Lockout system. Affix a lock to each energy-isolating device(s) with assigned individual lock(s) that will hold the energy isolating device(s) in a safe or off position. Potentially hazardous energy (such as that found in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be controlled by methods such as grounding, repositioning, blocking, bleeding down, etc.

- (6) Tags-plus system. Affix a tag to each energy-isolating device and provide at least one additional safety measure that clearly indicates that removal of the device from the safe or off position is prohibited.

Potentially hazardous energy (such as that found in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems and air, gas, steam, or water pressure, etc.) must be controlled by methods such as grounding, repositioning, blocking, bleeding down, etc.

- (7) Ensure that the machinery, equipment, or system is relieved, disconnected, restrained, or rendered safe from the release of all potentially hazardous energy by checking that no personnel are exposed, and then verifying the isolation of energy to the machine, equipment, or system by operating the push button or other normal operating control(s), or by testing to make certain it will not operate.

**CAUTION:** Return operating control(s) to the safe or off position after verifying the isolation of the machinery, equipment, or system.

- (8) The machinery, equipment, or system is now secured by a lockout or tags-plus system, and servicing by the authorized person may be performed.

#### **Procedures for removal of lockout/tags-plus systems**

When servicing is complete and the machinery, equipment, or system is ready to return to normal operating condition, the following steps shall be taken:

- (1) Notify each authorized and affected employee(s) that the lockout/tags-plus system will be removed and the machinery, equipment, or system reenergized.
- (2) Inspect the work area to ensure that all employees have been safely positioned or removed.
- (3) Inspect the machinery, equipment, or system and the immediate area around the machinery, equipment, or system to ensure that nonessential items have been removed and that the machinery, equipment, or system components are operationally intact.
- (4) Reconnect the necessary components, remove the lockout/tags-plus material and hardware, and reenergize the machinery, equipment, or system through the established detailed procedures determined by the employer.
- (5) Notify all affected employees that servicing is complete and the machinery, equipment, or system is ready for testing or use.

#### **WAC 296-304-06017 Retention of DOT markings, placards, and labels.**

- (1) Any employer who receives a package of hazardous material that is required to be marked, labeled, or placarded in accordance with the U.S. Department of Transportation Hazardous Materials Regulations (49 C.F.R. parts 171 through 180) must retain those markings, labels, and placards on the package until the packaging is sufficiently cleaned of residue and purged of vapors to remove any potential hazards.

- (2) Any employer who receives a freight container, rail freight car, motor vehicle, or transport vehicle that is required to be marked or placarded in accordance with the U.S. Department of Transportation Hazardous Materials Regulations must retain those markings and placards on the freight container, rail freight car, motor vehicle, or transport vehicle until the hazardous materials are sufficiently removed to prevent any potential hazards.
- (3) You must maintain markings, placards, and labels in a manner that ensures that they are readily visible.
- (4) For nonbulk packages that will not be reshipped, the requirements of this section are met if a label or other acceptable marking is affixed in accordance with WAC [296-901-14012](#), Labels and other forms of warning and WAC [296-901-14014](#), Safety data sheets.
- (5) For the purposes of this section, the term “hazardous material” and any other terms not defined in this section have the same definition as specified in the U.S. Department of Transportation Hazardous Materials Regulations.

### **WAC 296-304-06018 Motor vehicle safety equipment, operation, and maintenance.**

#### **(1) Application.**

- (a) This section applies to any motor vehicle used to transport employees, materials, or property at worksites engaged in shipyard employment. This section does not apply to motor vehicle operation on public streets and highways.
- (b) The requirements of this section apply to employer-provided motor vehicles. The requirements of subsections (2)(b) and (d) and (3)(b) of this section also apply to employee-provided motor vehicles.
- (c) Only the requirements of subsection (2)(a) through (c) of this section apply to powered industrial trucks, as defined in chapter [296-863](#) WAC. The maintenance, inspection, operation, and training requirements in chapter [296-863](#) WAC continue to apply to powered industrial trucks used for shipyard employment.

#### **(2) Motor vehicle safety equipment.**

- (a) You must ensure that each motor vehicle acquired or initially used after the effective date of this rule is equipped with a safety belt for each employee operating or riding in the motor vehicle. This requirement does not apply to any motor vehicle that was not equipped with safety belts at the time of manufacture.
- (b) You must ensure that each employee uses a safety belt, securely and tightly fastened, at all times while operating or riding in a motor vehicle.
- (c) You must ensure that vehicle safety equipment is not removed from any employer-provided vehicle. You must replace safety equipment that is removed.
- (d) You must ensure that each motor vehicle used to transport an employee has firmly secured seats for each employee being transported and that all employees being transported are using such seats.

**(3) Motor vehicle maintenance and operation.**

- (a) You ensure that each motor vehicle is maintained in a serviceable and safe operating condition, and removed from service if it is not in such condition.
- (b) You ensure that, before a motor vehicle is operated, any tools and materials being transported are secured if their movements may create a hazard for employees.
- (c) You must implement measures to ensure that motor vehicle operators are able to see, and avoid harming, pedestrians and bicyclists at shipyards. Measures that you may implement to comply with this requirement include:
  - (i) Establishing dedicated travel lanes for motor vehicles, bicyclists, and pedestrians;
  - (ii) Installing crosswalks and traffic control devices such as stop signs, mirrors at blind spots, or physical barriers to separate travel lanes;
  - (iii) Establishing appropriate speed limits for all motor vehicles;
  - (iv) Establishing “no drive” times to allow for safe movement of pedestrians;
  - (v) Providing reflective vests or other gear so pedestrians and bicyclists are clearly visible to motor vehicle operators;
  - (vi) Ensuring that bicycles have reflectors, lights, or other equipment to maximize visibility of the bicyclist; or
  - (vii) Other measures that you can demonstrate are as effective in protecting pedestrians and bicyclists as those measures specified in this section.

**Reference:** See chapter [296-864](#) WAC, Split (multipiece) rim and single-piece rim wheels, for requirements relating to servicing multipiece and single-piece rim wheels.

***WAC 296-304-070 Gear and equipment for rigging and materials handling—Scope and application.***

All sections of this chapter which include WAC 296-304-070 in the section number apply to gear and equipment for rigging and materials handling.

**WAC 296-304-07001 Inspection.**

- (1) All gear and equipment provided by you for rigging and materials handling must be inspected before each shift and, when necessary, at intervals during its use to ensure that is safe. Defective gear must be removed and repaired or replaced before further use.
- (2) The safe working load of gear as specified in WAC 296-304-07003 and 296-304-07005 must not be exceeded.

**WAC 296-304-07003 Ropes, chains and slings.**

- (1) **Manila rope and manila rope slings.** You must ensure that manila rope and manila-rope slings:
  - (a) Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one;
  - (b) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and
  - (c) Not be used without affixed and legible identification markings as required by (a) of this subsection.
- (2) **Wire rope and wire rope slings.**
  - (a) You must ensure that wire rope and wire rope slings:
    - (i) Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one;
    - (ii) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and
    - (iii) Not be used without affixed and legible identification markings as required by (a)(i) of this subsection.
  - (b) Protruding ends of strands in splices on slings and bridles must be covered or blunted.
  - (c) Where U-bolt wire rope clips are used to form eyes, you must use Table G-1 in WAC 296-304-07011 to determine the number and spacing of clips. You must apply the U-bolt so that the “U” section is in contact with the dead end of the rope.
  - (d) Wire rope must not be secured by knots.
- (3) **Chains and chain slings.**
  - (a) You must ensure that chain and chain slings:
    - (i) Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one;
    - (ii) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and
    - (iii) Not be used without affixed and legible identification markings as required by (a)(i) of this subsection.

- (b) All sling chains, including end fastenings, must be given a visual inspection before being used on the job. A thorough inspection of all chains in use must be made every 3 months. Each chain must bear an indication of the month in which it was thoroughly inspected. The thorough inspection must include inspection for wear, defective welds, deformation and increase in length or stretch.
- (c) You must note interlink wear, not accompanied by stretch in excess of 5 percent, and remove the chain from service when maximum allowable wear at any point of link, as indicated in Table G-2 in WAC 296-304-07011, has been reached.
- (d) Chain slings must be removed from service when, due to stretch, the increase in length of a measured section exceeds five percent; when a link is bent, twisted or otherwise damaged; or when raised scarfs or defective welds appear.
- (e) All repairs to chains must be made under qualified supervision. Links or portions of the chain found to be defective as described in (d) of this section must be replaced by links having proper dimensions and made of material similar to that of the chain. Before repaired chains are returned to service, they must be proof tested to the proof test load recommended by the manufacturer.
- (f) Wrought iron chains in constant use must be annealed or normalized at intervals not exceeding six months when recommended by the manufacturer. The chain manufacturer must be consulted for recommended procedures for annealing or normalizing. Alloy chains must never be annealed.
- (g) A load must not be lifted with a chain having a kink or knot in it. A chain must not be shortened by bolting, wiring or knotting.

#### **WAC 296-304-07005 Shackles and hooks.**

(1) **You must ensure that shackles:**

- (a) Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load;
- (b) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and
- (c) Not be used without affixed and legible identification markings as required by (a) of this subsection.

(2) **Hooks.**

- (a) The manufacturer's recommendations must be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable manufacturer's recommendations are available must be tested to twice the intended safe working load before they are initially put into use. You must maintain a record of the dates and results of such tests.
- (b) Loads must be applied to the throat of the hook since loading the point overstresses and bends or springs the hook.



- (c) Hooks must be inspected periodically to see that they have not been bent by overloading. Bent or sprung hooks must not be used.

### **WAC 296-304-07007 Chain falls and pull-lifts.**

- (1) Chain falls and pull-lifts must be clearly marked to show the capacity and the capacity must not be exceeded.
- (2) Chain falls must be regularly inspected to ensure that they are safe, particular attention being given to the lift chain, pinion, sheaves and hooks for distortion and wear. Pull-lifts must be regularly inspected to ensure that they are safe, particular attention being given to the ratchet, pawl, chain and hooks for distortion and wear.
- (3) Straps, shackles, and the beam or overhead structure to which a chain fall or pull-lift is secured must be of adequate strength to support the weight of load plus gear. The upper hook must be moused or otherwise secured against coming free of its support.
- (4) Scaffolding must not be used as a point of attachment for lifting devices, such as tackles, chain falls, and pull-lifts unless the scaffolding is specifically designed for that purpose.

### **WAC 296-304-07009 Hoisting and hauling equipment.**

- (1) **Derrick and crane certification:**
  - (a) Derricks and cranes which are part of, or regularly placed aboard barges, other vessels, or on wingwalls of floating drydocks, and are used to transfer materials or equipment from or to a vessel or drydock, must be tested and certificated in accordance with the standards provided in WAC 296-304-130 gear certification, by persons accredited for that purpose.
  - (b) Subsection (a) of this section must take effect 180 days after the effective date of the amendment.
- (2) **The moving parts of hoisting and hauling equipment must be guarded.**
- (3) **Mobile crawler or truck cranes used on a vessel:**
  - (a) The maximum manufacturer's rated safe working loads for the various working radii of the boom and the maximum and minimum radii at which the boom may be safely used with and without outriggers must be conspicuously posted near the controls and must be visible to the operator. A radius indicator must be provided.
  - (b) The posted safe working loads of mobile crawler or truck cranes under the conditions of use must not be exceeded.
- (4) Accessible areas within the swing radius of the outermost part of the body of a revolving derrick or crane whether permanently or temporarily mounted, must be guarded in such a manner as to prevent an employee from being in such a position as to be struck by the crane or caught between the crane and fixed parts of the vessel or of the crane itself.
- (5) **Marine railways.** The cradle or carriage on the marine railway must be positively blocked or secured when in the hauled position to prevent it from being accidentally released.

**WAC 296-304-07011 Use of gear.**

- (1) Loads must be safely rigged before being hoisted.
- (2) Plates must be handled on and off hulls by means of shackles whenever possible. Clips or pads of ample size must be welded to the plate to receive the shackle pins whenever there are no holes in the plate. When it is not possible to make holes in or to weld pads to the plate, alligator tongs, grab hooks, grab clamps or screw clamps may be used. In such cases special precautions must be taken to keep employees from under such lifts.
- (3) Tag lines must be provided on loads likely to swing or to need guidance.
- (4) When slings are secured to eyebolts, the slings must be so arranged, using spreaders if necessary, that the pull is within 20 degrees of the axis of the bolt.
- (5) Slings must be padded by means of wood blocks or other suitable material where they pass over sharp edges or corners of loads so as to prevent cutting or kinking.
- (6) Skips must be rigged to be handled by not less than 3 legged bridles, and all legs must always be used. When open end skips are used, means must be taken to prevent the contents from falling.
- (7) Loose ends of idle legs of slings in use must be hung on the hook.
- (8) Employees must not be permitted to ride the hook or the load.
- (9) Loads (tools, equipment or other materials) must not be swung or suspended over the heads of employees.
- (10) Pieces of equipment or structure susceptible to falling or dislodgement must be secured or removed as early as possible.
- (11) An individual who is familiar with the signal code in use must be assigned to act as a signalman when the hoist operator cannot see the load being handled. Communications must be made by means of clear and distinct visual or auditory signals except that verbal signals must not be permitted.
- (12) Pallets, when used, must be of such material and construction and so maintained as to safely support and carry the loads being handled on them.
- (13) A section of hatch through which materials or equipment are being raised, lowered, moved, or otherwise shifted manually or by a crane, winch, hoist, or derrick, must be completely opened. The beam or pontoon left in place adjacent to an opening must be sufficiently lashed, locked or otherwise secured to prevent it from moving so that it cannot be displaced by accident.
- (14) Hatches must not be opened or closed while employees are in the square of the hatch below.
- (15) Before loads or empty lifting gear are raised, lowered, or swung, clear and sufficient advance warning must be given to employees in the vicinity of such operations.
- (16) At no time will an employee be permitted to place himself or herself in a hazardous position between a swinging load and a fixed object.

**TABLE E-1 DIMENSIONS AND SPACING OF WOOD  
INDEPENDENT-POLE SCAFFOLD MEMBERS**

Structural Members	Light Duty (Up to 25 pounds per square foot)			Heavy duty (25 to 75 pounds per square foot)		
	Height in feet			Height in feet		
	<24	>24<40	40<60	<24	>24<40	40<60
Poles or uprights (in inches)	2x4	3x4 or 2x6	4x4	3x4	4x4	4x6
Bearer (in inches)	2x4	2x6	2x6	2x8	2x8	2x10
Ledgers (in inches)	2x6	2x6	2x6	2x8	2x8	2x8
Stringer (not supporting) bearers) (in inches)	1x6	1x6	1x6	1x6	1x6	1x6
Braces (in inches)	1x4	1x6	1x6	1x6	1x6	1x6
Pole spacing-longitudinally (in feet)	7-1/2	7-1/2	7-1/2	7	7	7
Pole spacing-transversely (in feet)	6-1/2 min	7-1/2 min	8-1/2 min	6-1/2	10	10
Ledger spacing-vertically (in feet)	7	7	7	4-1/2	4-1/2	4-1/2

**TABLE E-2 SPECIFICATIONS FOR SIDE RAILS OF LADDERS**

Length (in feet)	Cross section (in inches)	
	At ends	At Center
15	1-7/8 x 2-3/4	1-7/8 x 3-3/4
16	1-7/8 x 2-3/4	1-7/8 x 3-3/4
17	1-7/8 x 3	1-7/8 x 4
18	1-7/8 x 3	1-7/8 x 4
20	1-7/8 x 3	1-7/8 x 4-1/2
24	1-7/8 x 3	1-7/8 x 4-1/2

**TABLE E-3 SPECIFICATIONS FOR THE CONSTRUCTION OF HORSES**

Structural Members	Height in feet		
	<10	>10<16	16<20
Legs	2x4	3x4	4x6
Bearers or headers	2x6	2x8	4x6
Crossbraces	2x4 or 1/8	2x4	2x6
Longitudinal braces	2x4	2x6	2x6

[Codification note: The graphic presentation of this table has been varied in order that it would fall within the printing specifications for the Washington Administrative Code. The following table had lumber dimensions in the table heading typed in vertically across the page while the remainder of the table was typed horizontally on the page. The "Span in Feet" materials (6 through 16) which ran top to bottom has been switched to run left to right on the page. The "Lumber dimensions in inches" which ran left to right on the page has been switched to run top to bottom on the page.]

**TABLE E-4 SAFE CENTER LOADS FOR SCAFFOLD PLANK OF 1,100 POUNDS FIBER STRESS**

Lumber dimensions in inches	Span in feet					
	6	8	10	12	14	16
A-2x10 B-1-5/8 x 9-1/2	256	192	153	128	110	---
A-2 x 12 B-1-5/8 x 11-1/2	309	232	186	155	133	116
A-3 x 8 B-2-5/8 x 7-1/2	526	395	316	263	225	197
A-3 x 10 B-2-5/8 x 9-1/2	667	600	400	333	286	250
A-3 x 12 B-2-5/8 x 11-1/2	807	605	484	404	346	303

(A)-Rough lumber.

(B)-Dressed lumber.

**TABLE G-1 NUMBER AND SPACING OF U-BOLT WIRE ROPE**

Number of Clips

Improved plow steel rope diameter (inches)	Drop forged	Other material	Minimum spacing (inches)
*	...	...	...
1/2	3	4	3
5/8	3	4	3-3/4
3/4	4	5	4-1/2
7/8	4	5	5-1/4
1	4	6	6
1-1/8	5	6	6-3/4
1-1/4	5	7	7-1/2
1-3/8	6	7	8-1/4
1-1/2	6	8	9

\* Three clips shall be used on wire size less than 1/2-inch diameter.

**TABLE G-2 MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK**

Chain size in inches	Maximum allowable wear in fraction of inches
1/4 (9/32)	3/64
3/8	5/64
1/2	7/64
5/8	9/64
3/4	5/32
7/8	1-1/64
1	3/16
1-1/8	7/32
1-1/4	
1-3/8	9/32
1-1/2	5/16
1-3/4	1-1/32

**WAC 296-304-07013 Qualifications of operators.**

- (1) When ship's gear is used to hoist materials aboard, a competent person must determine that the gear is properly rigged, that it is in safe condition, and that it will not be overloaded by the size and weight of the lift.
- (2) Only those employees who understand the signs, notices, and operating instructions, and are familiar with the signal code in use, must be permitted to operate a crane, winch, or other power operated hoisting apparatus.
- (3) No employee known to have defective uncorrected eyesight or hearing, or to be suffering from heart disease, epilepsy, or similar ailments which may suddenly incapacitate him, must be permitted to operate a crane, winch or other power operated hoisting apparatus.

- (4) No minor under eighteen years of age must be employed in occupations involving the operation of any power-driven hoisting apparatus or assisting in such operations by work such as hooking on, loading slings, rigging gear, etc.

### ***WAC 296-304-080 Tools and related equipment-Scope and application.***

All sections of this chapter which include WAC 296-304-080 in the section number apply to tools and related equipment.

#### **WAC 296-304-08001 General precautions.**

- (1) Hand lines, slings, tackles of adequate strength, or carriers such as tool bags with shoulder straps must be provided and used to handle tools, materials, and equipment so that employees will have their hands free when using ship's ladders and access ladders. The use of hose or electric cords for this purpose is prohibited.
- (2) When air tools of the reciprocating type are not in use, the discs and tools must be removed.
- (3) All portable, power-driven circular saws must be equipped with guards above and below the base plate or shoe. The upper guard must cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard must cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard must automatically and instantly return to the covering position.
- (4) The moving parts of machinery on dry docks must be guarded.
- (5) Before use, pneumatic tools must be secured to the extension hose or whip by some positive means to prevent the tool from becoming accidentally disconnected from the whip.
- (6) The moving parts of drive mechanisms, such as gearing and belting on large portable tools, must be adequately guarded.
- (7) Headers, manifolds, and widely spaced hose connections on compressed airlines must bear the word "air" in letters at least 1 inch high, which must be painted either on the manifolds or separate hose connections, or on signs permanently attached to the manifolds or connections. Grouped air connections may be marked in one location.
- (8) Before use, compressed air hose must be examined. Visibly damaged and unsafe hose must not be used.

#### **WAC 296-304-08003 Portable electric tools.**

- (1) The frames of portable electric tools and appliances, except double insulated tools approved by Underwriters' Laboratories, must be grounded either through a third wire in the cable containing the circuit conductors or through a separate wire which is grounded at the source of the current.

- (2) Grounding circuits, other than by means of the structure of the vessel on which the tool is being used, must be checked to ensure that the circuit between the ground and the grounded power conductor has resistance which is low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.
- (3) Portable electric tools which are held in the hand must be equipped with switches of a type which must be manually held in the closed position.
- (4) Worn or frayed electric cables must not be used.
- (5) You must notify the officer in charge of the vessel before using electric power tools operated with the vessel's current.

**WAC 296-304-08005 Hand tools.**

- (1) You must not issue or permit the use of unsafe hand tools.
- (2) Wrenches, including crescent, pipe, end and socket wrenches, must not be used when jaws are sprung to the point that slippage occurs.
- (3) Impact tools, such as drift pins, wedges, and chisels must be kept free of mushroomed heads.
- (4) The wooden handles of tools must be kept free of splinters or cracks and must be kept tight in the tool.

**WAC 296-304-08007 Abrasive wheels.**

- (1) Floor stand and bench mounted abrasive wheels used for external grinding must be provided with safety guards (protection hoods). The maximum angular exposure of the grinding wheel periphery and sides must be not more than 90 degrees, except that when work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure must be the horizontal plane of the spindle. Safety guards must be strong enough to withstand the effect of a bursting wheel.
- (2) Floor and bench mounted grinders must be provided with work rests which are rigidly supported and readily adjustable. Such work rests must be kept a distance not to exceed 1/8 inch from the surface of the wheel.
- (3) Cup type wheels used for external grinding must be protected by either a revolving cup guard or a band type guard in accordance with the provisions of the United States of American Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, B7.1.1970. All other portable abrasive wheels used for external grinding must be provided with safety guards (protection hoods) meeting the requirements of (5) of this section, except as follows:
  - (a) When the work location makes it impossible, in which case a wheel equipped with safety flanges as described in (6) of this section must be used.
  - (b) When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used.

- (4) Portable abrasive wheels used for internal grinding must be provided with safety flanges (protection flanges) meeting the requirements of (6) of this section, except as follows:
  - (a) When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used.
  - (b) If the wheel is entirely within the work being ground while in use.
- (5) When safety guards are required, they must be mounted so as to maintain proper alignment with the wheel, and the guard and its fastenings must be of sufficient strength to retain fragments of the wheel in case of accidental breakage. The maximum angular exposure of the grinding wheel periphery and sides must not exceed 180 degrees.
- (6) When safety flanges are required, they must be used only with wheels designed to fit the flanges. Only safety flanges of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of accidental breakage must be used.
- (7) All abrasive wheels must be closely inspected and ring tested before mounting to ensure that they are free from cracks or defects.
- (8) Grinding wheels must fit freely on the spindle and must not be forced on. The spindle nut must be tightened only enough to hold the wheel in place.
- (9) The power supply must be sufficient to maintain the rated spindle speed under all conditions of normal grinding. The rated maximum speed of the wheel must not be exceeded.
- (10) You must ensure that all employees using abrasive wheels are protected by eye protection equipment that meets the requirements of WAC 296-304-09005 (1) and (2), except when adequate eye protection is provided by eye shields permanently attached to the bench or floor stand.

#### **WAC 296-304-08009 Powder-actuated fastening tools.**

- (1) You must ensure powder-actuated fastening tools are used, designed, constructed, and maintained according to the requirements of WAC [296-807-150](#), Powder actuated fastening systems.
- (2) You must ensure that employees using powder-actuated fastening tools are protected by personal protective equipment that meets the requirements of WAC 296-304-09005 (1) and (2). You must also meet the requirements of chapter [296-817](#) WAC, Hearing loss prevention (noise).

#### **WAC 296-304-08011 Internal combustion engines, other than ship's equipment.**

- (1) When internal combustion engines, furnished by you are used in a fixed position below decks, for such purposes as driving pumps, generators, and blowers, the exhaust must be led to the open air, clear of any ventilation intakes and openings through which it might enter the vessel
- (2) All exhaust line joints and connections must be checked for tightness immediately upon starting the engine, and any leaks must be corrected at once.



- (3) When internal combustion engines on vehicles, such as forklifts and mobile cranes, or on portable equipment such as fans, generators, and pumps exhaust into the atmosphere below decks, the competent person must make tests of the carbon monoxide content of the atmosphere as frequently as conditions require to ensure that dangerous concentrations do not develop. Employees must be removed from the compartment involved when the carbon monoxide concentration exceeds 50 parts per million (0.005%). You must use blowers sufficient in size and number and so arranged as to maintain the concentration below this allowable limit before work is resumed.

### **WAC 296-304-090 Personal protective equipment (PPE)— General requirements.**

- (1) You must provide and ensure that each affected employee uses the appropriate personal protective equipment (PPE) for the eyes, face, head, extremities, torso, and respiratory system, including protective clothing, protective shields, hearing protection, protective barriers, personal fall protection equipment, and lifesaving equipment, wherever the employee is exposed to hazards that require the use of PPE. You must furnish the personal protective equipment at no cost to employees if:
  - (a) The intended purpose is to protect against hazardous materials (the PPE may be contaminated by hazardous materials in the course of employment); or
  - (b) The PPE is of such a nature that it would not reasonably be worn outside the worksite.
- (2) The provision of personal protective equipment which may reasonably be worn outside of the workplace is subject to labor-management negotiations, but you must ensure that exposed employees are wearing the appropriate PPE.
- (3) Examples of PPE that must be provided at no cost to employees include, but are not limited to:
  - (a) Boots worn to protect against chemicals;
  - (b) Nonprescription protective eye wear;
  - (c) Goggles to fit over prescription eye wear;
  - (d) Metatarsal protection; and
  - (e) Full body harnesses and lanyards.
- (4) Examples of PPE that provision is subject to labor-management negotiation include, but are not limited to:
  - (a) Leather boots with or without steel toes;
  - (b) Coats to protect against inclement weather; and
  - (c) Prescription protective eye wear (except as part of a full facepiece or hooded respirator).

**WAC 296-304-09001 Hazard assessment and equipment selection.**

- (1) You must assess its work activity to determine if hazards that require the use of personal protective equipment (PPE) are present, or are likely to be present. If such hazards are present, or likely to be present you must:
  - (a) Select, and require each affected employee to use, PPE that will protect the employee from the hazards identified in the hazard assessment;
  - (b) Inform the affected employee what types of PPE to use;
  - (c) Select PPE that properly fits the affected employee; and
  - (d) Verify that the hazard assessment has been performed through a document that contains the following information:
    - (i) Work activity evaluated;
    - (ii) Occupation;
    - (iii) Date(s) of the hazard assessment; and
    - (iv) The name of the person performing the hazard assessment.

**Note:** A hazard assessment conducted according to the trade or occupation of affected employees will be considered to comply with this requirement if it addresses all PPE hazards to which employees are exposed in the course of their work activities.

- (2) You must ensure that employees do not use defective or damaged PPE.
- (3) You must ensure that all unsanitary PPE, including all previously used PPE, is cleaned and disinfected before it is reissued.

**WAC 296-304-09003 Training.**

You must provide training to each employee for whom PPE is required by this section.

- (1) Each employee whose work activities require the use of PPE must be trained to know at least the following:
  - (a) When PPE is necessary;
  - (b) What PPE is necessary;
  - (c) How to properly put on, take off, adjust, and wear PPE;
  - (d) The limitations of the PPE; and
  - (e) The proper care, maintenance, useful life and disposal of the PPE.
- (2) You must ensure that each affected employee demonstrates the ability to use PPE properly before being allowed to perform work where its use is required.

- (3) You must retrain any employee who does not understand or display the skills required by subsection (2) of this section. Circumstances where retraining is required include, but are not limited to, situations where:
  - (a) Changes in occupation or work make previous training obsolete; or
  - (b) Changes in the types of PPE to be used make previous training obsolete; or
  - (c) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the understanding or skill.
- (4) You must verify that each affected employee has received the required training through a document that contains the following information:
  - (a) Name of each employee trained;
  - (b) Date(s) of training; and
  - (c) Type of training the employee received.

**WAC 296-304-09005 Eye and face protection.**

- (1) You must provide each affected employee with eye and face protection according to the following requirements:
  - (a) Each affected employee must use appropriate eye or face protection when exposed to eye or face hazards caused by flying particles, molten metal, liquid chemicals, acid or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
  - (b) Each affected employee must use eye or face protection that provides side protection when there is a hazard from flying objects. A detachable side protector (e.g., a clip-on or slide-on side shield) that meets the requirements of this section is acceptable.
  - (c) Each affected employee who wears prescription lenses must:
    - (i) Use eye protection that incorporates the prescription in its design; or
    - (ii) Be protected by eye protection that can be worn over prescription lenses without disturbing the proper position of either the PPE or the prescription lenses.
  - (d) Each affected employee must use equipment with filter lenses of a shade that provides appropriate protection from injurious light radiation. Tables I-1A and I-1B lists the appropriate shade numbers for various operations. If filter lenses are used in goggles worn under a helmet with a lens, the shade number of the lens in the helmet may be reduced so that the shade numbers of the two lenses will equal the value shown in the Tables I-1A and I-1B.
- (2) You must ensure that all protective eye and face devices comply with ANSI Z87.1, American National Standard Practice for Occupational and Educational Eye and Face Protection, edition 1989, revision 1998, or edition 2003.
- (3) You may use alternate eye and face protection if they can demonstrate such devices are at least as effective as those constructed in accordance with one of the above consensus standards.

**WAC 296-304-09007 Respiratory protection.**

You must provide respiratory protection that meets the requirements of chapter [296-842](#) WAC, Respirators.

**WAC 296-304-09009 Hearing protection.**

You must meet the requirements of chapter [296-817](#) WAC, Hearing loss prevention (noise).

**WAC 296-304-09011 Head protection.**

- (1) You must provide each affected employee with head protection according to the following requirements:
  - (a) Each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head.
  - (b) Each affected employee wears a protective helmet designed to reduce electrical shock hazards where there is potential for electric shock or burns from contact with exposed electrical conductors that could contact the head.
- (2) You must ensure that all protective helmets comply with any of the following consensus standards:
  - (a) ANSI Z89.1-2009, American National Standard for Industrial Head Protection.
  - (b) ANSI Z89.1-2003, American National Standard for Industrial Head Protection.
  - (c) ANSI Z89.1-1997, American National Standard for Industrial Head Protection.
  - (d) ANSI Z89.1-1986, American National Standard for Personnel Protection—Protective Headwear for Industrial Workers—Requirements.
- (3) You may use alternate head protection if they can demonstrate such devices are at least as effective as those constructed in accordance with one of the above consensus standards.

**WAC 296-304-09013 Foot protection.**

- (1) You must ensure that each affected employee wears protective footwear when working in areas where:
  - (a) There is a danger of foot injuries from falling or rolling objects;
  - (b) There is a danger of foot injuries from objects piercing the sole; or
  - (c) Where an employee's feet are exposed to electrical hazards.
- (2) You must ensure that all protective footwear complies with one of the following consensus standards:
  - (a) ASTM F-2412-2005, Standard Test Methods for Foot Protection, and ASTM F-2413-2005, Standard Specification for Performance Requirements for Protective Footwear.
  - (b) ANSI Z41-1999, American National Standard for Personal Protection—Protective Footwear.

- (c) ANSI Z41-1991, American National Standard for Personal Protection—Protective Footwear.
- (3) You may use alternate footwear if they can demonstrate it is at least as effective as those constructed in accordance with one of the above consensus standards.

### **WAC 296-304-09015 Hand and body protection.**

- (1) You must ensure that each affected employee uses appropriate hand protection and other protective clothing where there is exposure to hazards such as:
- (a) Skin absorption of harmful substances;
  - (b) Severe cuts or lacerations;
  - (c) Severe abrasions;
  - (d) Punctures;
  - (e) Chemical burns;
  - (f) Thermal burns;
  - (g) Harmful temperature extremes; and
  - (h) Sharp objects.
- (2) **Hot work operations.** You must ensure that an employee's clothing is free from flammable or combustible materials (such as grease or oil) while engaged in hot work operations or working near an ignition or oxygen source.
- (3) **Electrical protective devices.** You must ensure that each affected employee wears protective electrical insulating gloves and sleeves or other electrical protective equipment, if that employee is exposed to electrical shock hazards while working on electrical equipment.

### **WAC 296-304-09017 Lifesaving equipment.**

(1) **Personal flotation devices (PFD).**

You must provide your employees with PFDs approved by the United States Coast Guard for use on commercial or merchant vessels. The following are appropriate or allowable United States Coast Guard approved PFDs:

<b><i>Type of PFD</i></b>	<b><i>General Description</i></b>
Type I	Off-shore life jacket – effective for all waters or where rescue may be delayed.
Type II	Near-shore buoyant vest – intended for calm, inland water or where there is a good chance of quick rescue.
Type III	Flotation aid – good for calm, inland water, or where there is a good chance for rescue.
Type V	Flotation aids such as boardsailing vests, deck suits, work vests and inflatable PFDs marked for commercial use.

**Note:**

1. Commercially available PFDs are marked or imprinted with the Type of PFD.
2. Type IV PFDs are throwable devices. They are used to aid persons who have fallen into the water.
3. The requirements for USCG approval are in 46 CFR Part 160, Coast Guard Lifesaving Equipment Specifications.

You must ensure that each personal flotation device is inspected before use for dry rot, chemical damage, or other defects that may affect its strength and buoyancy. Defective personal flotation devices must not be used.

**(2) Ring life buoys and ladders.**

- (a) You must ensure that when work is performed on a floating vessel 200 feet (61 m) or more in length, at least three 30-inch (0.76 m) U.S. Coast Guard approved ring life buoys with lines attached are located in readily visible and accessible places. Ring life buoys must be located one forward, one aft, and one at the access to the gangway.
- (b) On floating vessels under 200 feet (61 m) in length, at least one 30-inch (0.76 m) U.S. Coast Guard approved ring life buoy with line attached must be located at the gangway.
- (c) At least one 30-inch (0.76 m) U.S. Coast Guard approved ring life buoy with a line attached must be located on each staging alongside of a floating vessel on which work is performed.
- (d) At least 90 feet (27.43 m) of line must be attached to each ring life buoy.
- (e) There must be at least one portable or permanent ladder near each floating vessel on which work is performed. The ladder must be long enough to help an employee reach safety in the event of a fall into the water.

**WAC 296-304-09019 Fall protection—General requirement.**

You must provide and ensure the use of fall protection when employees work aloft or elsewhere at elevations more than 5 feet above a solid surface in accordance with chapter [296-880](#) WAC, Unified safety standards for fall protection.

**WAC 296-304-09021 Personal fall arrest systems (PFAS).**

Personal fall arrest systems must be in accordance with chapter [296-880](#) WAC, Unified safety standards for fall protection.

**WAC 296-304-09023 Positioning device systems.**

You must ensure that positioning device systems and their use be in accordance with chapter [296-880](#) WAC, Unified safety standards for fall protection.

## ***WAC 296-304-100 Ship's machinery and piping systems— Scope and application.***

All sections of this chapter which include WAC 296-304-100 in this section number apply to ship's machinery and piping systems and sections WAC 296-304-10001 to 296-304-10007 apply only to shipbuilding and ship repairing.

### **WAC 296-304-10001 Ship's boilers.**

Before work is performed in the fire, steam, or water spaces of a boiler where employees may be subject to injury from the direct escape of a high temperature medium, such as steam, or water, oil, or other medium at a high temperature entering from an interconnecting system, you must ensure that the following steps are taken:

- (1) The isolation and shutoff valves connecting the dead boiler with the live system or systems must be secured, blanked, and locked or tagged, in accordance with WAC 296-304-06016, indicating that employees are working in the boiler. This tag must not be removed nor the valves unblanked until it is determined that this may be done without creating a hazard to the employees working in the boiler, or until the work in the boiler is completed. Where valves are welded instead of bolted at least two isolation and shutoff valves connecting the dead boiler with the live system or systems must be secured, locked and tagged.
- (2) Drain connections to atmosphere on all of the dead interconnecting systems must be opened for visual observation of drainage.
- (3) A warning sign calling attention to the fact that employees are working in the boilers must be hung in a conspicuous location in the engine room. This sign must not be removed until it is determined that the work is completed and all employees are out of the boilers.

### **WAC 296-304-10003 Ship's piping systems.**

Before work is performed on a valve, fitting, or section of piping in a piping system where employees may be subject to injury from the direct escape of steam, or water, oil, or other medium at a high temperature, you must ensure that the following steps are taken:

- (1) The isolation and shutoff valves connecting the dead system with the live system or systems shall be secured, blanked, and locked or tagged, in accordance with WAC 296-304-06016, indicating that employees are working on the systems. This tag must not be removed nor the valves unblanked until it is determined that this may be done without creating a hazard to the employees working on the system, or until the work on the system is completed. Where valves are welded instead of bolted at least two isolation and shutoff valves connecting the dead system with the live system or systems must be secured, locked, and tagged.
- (2) Drain connections to the atmosphere on all of the dead interconnecting systems must be opened for visual observation of drainage.

**WAC 296-304-10005 Ship's propulsion machinery.**

- (1) Before work is performed on the main engine, reduction gear, or connecting accessories, you must ensure that the following steps are taken:
  - (a) The jacking gear must be engaged to prevent the main engine from turning over. A sign must be posted at the throttle indicating that the jacking gear is engaged. This sign must not be removed until the jacking gear can be safely disengaged.
  - (b) If the jacking gear is steam driven, the stop valves to the jacking gear must be secured, locked, and tagged in accordance with WAC 296-304-06016, indicating that employees are working on the main engine.
  - (c) If the jacking gear is electrically driven, the circuit controlling the jacking gear must be deenergized by tripping the circuit breaker, opening the switch or removing the fuse, whichever is appropriate. The breaker, switch, or fuse location must be tagged indicating that employees are working on the main engine.
- (2) Before the jacking engine is operated, the following precautions must be taken:
  - (a) A check must be made to ensure that all employees, equipment, and tools are clear of the engine, reduction gear, and its connecting accessories.
  - (b) A check must be made to ensure that all employees, equipment and tools are free of the propeller.
- (3) Before work is started on or in the immediate vicinity of the propeller, a warning sign calling attention to the fact that employees are working in that area must be hung in a conspicuous location in the engine room. This sign must not be removed until it is determined that the work is completed and all employees are free of the propeller.
- (4) Before the main engine is turned over (e.g., when warming up before departure or testing after an overhaul) a check must be made to ensure that all employees, equipment, and tools are free of the propeller.

**WAC 296-304-10007 Ship's deck machinery.**

Before work is performed on the anchor windlass or any of its attached accessories, you must ensure that the following steps are taken:

- (1) The devil claws (also known as chain toppers) must be made fast to the anchor chains.
- (2) The riding pawls must be in the engaged position.
- (3) In the absence of devil claws and riding pawls, the anchor chains must be secured to a suitable fixed structure of the vessel.



## ***WAC 296-304-110 Portable, unfired pressure vessels, drums and containers, other than ship's equipment—Scope and application.***

All sections of this chapter which include WAC 296-304-110 in the section number apply to portable, unfired pressure vessels, drums and containers, other than ship's equipment and WAC 296-304-11001 to 296-304-11003 applies only to shipbuilding and ship repairing.

### **WAC 296-304-11001 Portable air receivers and other unfired pressure vessels.**

- (1) Portable, unfired pressure vessels, built after the effective date of this regulation, must be marked and reported indicating that they have been designed and constructed to meet the standards of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Rules for Construction of Unfired Pressure Vessels, 1963. They must be subjected to a hydrostatic pressure test of one and one-half times the working pressure of the vessels.
- (2) Portable, unfired pressure vessels, not built to the code requirements of (1) of this section, and built prior to the effective date of this regulation, must be examined quarterly by a competent person, and approved by the state boiler inspecting division. They must be subjected yearly to a hydrostatic pressure test of one and one-half times the working pressure of the vessels.
- (3) The relief valves on the portable, unfired pressure vessels in (1) and (2) of this section must be set to the safe working pressure of the vessels, or set to the lowest safe working pressure of the systems, whichever is lower.
- (4) A record of such examinations and tests made in compliance with the requirements of (1) and (2) of this section must be maintained.

### **WAC 296-304-11003 Drums and containers.**

- (1) Shipping drums and containers must not be pressurized to remove their contents.
- (2) A temporarily assembled pressurized piping system conveying hazardous liquids or gases must be provided with a relief valve and by-pass to prevent rupture of the system and the escape of such hazardous liquids or gases.
- (3) Pressure vessels, drums and containers containing toxic or flammable liquids or gases must not be stored or used where they are subject to open flame, hot metal, or other sources of artificial heat.
- (4) Unless pressure vessels, drums and containers of 30 gallon capacity or over containing flammable or toxic liquids or gases are placed in an out-of-the-way area where they will not be subject to physical injury from an outside source, barriers or guards must be erected to protect them from such physical injury.
- (5) Containers of 55 gallons or more capacity containing flammable or toxic liquid must be surrounded by dikes or pans which enclose a volume equal to at least 35 percent of the total volume of the containers.

- (6) Fire extinguishers adequate in number and suitable for the hazard must be provided. These extinguishers must be located in the immediate area where pressure vessels, drums and containers containing flammable liquids or gases are stored or in use. Such extinguishers must be ready for use at all times.

### ***WAC 296-304-120 Electrical machinery—Electrical circuits and distribution boards.***

- (1) Before an employee is permitted to work on an electrical circuit, except when the circuit must remain energized for testing and adjusting, the circuit must be deenergized and checked at the point at which the work is to be done to ensure it is actually deenergized. When testing or adjusting an energized circuit a rubber mat, duck board, or other suitable insulation must be used underfoot where an insulated deck does not exist.
- (2) Deenergizing the circuit must be accomplished by opening the circuit breaker, opening the switch, or removing the fuse, whichever method is appropriate. The circuit breaker, switch, or fuse location must be locked out or tagged, in accordance with WAC 296-304-06016, to indicate that an employee is working on the circuit. Such tags must not be removed nor the circuit energized until it is definitely determined that the work on the circuit has been completed.
- (3) When work is performed immediately adjacent to an open-front energized board or in back of an energized board, the board must be covered or some other equally safe means must be used to prevent contact with any of the energized parts.

<p><b>Note:</b> WAC 296-304-120 is applicable only to shipbuilding and ship repairing.</p>
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### ***WAC 296-304-130 Gear certification—General provisions.***

All sections of this chapter which include WAC 296-304-130 in the section number apply to gear certification.

#### **WAC 296-304-13001 Purpose and scope.**

- (1) The regulations in this part implement WAC 296-304-07001 through 296-304-07013. They provide procedures and standards governing accreditation of persons by the department of labor and industries, for the purpose of certificating shore-based material handling devices, and the manner in which such certification must be performed.
- (2) Accreditation is not required, and the regulations of this part are not applicable, under the following circumstances:
  - (a) Persons not required to be accredited for gear certification purposes, may, nevertheless, apply for and receive accreditation by the department of labor and industries.
  - (b) The appropriate portions of this section must apply to persons accredited except insofar as exemptions may be granted.

**WAC 296-304-13003 Definitions of terms.**

- (1) **Vessel.** Every description of watercraft or other artificial contrivance used or capable of being used, as a means of transportation on water, including special-purpose floating structures not primarily designed for or used as a means of transportation on water.
- (2) Except as otherwise noted, “**cargo gear,**” as used in WAC 296-304-140 through 296-304-17023, includes that gear forming a part of a vessel's equipment which is used for the handling of cargo other than bulk liquids, but does not include gear which is used only for handling or holding hoses, handling ships' stores, handling the gangway, or boom conveyor belt systems for the self-unloading of bulk cargo vessels.
- (3) **With reference to equipment covered by this section.**
  - (a) **Derrick:**
    - (i) When applied to vessels' cargo handling gear, a mechanical device for lifting, including a boom which is suspended at its head by a topping lift from a mast, king post, or similar structure, controlled in the horizontal plane by vang, and used either singly or in pairs with married falls;
    - (ii) When applied to shore-based material handling devices, a mechanical device intended for lifting, with or without a boom supported at its head by a topping lift from a mast, fixed A frame, or similar structure. The mast or equivalent member may or may not be supported by guys or braces. The boom, where fitted, may or may not be controlled in the horizontal plane by guys (vangs). The term includes shear legs.
  - (b) **Crane.** A mechanical device intended for lifting or lowering a load and moving it horizontally, in which the hoisting mechanism is an integral part of the machine. A crane may be a fixed or mobile machine.
  - (c) **Bulk cargo spout.** A spout, which may or may not be telescopic and may or may not have removable sections, but is suspended over the vessel from some overhead structure by wire rope or other means. Such a spout is often used with a “thrower” or “trimming machine.” A grain loading spout is an example of those covered by this definition.
  - (d) **Bulk cargo sucker.** A pneumatic conveyor which utilizes a spout-like device, which may be adjustable vertically and/or laterally, and which is suspended over a vessel from some overhead structure by wire rope or other means. An example of an installation of this nature is the “grain sucker” used to discharge grain from barges.
- (4) **Director.** The director of the department of labor and industries, or his authorized representative.
- (5) **Bureau.** The Bureau of Labor Standards, U.S. Department of Labor.
- (6) **Person.** Any individual, partnership, corporation, agency, association, or organization.

- (7) **Competent person:**
- (a) An individual qualified to perform gear certification functions with respect to vessels' cargo handling gear, as specifically set forth in WAC 296-304-17023.
  - (b) An individual qualified under the provisions of WAC 296-304-180 through 296-304-18003 and 296-304-190 through 296-304-19001 to perform gear certification functions with respect to shore-based material handling devices.
- (8) **Ton.** A ton of 2,240 pounds when applied to vessels' cargo handling gear, and a ton of 2,000 pounds when applied to shore-based material handling devices or to shore-type cranes permanently mounted aboard barges or other vessels employed in domestic trade and designed on the basis of the 2,000-pound ton. Capacity ratings may be stated in pounds.
- (9) **Nondestructive examination.** Examination of structure or parts by electronic, ultrasonic, or other nondestructive examination suitable for the purpose.

### ***WAC 296-304-140 Procedure governing accreditation— Scope and application.***

All sections of this chapter which include WAC 296-304-140 in the section number apply to procedure governing accreditation.

#### **WAC 296-304-14001 Application for accreditation.**

- (1) **Application.** Any person seeking accreditation must file an original and duplicate copy of an application for accreditation with the director of the department of labor and industries, on a form provided by the department of labor and industries, for this purpose. Each application must be signed and certified by the applicant and, if the applicant is an agency or organization, by a responsible officer of such agency or organization.
- (2) **Contents of application.** The application form must include the following information:
- (a) A statement detailing the applicable types of work performed by the applicant in the past, noting the amount and extent of such work performed within the previous three years, listing representative vessels involved, and including representative job orders if available, or equivalent evidence;
  - (b) Descriptive details concerning any testing instruments and heat treatment furnaces which are to be used in conducting required tests or heat treatments. Test reports indicating that instruments meet the accuracy standards set forth in this section must be included;
  - (c) A list setting forth the ports in which applicant currently conducts his business as well as those in which he proposes to conduct gear certification activities;
  - (d) A list of the applicant's responsible qualified personnel, both supervisory and managerial and including any surveyors, with resumes of their individual experience in the testing, examination, inspection and heat treatment of cargo gear. Such list must include any branch office personnel or surveyors appointed to act in the

applicant's behalf in any of the ports of the United States: Provided, however, That where the submission of individual resumes would be unduly burdensome because of the large number of persons engaged in the applicant's behalf, the applicant, after stating this fact, need only submit a list of its personnel together with a detailed statement of the qualifications upon which the appointment of surveyors is bases;

- (e) Names of at least three business references who will furnish information regarding work performed by the applicant;
- (f) Any additional information the applicant deems to be pertinent.

### **WAC 296-304-14003 Action upon application.**

- (1) Upon receipt of an application for accreditation, the director must approve or deny the application. The director may conduct an investigation, which may include a hearing, prior to approving or denying an application. To the extent he deems appropriate, the director may provide an opportunity to other interested persons to present data and views on the application prior to approval or denial.
- (2) Any application which fails to present the information required by the prescribed form may be returned to the applicant with a notation of deficiencies and without prejudice to submission of a new or revised application.
- (3) If the application is approved, notice of approval must be mailed to the applicant. If the application is denied, notice of such denial must be mailed to the applicant and such denial must be without prejudice to any subsequent application except where such action is deemed to be in the public interest. In the event an application is denied with prejudice, the provisions of WAC 296-304-14013 must be applicable.
- (4) A copy of the notice of accreditation must be kept on file by applicant at the applicant's place of business.

### **WAC 296-304-14005 Duration and renewal of accreditation.**

The period of accreditation must not exceed three years. Applications for renewal of accreditation must be made on the same form as described in WAC 296-304-14001. No accreditation must expire until action on an application for renewal must have been finally determined: Provided, That such application has been properly executed in accordance with WAC 296-304-14001 and filed with and received by the director not less than 15 nor more than 60 days prior to the expiration date.

A final determination means either the approval or initial denial of the application for renewal. The procedure specified in WAC 296-304-14003 must be applicable to all applications for renewal.

### **WAC 296-304-14007 Criteria governing accreditation to certificate vessels' cargo gear.**

- (1) A person applying for accreditation to issue registers and pertinent certificates, to maintain registers and appropriate records, and to conduct initial, annual and quadrennial surveys, must not be accredited unless they are engaged in one or more of the following activities:

- (a) Classification of vessels;
  - (b) Certification of vessels' cargo gear;
  - (c) Shipbuilding or ship repairing, or both insofar as related to work on vessels' cargo handling gear;
  - (d) Unit and loose gear testing of vessels' cargo handling gear.
- (2) Applicants for accreditation under WAC 296-304-14007(1) for operations in coastal or Great Lakes ports who come within WAC 296-304-14007 (1)(b) or (d) must not be accredited unless they conduct at least 1,500 hours of cargo gear certification work per year.
  - (3) A person applying for accreditation to carry out tests of loose gear or wire rope, or both, or to carry out heat treatments, and to issue the related certificates, must be engaged in one or both of the following activities:
    - (a) Testing of loose gear or wire rope, or both;
    - (b) Heat treatment of chains and loose cargo gear.
  - (4) A person applying for accreditation must be staffed by individuals technically qualified to conduct the inspections and examinations and to conduct or supervise tests and heat treatments prescribed in this part. Any representatives, agents or surveyors acting on behalf of a person applying for accreditation in ports in which such operations are conducted must be similarly qualified.

Accreditation to conduct such nondestructive examination as may be a part of any certification activity may be granted to applicants found competent and equipped to carry out this activity.
  - (5) Except as noted in WAC 296-304-13001 (2)(a), and unless exemptions are granted under WAC 296-304-15001(8), a person applying for accreditation as specified in WAC 296-304-14007(1) must be prepared to carry out all of the requirements of WAC 296-304-150 through 296-304-15005, 296-304-160 through 296-304-16025, and 296-304-170 through 296-304-17023 except that loose gear and wire rope tests and heat treatments may be carried out by the manufacturer of the gear concerned or by another person accredited specifically for this purpose.
  - (6) A person applying for accreditation must have a satisfactory record of performance.

#### **WAC 296-304-14009 Voluntary amendment or termination of accreditation.**

The accreditation of any person may be voluntarily amended or terminated upon written request filed with the director.

#### **WAC 296-304-14011 Suspension or revocation of accreditation.**

The director may suspend or revoke an accreditation of any person for cause. Except in cases of willfulness or cases in which the public interest requires otherwise, before any accreditation is suspended or revoked facts or conduct which may warrant such action must be called to the attention of the person involved in writing and that person must be afforded an opportunity to achieve or demonstrate appropriate compliance.

**WAC 296-304-14013 Reconsideration and review.**

- (1) Any person aggrieved by the action of the director or his authorized representative in denying, granting, suspending or revoking an accreditation under this section may within 15 days after such action, (a) file a written request for reconsideration thereof by the director or the authorized representative of the director who made the decision in the first instance, or (b) file a written request for review of the decision by the director or an authorized representative of the director, who has taken no part in the action which is the subject for review.
- (2) A request for reconsideration must be granted where the applicant shows that there is additional evidence which may materially affect the decision and that there were reasonable grounds for failure to adduce such evidence in the original proceedings.
- (3) Any person aggrieved by the action of the director or authorized representative of the director in denying a request for reconsideration may, within 15 days after the denial of such request, file with the director or his authorized representative a written request for review.
- (4) Any person aggrieved by the reconsidered determination of the director or authorized representative of the director, may within 15 days after such determination, file with the director a written request for review.
- (5) A request for review must be granted where reasonable grounds for the review are set forth in the request.
- (6) If a request for reconsideration or review is granted, all interested persons must be afforded an opportunity to present their views.
- (7) No cargo gear certification function must be performed by any person seeking reconsideration or review under this section pending the final decision with respect to such reconsideration or review.

***WAC 296-304-150 Duties of persons accredited to certificate vessels' cargo gear—Scope and application.***

All sections of this chapter which include WAC 296-304-150 in the section number apply to duties of persons accredited to certificate vessels' cargo gear.

**WAC 296-304-15001 General duties—Exemptions.**

- (1) Except as noted in WAC 296-304-13001 and 296-304-15001(8), the requirements set forth in WAC 296-304-160 through 296-304-16025 and 296-304-170 through 296-304-17023 must be strictly adhered to in all testing, examinations, inspections and heat treatments.
- (2) Supervision of all testing, examinations, inspections, and heat treatments must be carried out only by such persons as are listed in the application for accreditation or subsequent supplements thereto, submitted pursuant to this section.

The certificates issued by an accredited person must be signed and all register entries made only by an authorized agent of such accredited person. No certification must be issued until any deficiencies considered by the accredited person to constitute a currently unsatisfactory condition have been corrected. Replacement parts must be of equal or better quality as original equipment and suitable for the purpose. In the event deficiencies remain uncorrected and no certification may therefore be issued, the accredited person must inform the nearest district office of the department of labor and industries of the circumstances.

- (3) Dynamometers or other recording test equipment owned by an accredited person must have been tested for accuracy within the six months next preceding application for accreditation or renewal of same. Such test must be performed with calibrating equipment which has been checked in turn so that indications are traceable to the U.S. Bureau of Standards. A copy of test reports must accompany the application. Where test equipment is not the property of the accredited person, that person must not issue any certificate based upon the use of such equipment unless its owner has made available a certificate of accuracy based on the requirements of this section, obtained within 1 year prior to such use, and stating the errors of the equipment. Reasonable standards of accuracy must be met and proof loads adjusted as necessary.
- (4) An accredited person must, upon request, provide the nearest local office of the department of labor and industries with advance information as to scheduled testing or of such other functions as are performed and facilitate the department of labor and industries observation of any such activities as it may desire to witness: Provided, however, That tests need not be delayed, except when specifically requested by the department of labor and industries under unusual circumstances.
- (5) All cargo gear registers or certificates issued by an accredited person must be made on forms prescribed or approved by the department of labor and industries.
- (6) Unless otherwise instructed by the director in specific instances, any person accredited under WAC 296-304-14007(1) must accept certificates relating to loose gear or wire rope tests or to heat treatments which are issued by the manufacturer of the gear concerned, by another person accredited specifically by the director for this purpose, or by any other person whose certificates are acceptable to the department of labor and industries. Such certificates must either be attached as a part of the vessel's certification or must be used as the basis for the issuance of the accredited person's own loose gear, wire rope, or heat treatment certificates. In the latter case, the original certificates must be kept on file by the accredited person as part of the permanent record of the vessel concerned.
- (7) In case of practical difficulties or unnecessary hardships, the director in his discretion may grant exemptions from any provision of WAC 296-304-150 through 296-304-15005, 296-304-160 through 296-304-16025 and 296-304-170 through 296-304-17023.

**WAC 296-304-15003 Recordkeeping and related procedures concerning records in custody of accredited persons.**

- (1) An accredited person must maintain records of all work performed under WAC 296-304-160 through 296-304-16025 and 296-304-170 through 296-304-17023.
- (2) An accredited person must maintain a continuous record of the status of the certification of each vessel issued a register by such person.



- (3) The records required in (1) and (2) of this section must be available for examination by the director.
- (4) When annual or quadrennial tests, inspections, examinations, or heat treatments are performed by an accredited person, other than the person who originally issued the vessel's register, such accredited person must furnish copies of any certificates issued and information as to register entries to the person originally issuing the register.
- (5) An accredited person must inform the nearest local office of the department of labor and industries whenever a vessel is initially certificated under these regulations and a register in the prescribed form has been issued.
- (6) A copy of each certificate relating to unit tests or thorough examinations, except those issued by the manufacturer and those issued by accredited persons outside of the United States, must be sent to the nearest local office of the department of labor and industries within 10 days after issuance. Such records must form a part of the department of labor and industries file on the accredited person.
- (7) An accredited person must promptly notify the nearest local office of the department of labor and industries with respect to any changes in technical personnel, in fee schedules in geographical areas in which operations are conducted, or other pertinent substantial changes in its organization or operations.

**WAC 296-304-15005 Recordkeeping and related procedures concerning records in custody of the vessel.**

- (1) A fully completed and up-to-date register must be kept in the form prescribed or approved by the department of labor and industries, giving the particulars required with respect to:
  - (a) The inspections and thorough examinations required by WAC 296-304-16005 (1) and (2).
  - (b) The thorough examinations required by WAC 296-304-16005(3).
  - (c) The thorough examinations required by WAC 296-304-16009.
  - (d) The heat treatment required by WAC 296-304-16007 (1) and (2), and 296-304-16013.
- (2) Certificates in the form prescribed or approved by the department of labor and industries must be kept up-to-date, be attached to the register, and must contain the particulars required with respect to:
  - (a) The testing and examinations required by WAC 296-304-16003, 296-304-16005(1) and 296-304-16013.
  - (b) The heat treatment required by WAC 296-304-16007 and 296-304-16013.
- (3) The certificates and entries in the register must be signed by a person qualified under WAC 296-304-17023.
- (4) Adequate means must be provided to enable persons examining the register, or any certificate attached thereto, to identify items of cargo gear referred to therein. Small items of gear, such as shackles, must bear a mark to indicate that they have been initially tested.

- (5) Records must be kept aboard vessels identifying wire rope or articles of loose gear obtained from time to time and required to be certificated under the regulations of this section.
- (6) An accredited person must instruct the vessel's officers or the vessel's operator if the vessel is unmanned, that the vessel's register and certificates must be preserved for at least 4 years after the date of the latest entry except in the case of nonrecurring test certificates concerning gear which is kept in use for a longer period, in which event the pertinent certificates must be retained so long as that gear is continued in use.
- (7) In cases where derricks, spouts, suckers, or cranes are mounted permanently aboard barges which remain in domestic inland waters service, the certification documentation must comply with the provisions of WAC 296-304-20025.

### ***WAC 296-304-160 Certification of vessels' cargo gear— Scope and application.***

All sections of this chapter which include WAC 296-304-160 in the section number apply to certification of vessels' cargo gear.

#### **WAC 296-304-16001 General.**

- (1) Except as noted in WAC 296-304-13001 and as provided in exemptions under WAC 296-304-15001(9), certification performed by accredited persons must conform to the requirements contained in this section.
- (2) Safe working loads assigned to assembled units of gear must be based on applicable design criteria acceptable to the accredited person. Where no design data on which to base a rating is obtainable, the safe working load ratings assigned must be based on the owner's information and warranty that those so assigned are correct. Unit test certificates must state the basis for any such safe working load assignment.

#### **WAC 296-304-16003 Initial tests of cargo gear and tests after alterations, renewals or repairs.**

- (1) Before being taken into use, hoisting machines, fixed gear aboard vessels accessory thereto, and loose gear and wire rope used in connection therewith, must be tested and examined and the safe working load thereof certified in the manner set forth in WAC 296-304-170 through 296-304-17023.
- (2) Replacement or additional loose gear and wire rope obtained from time to time must also be tested and examined in the manner set forth in WAC 296-304-16003(1). However, the replacement of a component part of an article of loose gear, such as a sheave, pin, or bushing does not require a new test certificate so long as the new component at least equals in all particulars the part replaced.
- (3) In the case of untested gear which has been in use, an initial test in conformance with WAC 296-304-16003(1) must be carried out: Provided, however, That existing standing rigging and wire rope will not be required to be tested but must be thoroughly examined to ascertain its fitness for continued use in conformance with the requirements of WAC 296-304-16023 and 296-304-16025.

- (4) In the case of important alterations or renewals of the machinery and gear and also after repairs due to failure of or damage to other than loose components, a test as required in WAC 296-304-16003(1) must be carried out.
- (5) If the operation in which cargo gear is engaged never utilizes more than a fraction of the safe working load rating, the owner may, at his option, have said gear certificated for, and limited in operation to, a lesser maximum safe working load: Provided, however, That the gear concerned is physically capable of operation at the original load rating and the load reduction is not for the purpose of avoiding correction of any deficiency.
- (6) In no case must safe working loads be increased beyond the original design limitations unless such increase is based on engineering calculations by or acceptable to the accredited certification agency, and all necessary structural changes are carried out.

### **WAC 296-304-16005 Periodic tests, examinations and inspections.**

After being taken into use, every hoisting machine, all fixed gear aboard vessels accessory thereto and loose gear used in connection therewith, must be tested, thoroughly examined or inspected as follows:

- (1) Derricks with their winches and accessory gear, including the attachments, as a unit; and cranes and other hoisting machines with their accessory gear, as a unit, must be tested and thoroughly examined every four years in the manner set forth in WAC 296-304-170 through 296-304-17023.
- (2) Derricks, their permanent attachments and any other fixed gear the dismantling of which is especially difficult must be visually inspected every twelve months. In order to facilitate such inspection all derricks must be lowered.
- (3) All hoisting machines (e.g., cranes, winches), blocks, shackles, and all other accessory gear not included in WAC 296-304-16005(2), must be thoroughly examined every twelve months by means of a visual examination, supplemented as necessary by other means, such as a hammer test or with electronic, ultrasonic, or other nondestructive methods, carried out as carefully as conditions permit in order to arrive at a reliable conclusion as to the safety of the parts examined. Particular attention must be paid to the suitability for continued use of all swivels and the pins and bushing of blocks. If necessary, parts of the machines or gear must be dismantled. If blocks are disassembled, all shell bolt nuts must be securely locked upon reassembly.
- (4) Where a derrick or crane is mounted on a barge hull and ballast tanks within the hull are used to facilitate use of the derrick or crane, or uncontrolled free surface may be a factor, each annual inspection or examination, as required, must include such inspection as is necessary for the purpose of determining the integrity of any internals contributing to stability under conditions of use. The owner must provide the accredited person with necessary information on any ballasting arrangements required.
- (5) Annual inspection or examination, as required, must include, among other things, examination of the following:
  - (a) Derrick heel attachment points. Heel pins may, if possible, be examined by nondestructive examination.

- (b) Shrouds and stays necessary in the use of the gear, together with attachment points.
- (c) Deck fittings for the securing of vang, topping lifts, and/or preventers.
- (d) Means of attachment to the hull of "A" frame or other fixed derrick or crane structure and of mobile types of equipment permanently placed aboard the barge or vessel.
- (e) Clamshell buckets or other similar equipment, such as magnets, etc., used in conjunction with a derrick or crane mounted aboard a vessel, with particular attention to closing line wires and sheaves. The accredited person may supplement such examination by requesting any operational tests he may deem appropriate.
- (f) Winch and other operating drums for excessive wear or defect.

### **WAC 296-304-16007 Heat treatment**

- (1) All chains (other than bridle chains attached to derricks or masts), rings, hooks, shackles, and swivels made of wrought iron, which are used in hoisting or lowering, must be annealed in accordance with WAC 296-304-17021 at the following intervals:
  - (a) Half inch and smaller chains, rings, hooks, shackles, and swivels in general use, at least once every six months; and
  - (b) All other chains, rings, hooks, shackles, and swivels in general use, at least once every twelve months.
  - (c) In the case of gear used solely on lifting machinery worked by hand, twelve months must be substituted for six months in WAC 296-304-16007 (1)(a) and two years for twelve months in WAC 296-304-16007 (1)(b).
  - (d) When used in this paragraph, the term "in general use" means used on fifty-two or more days in a year. In any case, however, the period between annealings must not exceed two years.
- (2) Chains, rings, hooks, shackles, and swivels made of material other than wrought iron or steel must be heat treated when necessary in accordance with WAC 296-304-17021(2).

### **WAC 296-304-16009 Exemptions from heat treatment.**

Gear made of steel, or gear which contains (as in ball bearing swivels), or is permanently attached to (as with blocks), equipment made of materials which cannot be subjected to heat treatment, must be exempt from the requirements of WAC 296-304-16007. Such gear, however, must be thoroughly examined in the manner described in WAC 296-304-16005(3).

### **WAC 296-304-16011 Grace periods.**

Grace periods allowed in connection with the requirements of this section are as follows:

- (1) Annual or six-month requirements - By the end of the voyage during which they become due;
- (2) Quadrennial requirements - Within six months after the date when due;
- (3) Grace periods must not be deemed to extend subsequent due dates.

**WAC 296-304-16013 Gear requiring welding.**

Chains or other gear which have been lengthened, altered or repaired by welding, must be properly heat treated where necessary, and, before again being put into use, must be tested and reexamined in the manner set forth in WAC 296-304-170 through 296-304-17023.

**WAC 296-304-16015 Damaged components.**

- (1) Pursuant to WAC 296-304-18003, any derrick or associated permanent fitting which is deformed in service between surveys must be subjected to proof test to determine its suitability for continued service. If a proof test indicates that the derrick or associated permanent fitting may be continued in service without repair, a note of the existing deformity shall be made on the test certificate. When, in the opinion of the accredited person, it is unsafe to conduct a proof test with an existing deformity, the derrick or associated permanent fitting must be replaced or repaired and then subjected to proof test in accordance with WAC 296-304-170 through 296-304-17023.
- (2) Any loose gear components which are injured or deformed by a proof load must be replaced before a certificate is issued.
- (3) Any derrick, other fixed installation, or associated permanent fitting, which is injured or deformed by a proof load must be replaced or repaired and another proof load test must be conducted without damage before a certificate is issued.

**WAC 296-304-16017 Marking and posting of safe working loads.**

- (1) The safe working load of the assembled gear and the minimum angle to the horizontal at which this load may be applied must be plainly marked at the heels of all booms along with the date of the test. Where gear is certificated for use in union purchase, the union purchase safe working load must also be plainly marked. Any limitations must be noted in the vessel's papers.
- (2) The safe working load must be marked on all blocks used in hoisting or lowering.
- (3) When the capacity of the boom of a crane or derrick has been or will be rated in accordance with the variance of its radius, the maximum safe working loads for the various working angles of the boom and the maximum and minimum radius at which the boom may be safely used, must be conspicuously posted near the controls and visible to the crane operator. Ratings may be stated in pounds. When they are stated in tons of 2,000 pounds, this fact must be indicated.

**WAC 296-304-16019 Requirements governing braking devices and power sources.**

All types of winches and cranes must be provided with means to stop and hold the proof load in any position, and the efficiency of such means must be demonstrated. Electric winches, electrohydraulic winches fitted with electromagnetic or hydraulic brakes at the winch, or electric cranes, must be equipped so that a failure of the electric power must stop the motion and set the brakes without any action on the part of the operator. Current for operation of electric winches and cranes during the tests must be taken from the vessel's circuits. Shore current may be used if it passes through the vessel's main switchboard.

**WAC 296-304-16021 Means of derrick attachment.**

Appropriate measure must be taken to prevent the foot of a derrick from being accidentally lifted from its socket or support during the test.

**WAC 296-304-16023 Limitations on use of wire rope**

- (1) An eye splice made in any wire rope must have at least three tucks with a whole strand of rope and two tucks with one-half of the wires cut out of each strand. However, this requirement must not operate to preclude the use of another form of splice or connection which can be shown to be as efficient.
- (2) Except for eye splices in the ends of wires, each wire rope used in hoisting or lowering, in guying derricks, or as a topping lift, preventer or pendant, must consist of one continuous piece without knot or splice.
- (3) Eyes in the ends of wire rope cargo falls must not be formed by knots and, in single part falls, must not be formed by wire rope clips.
- (4) The ends of falls must be secured to the winch drums by clamps, U-bolts, shackles or some other equally strong method. Fiber rope fastenings must not be used.
- (5) Wire rope must not be used for the vessel's cargo gear if in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect. Particular attention must be given to the condition of those sections of wire rope adjacent to any terminal connections, those sections exposed to abnormal wear, and those sections not normally exposed for examination.

**WAC 296-304-16025 Limitations on use of chains.**

Chains forming a part of vessel's cargo gear must not be used when, due to stretch, the increase of length of a measured section exceeds five percent, when a link is damaged, or when other external defects are evident. Chains must not be shortened by bolting, wiring, or knotting.

***WAC 296-304-170 Certification of vessels—Tests and proof loads—Heat treatment—Competent persons—Scope and application.***

All sections of this chapter which include WAC 296-304-170 in the section number apply to certification of vessels: Tests and proof loads; heat treatment; competent persons.

**WAC 296-304-17001 Visual inspection before tests.**

Before any test under this WAC 296-304-170 through 296-304-17023 is carried out, a visual inspection of the gear involved must be conducted and any visibly defective gear must be replaced or repaired. The provisions of WAC 296-304-16005(4) must be adhered to.

**WAC 296-304-17003 Unit proof test—Winches, derricks and gear accessory thereto.**

- (1) Winches, with the whole of the gear accessory thereto (including derricks, goosenecks, eye plates, eye bolts, or other attachments), must be tested with a proof load which must exceed the safe working load as follows:

<b>Safe working load</b>	<b>Proof load</b>
Up to 20 tons	25 percent in excess
20 – 50 tons	5 tons in excess
Over 50 tons	10 percent in excess

- (2) The proof load must be lifted with the vessel's normal tackle with the derrick at an angle not more than 15 degrees to the horizontal, or, at the designed minimum angle when this is greater, or, when this is impracticable, at the lowest practicable angle. The angle at which the test was made must be stated in the certificate of test. After the proof load has been lifted, it must be swung as far as possible in both directions. In applying the proof load, the design factors of the gear concerned will determine whether the load is applied with a single part fall or with a purchase and the certificate of test shall state the means used. Where winches are fitted with mechanical brakes for manual operation they must be demonstrated to be in satisfactory operating condition.
- (3) In the case of heavy lift derrick barges, proof loads must be applied, except as limited by design and stability considerations, at the maximum and minimum radius for which designed, as well as at any intermediate radius which the surveyor may deem necessary, and must be swung as far as possible in both directions. Data with respect to each proof load applied must be entered in the test certificate.
- (4) No items of cargo gear furnished by outside sources must be used as a part of the vessel's gear for the purpose of accomplishing the proof test.
- (5) All tests prescribed by this section should in general be carried out by dead load, except that in the case of quadrennial tests, replacements, or renewals, spring or hydraulic balances may be used where dead loads are not reasonably available. However, no exception must be allowed in the case of gear on new vessels.
- (6) The test must not be regarded as satisfactory unless the indicator remains constant under the proof load for a period of at least 5 minutes.
- (7) The safe working load, determined pursuant to the requirements of this section, must be applicable only to a swinging derrick. When using two fixed derricks in "union purchase" rigs, the safe working load should generally be reduced. It is recommended that owners obtain union purchase safe working load certification based upon design study and analysis by, or acceptable to, a qualified technical office of an accredited gear certification agency, with the recognition that such determinations are valid only for the conditions contemplated in the analysis.
- Where both guys and preventers are fitted, union purchase certification must state whether the guy or the preventer is the working strength member, when the guy is for slewing only, and when the guy and preventer should share working loads as far as practicable.
- (8) When necessary in the proof testing of heavy derricks, the appropriate shrouds and stays must be rigged.

**WAC 296-304-17005 Unit proof tests—Cranes and gear accessory thereto.**

- (1) Except as noted in WAC 296-304-17005(5), cranes and other hoisting machines, together with gear accessory thereto, must be tested with a proof load which must exceed the safe working load as follows:

<b><i>Safe working load</i></b>	<b><i>Proof load</i></b>
Up to 20 tons	25 percent in excess
20 – 50 tons	5 tons in excess
Over 50 tons	10 percent in excess

- (2) The proof load must be lifted and swung as far as possible in both directions. If the jib or boom of the crane has a variable radius, it must be tested with proof loads, as specified in WAC 296-304-17005(1), at the maximum and minimum radius. In the case of hydraulic cranes, when owing to the limitation of pressure it is impossible to lift a load 25 percent in excess of the safe working load, it will be sufficient to lift the greatest possible load.
- (3) Initial proof tests of new cranes must be made only with a dead load as specified in WAC 296-304-17005(2).
- (4) Initial tests of cranes which have been in service, quadrennial tests, or tests associated with replacements or renewals, may be made with spring or hydraulic balances where dead loads are not reasonably available, under the following conditions:
- Tests must be conducted at maximum, minimum, and intermediate radius points, as well as such points in the arc of rotation as meet with the approval of the accredited person.
  - An additional test must be conducted with partial load and must include all functions and movements contemplated in the use of the crane.
- (5) In cases where shore-type cranes are mounted permanently aboard barges, the requirements of WAC 296-304-170 through 296-304-17023 with respect to unit proof tests and examinations must not apply and the applicable requirements of WAC 296-304-200 through 296-304-20025 must be adhered to with respect to unit proof tests and examinations.

**WAC 296-304-17007 Limitations on safe working loads and proof loads.**

The proof loads specified in WAC 296-304-17003 and 296-304-17005 must be adjusted as necessary to meet any pertinent limitations based on stability and/or on structural competence at particular radii. Safe working loads must be reduced accordingly.

**WAC 296-304-17009 Examinations subsequent to unit tests.**

- (1) After satisfactory completion of the unit proof load tests required by WAC 296-304-17003 and 296-304-17005, the cargo gear and all component parts thereof must be given a thorough visual examination, supplemented as necessary by other means, such as a hammer test or with electronic, ultrasonic, or other nondestructive methods, to determine if any of the parts were damaged, deformed, or otherwise rendered unsafe for further use.



- (2) When the test of gear referred to in WAC 296-304-17008(1) is being conducted for the first time on a vessel, accessory gear must be dismantled or disassembled for examination after the test. The sheaves and pins of the blocks included in this test need not be removed unless there is evidence of deformation or failure.
- (3) For subsequent tests such parts of the gear must be dismantled or disassembled after the test as necessary to determine their suitability for continued service.
- (4) When blocks are disassembled all shell bolt nuts must be securely locked upon reassembly.
- (5) In carrying out the requirements of this section, replacement must be required of:
  - (a) Any swivel found to have excessive tolerance as a result of wear on any bearing surface.
  - (b) Pins of blocks found to be shouldered, notched, or grooved from wear, in which case, in addition to replacing the pin, sheave bushings must be examined for suitability for continued use.

#### **WAC 296-304-17011 Proof tests—Loose gear.**

- (1) Chains, rings, shackles and other loose gear (whether accessory to a machine or not) must be tested with a proof load equal to that shown against the article in the following table:

<b>Article of gear</b>	<b>Proof load</b>
Chain, ring, hook, shackle or swivel blocks:	100 percent in excess of the safe working load.
Single sheave block	300 percent in excess of the safe working load <sup>1</sup>
Multiple sheave block with safe working load up to and including 20 tons	100 percent in excess of the safe working load
Multiple sheave block with safe working load over 200 tons up to and including 40 tons	20 tons in excess of the safe working load.
Multiple sheave block with safe working load over 40 tons	50 percent in excess of the safe working load.
Pitched chain used with hand-operated blocks and rings, hooks, shackles or swivels permanently attached thereto	50 percent in excess of the safe working load.
Hand-operated blocks used with pitches chains and rings, hooks, shackles or swivels permanently attached thereto.	50 percent in excess of the safe working load.

<sup>1</sup> The proof load applied to the block is equivalent to twice the maximum resultant load on the eye or pin of the block when lifting the nominal safe working load defined in WAC 296-304-17011 (1)(a) below. The proof load is, therefore, equal to four times the safe working load as defined in WAC 296-304-17011 (1)(a) below or twice the safe working load as defined in WAC 296-304-17011 (1)(b) below.

- (a) The nominal safe working load of a single-sheave block should be the maximum load which can be safely lifted by the block when the load is attached to a rope which passes around the sheave of the block.
  - (b) In the case of a single-sheave block where the load is attached directly to the block instead of to a rope passing around the sheave, it is permissible to lift a load equal to twice the nominal safe working load of the block as defined in WAC 296-304-17011 (1)(a) above.
  - (c) In the case of a lead block so situated that an acute angle cannot be formed by the two parts of the rope passing over it (i.e., the angle is always 90° or more), the block need not have a greater nominal safe working load than one-half the maximum resultant load which can be placed upon it.
- (2) In cases where persons accredited to carry out loose gear tests may be retained to conduct tests of special stevedoring gear as described in WAC [296-56-60098](#) (8)(e), which does not form part of a vessel's equipment, such tests must adhere to the requirements set forth in WAC [296-56-60098](#) (8)(e).
  - (3) After being tested as required by WAC 296-304-17011(1), and before being taken into use, all chains, rings, hooks, shackles, blocks or other loose gear, except as noted in WAC 296-304-17013, must be thoroughly examined, the sheaves and pins of the blocks being removed for this purpose, to determine whether any part has been injured or permanently deformed by the test. Shell bolt nuts must be securely locked upon reassembly. Defective loose gear components must be replaced before the certificate is issued.
  - (4) Any certificate relating to shackles, swivels or strength members of single-sheave blocks which have been restored to original dimensions by welding must state this fact.

### **WAC 296-304-17013 Specially designed blocks and components.**

- (1) Blocks and connecting components of an unusual nature which are specially designed and constructed as an integral part of a particular lifting unit and are either permanently affixed or of such design that two or more components must be tested together need not be considered as loose gear for purposes of WAC 296-304-17011.
- (2) In lieu of the loose gear proof test required by WAC 296-304-17011(1), design data must be submitted to an accredited certification agency indicating design and material specifications and analysis whereby the designed strength of such gear may be determined.
- (3) Subsequent to the test of the lifting unit as a whole, a thorough visual examination must be made of disassembled parts and an electronic, ultrasonic, or other equally efficient nondestructive examination must be made of those parts not dismantled to ensure the safe condition of such parts.

**WAC 296-304-17015 Proof tests—Wire rope.**

Wire rope, except as provided in WAC 296-304-16003(2), must be tested by sample, a piece being tested to destruction, and the safe working load of running ropes, unless otherwise acceptable to the department of labor and industries on the basis of design, must not exceed one-fifth of the breaking load of the sample tested. In the case of running ropes used in gear with a safe working load exceeding 10 tons, the safe working load must not exceed one-fourth of the breaking load of the sample tested.

**WAC 296-304-17017 Proof tests after repairs or alterations.**

When proof loads are applied after repairs or alterations, all parts of the assembled gear must be examined as required in WAC 296-304-17009, 296-304-17011(3), or 296-304-17013(c), whichever is applicable.

**WAC 296-304-17019 Order of tests.**

When both unit and loose gear proof load tests are required, the loose gear test may be carried out after completion of the unit test.

**WAC 296-304-17021 Heat treatment.**

- (1) The annealing of wrought iron gear required by this section must be accomplished at a temperature between 1100° and 1200°F. and the exposure must be of between thirty and sixty minutes duration. After being annealed, the gear must be allowed to cool slowly and must then be carefully inspected. All annealing must be carried out in a closed furnace.
- (2) When heat treatment of loose gear made of other than wrought iron or steel is recommended by the manufacturer, it must be carried out in accordance with the specifications of the manufacturer.

**WAC 296-304-17023 Competent persons.**

All gear certification functions must be performed by competent persons as set forth in the following table:

<b><i>Functions</i></b>	<b><i>Competent person</i></b>
Any testing, examination, inspection, or heat treatment required in United States ports.	Responsible individual, surveyor or other authorized agent of a person accredited by the department of labor and industries under the regulations contained in this part.
Any testing, examination, inspection, or heat treatment required in United States ports.	Responsible individual, surveyor or other authorized agent of persons recognized by the Commandant of the United States Coast Guard or by a foreign nation whose certification is accepted by the department of labor and industries as being in substantial accordance with WAC 296-304-15005(1).
Testing, examination and inspection of loose gear or wire rope; heat treatment of loose gear.	Employees or authorized agents of persons accredited specifically by the department of labor and industries for this purpose under the regulations contained in this section, or the manufacturer of the gear concerned unless disapproved by the director.

### ***WAC 296-304-180 Accreditation to certificate shore-based equipment—Scope and application.***

All sections of this chapter which include WAC 296-304-180 in the section number apply to accreditation to certificate shore-based equipment.

#### **WAC 296-304-18001 Eligibility for accreditation to certificate shore-based material handling devices covered by chapter [296-56](#) WAC of the safety and health regulations for longshoring.**

- (1) A person applying for accreditation to carry out certification activities and to issue and maintain the requisite records must be:

- (a) A manufacturer of cranes or derricks or of specialized equipment of the type for which accreditation application is made, or a person or organization representing such a manufacturer in a technical capacity; or
  - (b) Technically experienced and qualified to carry out examinations and/or testing, as applicable, of vessels or shore-based equipment or gear of the type for which accreditation application is made.
- (2) The owner of shore-based equipment affected may designate a member of his organization to carry out certification functions respecting the owner's equipment, on the following conditions:
  - (a) The designee is technically experienced and qualified in the inspection and maintenance or design of the type of equipment involved, aside from employment as an operator only.
  - (b) The designee has applied to an accredited, nationally operating certification agency and has been granted appointment or equivalent recognition by that agency as a surveyor for the purpose intended.
  - (c) Certification activities carried out by the designee are cleared through the offices, and are subject to the approval, of the accredited certifying agency. When equipment is found satisfactory for use upon any survey, said equipment may be used pending receipt of notification of such approval or any disapproval.
  - (d) In cases where equipment is certificated by a person designated by the equipment owner, the cognizant accredited certification agency retains the right to inspect such equipment as desired and convenient, in order to ascertain the adequacy of the certification activity performed.
- (3) Accreditation to conduct such nondestructive examination as may be a part of any certification activity may be granted to applicants found competent and equipped to carry out this activity.
- (4) Unless exemptions are granted at the discretion of the director in cases of practical difficulties or unnecessary hardship, applicants for accreditation as specified in this section must be prepared to carry out all necessary functions, except that any requisite wire rope tests, nondestructive examinations, and heat treatments may be carried out by the manufacturer of the gear concerned or by another person accredited specifically for these purposes.
- (5) A person applying for accreditation must have a satisfactory record of relevant experience and performance.
- (6) WAC 296-304-18003 Provisions respecting application for accreditation, action upon the application, and related matters.

**WAC 296-304-18003 Provisions respecting application for accreditation, action upon application, and related matters.**

The provisions of WAC 296-304-14001, 296-304-14003, 296-304-14005, 296-304-14009, 296-304-14011 and 296-304-14013 must govern accreditation to certificate shore-based material handling devices, to the extent applicable.

**WAC 296-304-190 Duties of persons accredited to certificate shore-based material handling devices—General duties, exemptions.**

The requirements of WAC 296-304-200 through 296-304-20025 must be strictly observed: Provided, however, that in cases of practical difficulties or unnecessary hardship, the director in his discretion may grant exemptions or variations from any provision in that section.

- (1) Except as otherwise noted in this section, all functions required by WAC 296-304-200 through 296-304-20025 must be carried out by or under the supervision of a person accredited for the purpose or by his authorized representative.
- (2) All required unit proof load tests must be carried out by the use of weights as a dead load. Only where this is not possible may dynamometers or other recording test equipment be used. Any such recording test equipment owned by an accredited person must have been tested for accuracy within the 6 months next preceding application for accreditation or renewal thereof. Such test must be performed with calibrating equipment which has been checked in turn so that indications are traceable to the U.S. Bureau of Standards. A copy of test reports must accompany the accreditation application.

Where test equipment is not the property of the accredited person, that person must not issue any certificate based upon the use of such equipment unless its owner has made available a certificate of accuracy based on the requirements of this section, obtained within the year prior to such use, and stating the errors of the equipment. In any event reasonable standards of accuracy must be met and proof loads adjusted as necessary.

- (3) The qualifications of any person appointed or recognized by any accredited person for the purpose of carrying out certification functions must meet with the approval of the director.
- (4) WAC 296-304-15001 (5) and (7) and 296-304-15003 must govern, to the extent applicable, persons accredited under WAC 296-304-180 through 296-304-18003.

**WAC 296-304-200 Certification of shore-based material handling devices—Scope and application.**

All sections of this chapter which include WAC 296-304-200 in the section number apply to certification of shore-based material handling devices.

**WAC 296-304-20001 General provisions.**

- (1) Certification of shore-based material handling devices must conform to the requirements contained in this section, except in cases for which exemptions or variations have been granted by the director as provided in WAC 296-304-18001(4) and 296-304-190.
- (2) Any replacements or repairs deemed necessary by the accredited person must be carried out before application of a proof test.
- (3) "Ton" in this section means a ton of 2,000 pounds.
- (4) When applied to shore-based material handling devices, ratings may be stated in pounds rather than tons. When stated in tons of 2,000 pounds, this fact must be indicated.

**WAC 296-304-20003 Unit proof test and examination of cranes.**

- (1) Unit proof tests of cranes must be carried out at the following times:
  - (a) In the cases of new cranes, before initial use and every 4 years thereafter.
  - (b) In the cases of uncertificated cranes which have been in use, at the time of initial certification and every 4 years thereafter.
  - (c) After important alterations and renewals, and after repairs due to failure of, or damage to, major components.
- (2) Unit proof load tests of cranes must be carried out where applicable with the boom in the least stable direction relative to the mounting, based on the manufacturer's specifications.
- (3) Unit proof load tests must be based on the manufacturer's load ratings for the conditions of use and must, except in the case of bridge type cranes utilizing a trolley, consist of application of a proof load of 10 percent in excess of the load ratings at maximum and minimum radius, and at such intermediate radii as the certificating authority may deem necessary in the circumstances.<sup>1</sup> Trolley equipped cranes must be subject to a proof load of 25 percent in excess of the manufacturer's load rating. In cases of foreign manufacture, the manufacturer's specifications must be subject to approval by the certificating authority as being equivalent to U.S. practice.

<sup>1</sup> The manufacturer's load ratings are usually based upon percentage of tipping loads under some conditions and upon limitations of structural competence at others, as well as on other criteria such as type of crane mounting, whether or not outriggers are used, etc. Some cranes utilizing a trolley may have only one load rating assigned and applicable at any outreach. It is important that the manufacturer's ratings be used.

The weight of all auxiliary handling devices such as, but not limited to, magnets, hooks, slings, and clamshell buckets must be considered part of the load.

- (4) An examination must be carried out in conjunction with each unit proof load test. The accredited person, or his authorized representative, must make a determination as to correction of deficiencies found. The examination must cover the following points as applicable:

- (a) All functional operating mechanisms must be examined for improper function, maladjustment, and excessive component wear, with particular attention to sheaves, pins, and drums. The examination must include operation with partial load, in which all functions and movements, including, where applicable, maximum possible rotation in both directions, are performed.
- (b) All safety devices must be examined for malfunction.
- (c) Lines, tanks, valves, drains, pumps, and other parts of air or hydraulic systems must be examined for deterioration or leakage.
- (d) Loose gear components, such as hooks, including wire rope and wire rope terminals and connections, must be checked with particular attention to sections of wire rope exposed to abnormal wear and to sections not normally exposed for examination. The provisions of WAC 296-304-16023 shall apply in wire rope examinations. Cracked or deformed hooks must be discarded and not reused on any equipment subject to the provisions of chapter [296-56](#) WAC longshoring and WAC 296-304-130 through 296-304-13503.
- (e) Rope reeving must comply with manufacturer's recommendations.
- (f) Deformed, cracked, or excessively corroded members in crane structure and boom must be repaired or replaced as necessary.
- (g) Loose bolts, rivets, or other connections must be corrected.
- (h) Worn, cracked, or distorted parts affecting safe operation must be corrected.
- (i) Brake and clutch system parts, linings, pawls, and ratchets must be examined for excessive wear and free operation.
- (j) Load, boom angle, or other indicators must be checked over their full range for any significant inaccuracy. A boom angle or radius indicator must be fitted.
- (k) It must be ascertained that there is a durable rating chart visible to the operator, covering the complete range of the manufacturer's capacity ratings at all operating radii, for all permissible boom lengths and jib lengths, with alternate ratings for optional equipment affecting such ratings. Necessary precautions or warnings must be included. Operating controls must be marked or an explanation of controls must be posted at the operator's position to indicate function.
- (l) Where used, clamshell buckets or other similar equipment such as magnets, etc., must be carefully examined in all respects, with particular attention to closing line wires and sheaves. The accredited person may supplement such examination by requesting any operational tests as may be appropriate.
- (m) Careful examination of the junction areas of removable boom sections, particularly for proper seating, cracks, deformities, or other defects in securing bolts and in the vicinity of such bolts.
- (n) It must be ascertained that no counterweights in excess of the manufacturer's specifications are fitted.



- (o) Such other examination or supplemental functional tests must be made as may be deemed necessary by the accredited person under the circumstances.

#### **WAC 296-304-20005 Annual examination of cranes.**

In any year in which no quadrennial unit proof test is required, an examination must be carried out by an accredited person or his authorized representative. Such examination must be made not later than the anniversary date of the quadrennial certification and must conform with the requirements of WAC 296-304-20003(4).

#### **WAC 296-304-20007 Unit proof test and examination of derricks.**

- (1) Unit proof tests of derricks must be carried out at the same times as are specified in WAC 296-304-20003(1) for cranes.
- (2) Unit proof load tests and safe working load ratings must be based on the design load ratings at the ranges of boom angles or operating radii. Unit proof loads may exceed the safe working load as follows:

<i>Safe working load</i>	<i>Proof load</i>
up to 20 tons	25 percent in excess
20 - 50 tons	5 tons in excess
Over 50 tons	10 percent in excess

Proof loads must be applied at the designed maximum and minimum boom angles or radii, or, if this is impracticable, as close to these as practicable. The angles or radii of test must be stated in the certificate of test. Proof loads must be swung as far as possible in both directions. The weight of all auxiliary handling devices must be considered a part of the load.

- (3) After satisfactory completion of a unit proof load test the derrick and all component parts thereof must be carefully examined in accordance with the requirements of WAC 296-304-20003(4), as far as applicable.

#### **WAC 296-304-20009 Annual examination of derricks.**

In any year in which no quadrennial unit proof test is required, an examination must be carried out by an accredited person or his authorized representative. Such annual examination must be made not later than the anniversary date of the quadrennial certification and must conform in all applicable respects with WAC 296-304-20003(4).

#### **WAC 296-304-20011 Determination of crane or derrick safe working loads and limitations in absence of manufacturer's data.**

In the event neither manufacturer's data nor design data on safe working loads (including any applicable limitations) are obtainable, the safe working load ratings assigned must be based on the owner's information and warranty that those so assigned are correct. Unit test certificates must state the basis for any such safe working load assignment.

**WAC 296-304-20013 Safe working load reduction.**

If the operation in which equipment is engaged never utilizes more than a fraction of the safe working load rating, the owner of such equipment may, at his option, have the crane or derrick certificated for and operated at a lesser maximum safe working load in keeping with the use and based on radius and other pertinent factors: Provided, however, That the equipment concerned is physically capable of operation at the original load rating and the load reduction is not for the purpose of avoiding correction of any deficiency.

**WAC 296-304-20015 Safe working load increase.**

In no case must safe working loads be increased beyond the manufacturer's ratings or original design limitations unless such increase meets with the manufacturer's approval. Where the manufacturer's services are not available, or where the equipment is of foreign manufacture, engineering design analysis by, or acceptable to, the accredited certification agency is required. All necessary structural changes must be carried out.

**WAC 296-304-20017 Nondestructive examination.**

Wherever it is considered necessary by the accredited person or his authorized representative and wherever it is practical and advisable to avoid disassembly of equipment, removal of pins, etc., examination of structure or parts by electronic ultrasonic or other nondestructive methods may be carried out, provided that the procedure followed is acceptable to the director and the person carrying out such examination is accredited or acceptable to the director for the purpose.

**WAC 296-304-20019 Wire rope.**

- (1) Wire rope and replacement wire rope must be of the same size, same or better grade, and same construction as originally furnished by the equipment manufacturer or contemplated in the design, unless otherwise recommended by the equipment or the wire rope manufacturer due to actual working condition requirements. In the absence of specific requirements as noted, wire rope must be of a size and construction suitable for the purpose, and a safety factor of 4 must be adhered to, and verified by wire rope test certificate.
- (2) Wire rope in use on equipment previously constructed and prior to initial certification of said equipment must not be required to be tested but must be subject to thorough examination at the time of initial certification of the equipment.

**WAC 296-304-20021 Heat treatment.**

Wherever heat treatment of any loose gear is recommended by the manufacturer, it must be carried out in accordance with the specifications of the manufacturer.

**WAC 296-304-20023 Examination of bulk cargo loading or discharging spouts or suckers.**

Those portions of bulk cargo loading or discharging spouts or suckers which extend over vessels, together with any portable extensions, rigging components, outriggers, and attachment points, supporting them or any of their components vertically, must be examined annually. The examination must be carried out with particular attention to the condition of wire rope and accessories. The equipment must not be considered satisfactory unless, in the opinion of the accredited person or his authorized representative, it is deemed fit to serve its intended function.

**WAC 296-304-20025 Documentation.**

- (1) Documents issued respecting a certification function by an accredited person must be on forms approved for such use by the director and must so state.
- (2) Such documents must be issued by the accredited person to the owners of affected equipment, attesting to satisfactory compliance with applicable requirements. The forms used must contain the following information:
  - (a) Unit proof tests where required—
    - (i) Identification of crane or derrick including manufacturer, model number, serial number, and ownership.
    - (ii) Basis for assignment of safe working load ratings, with the ratings assigned (i.e., whether based on manufacturer's ratings, whether for any specific service, etc.).
    - (iii) Proof test details noting radii and proof loads, how applied, and, where applicable, direction relative to mounting.
    - (iv) A statement that the test and associated examination were conducted and all applicable requirements of this section are met.
    - (v) Any necessary remarks or supplementary data, including limitations imposed and the reason therefor.
    - (vi) Name of accredited person and identification of authorized representative actually conducting test and/or examination.
    - (vii) Authorized signature of accredited person, date and place of test and/or examination.
  - (b) Annual examination of cranes or derricks—
    - (i) Information specified in WAC 296-304-20025 (2)(a)(i), (v), (vi) and (vii).
    - (ii) A statement that the required examination has been carried out and that, in the opinion of the accredited person or his authorized representative, the equipment has been found in compliance in all applicable respects with the requirements of this section.

- (c) Annual examination of bulk cargo loadings or discharging spouts or suckers—
  - (i) Specific identification of equipment.
  - (ii) A statement that examination has been completed and that, in the opinion of the accredited person or his authorized representative, the equipment meets the criteria of WAC 296-304-20023(1).
  - (iii) Information specified in WAC 296-304-20025 (2)(a)(i), (v), (vi) and (vii).
- (3) Certificates relating to wire rope, whether tested by or under the supervision of the accredited person or by its manufacturer and whether or not issued on the basis of the manufacturer's certificates, must follow the general format of a wire rope test form approved by the director.
- (4) Accredited persons must advise owners of affected equipment of the necessity for maintaining required documentation or acceptable copies thereof available for inspection at or near the worksite of the equipment involved.
  - (a) Where initial and periodic tests as well as annual examinations are required, documentation available for inspection must include the latest unit test certificate and any subsequent annual examination certificates, together with wire rope test certificates relating to any replacements since the last unit test or annual examination.
  - (b) Where only annual examination is required, documentation available for inspection must include the latest annual examination certificate and wire rope test certificates relating to any wire replaced since the last annual examination.
  - (c) In the event that heat treatment of any loose gear is recommended by its manufacturer, the latest heat treatment certificate, attesting to compliance with the manufacturer's specifications, must be part of the available documentation.
- (5) No certification must be issued until any deficiencies considered by the accredited person to constitute a currently unsatisfactory condition have been corrected. Replacement parts shall be of equal or better quality as original equipment and suitable for the purpose. In the event deficiencies remain uncorrected and no certification therefore is issued, the accredited person must inform of the circumstances the nearest district office of the department of labor and industries.

**WAC 296-304-010 Scope and application**

[Statutory Authority: RCW 49.17.010, RCW 49.17.040, RCW 49.17.050, RCW 49.17.060. 22-23-144, (Order 22-29), § 296-304-010, filed 11/22/22, effective 12/26/22. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 01-11-038, § 296-304-010, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-010, filed 12/26/97, effective 3/1/98. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. WSR 95-22-015, § 296-304-010, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-010, filed 1/18/95, effective 3/10/95; WSR 89-11-035 (Order 89-03), § 296-304-010, filed 5/15/89, effective 6/30/89; Order 75-6, § 296-304-010, filed 3/10/75; Order 74-25, § 296-304-010, filed 5/7/74.]

**WAC 296-304-01001 Definitions.**

[Statutory Authority: RCW 49.17.010, RCW 49.17.040, RCW 49.17.050, RCW 49.17.060. 22-23-144, (Order 22-29), § 296-304-01001, filed 11/22/22, effective 12/26/22. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-01001, filed 06/02/2020, effective 10/01/2020.] Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-304-01001, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-01001, filed 6/5/12, effective 8/1/12. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-01001, filed 1/24/07, effective 4/1/07; WSR 05-19-086, § 296-304-01001, filed 9/20/05, effective 12/1/05; WSR 03-04-099, § 296-304-01001, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-01001, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-01001, filed 1/18/95, effective 3/10/95; Order 76-7, § 296-304-01001, filed 3/1/76; Order 74-25, § 296-304-01001, filed 5/7/74.]

**WAC 296-304-01003 Reference specifications, standards, and codes.**

[Statutory Authority: RCW 49.17.010, 49.17.040, RCW 49.17.050, and 49.17.060. 03-04-099 (Order 02-31), § 296-304-01003, filed 02/04/03, effective 08/01/03. Order 74-25, § 296-304-01003, filed 5/7/74.]

**WAC 296-304-01006 Fire protection in shipyards.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01006, filed 09/05/2017, effective 10/06/2017. WSR 06-08-003, recodified as § 296-304-01006, filed 3/23/06, effective 4/23/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-19-086, § 296-304-01006, filed 9/20/05, effective 12/1/05. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-01005, filed 1/18/95, effective 3/10/95.]

**WAC 296-304-01007 Fire safety plan.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-01007, filed 8/7/07, effective 12/1/07; WSR 07-03-163, § 296-304-01007, filed 1/24/07, effective 4/1/07; WSR 05-19-086, § 296-304-01007, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01009 Precautions for hot work.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-304-01009, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-05-062, § 296-304-01009, filed 2/20/07, effective 4/1/07; WSR 05-19-086, § 296-304-01009, filed 9/20/05, effective 12/1/05.]

**WAC 296-10111 Fire watches.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01011, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-01007, filed 8/7/07, effective 12/1/07; WSR 07-03-163, § 296-304-01007, filed 1/24/07, effective 4/1/07; WSR 05-19-086, § 296-304-01007, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01013 Fire response.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01013, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-01013, filed 8/7/07, effective 12/1/07; WSR 05-19-086, § 296-304-01013, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01015 Hazards of fixed extinguishing systems on board vessels and vessel sections.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01015, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-19-086, § 296-304-01015, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01017 Land-side fire protection systems.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01017, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-01017, filed 8/7/07, effective 12/1/07; WSR 05-19-086, § 296-304-01017, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01019 Training.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01019, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-19-086, § 296-304-01019, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01021 Competent person.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-01021, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-19-086, § 296-304-01021, filed 9/20/05, effective 12/1/05.]

**WAC 296-304-01023 Appendix A-Model fire safety plan.**

[Statutory Authority: RCW 49.17.010, .020, .040, .050, and .060. 07-17-034, (Order 07-12), § 296-304-01023, filed 08/07/07, effective 12/01/07.]

**WAC 296-304-020 Confined and enclosed spaces and other dangerous atmospheres in shipyard employment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-020, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-020, filed 8/7/07, effective 12/1/07. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-020, filed 1/18/95, effective 3/10/95; WSR 93-04-111 (Order 92-15), § 296-304-020, filed 2/3/93, effective 3/15/93; Order 74-25, § 296-304-020, filed 5/7/74.]

**WAC 296-304-02001 Reserved.**

[Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02001, filed 1/18/95, effective 3/10/95; Order 76-7, § 296-304-02001, filed 3/1/76; Order 74-25, § 296-304-02001, filed 5/7/74.]

**WAC 296-304-02003 Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-02003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-03-093, § 296-304-02003, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. WSR 95-22-015, § 296-304-02003, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02003, filed 1/18/95, effective 3/10/95; WSR 93-19-142 (Order 93-04), § 296-304-02003, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-02003, filed 3/1/76; Order 74-25, § 296-304-02003, filed 5/7/74.]

**WAC 296-304-02005 Cleaning and other cold work.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 18-04-096 (Order 17-26), § 296-304-02005, filed 02/06/2018, effective 03/09/2018. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-02005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-02005, filed 8/7/07, effective 12/1/07. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02005, filed 1/18/95, effective 3/10/95; Order 74-25, § 296-304-02005, filed 5/7/74.]

**WAC 296-304-02007 Hot work.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-02007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-17-034, § 296-304-02007, filed 8/7/07, effective 12/1/07; WSR 03-04-099, § 296-304-02007, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. WSR 95-22-015, § 296-304-02007, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02007, filed 1/18/95, effective 3/10/95; Order 76-7, § 296-304-02007, filed 3/1/76; Order 74-25, § 296-304-02007, filed 5/7/74.]

**WAC 296-304-02009 Maintenance of safe conditions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-02009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-02009, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. WSR 95-22-015, § 296-304-02009, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02009, filed 1/18/95, effective 3/10/95; Order 76-7, § 296-304-02009, filed 3/1/76; Order 74-25, § 296-304-02009, filed 5/7/74.]

**WAC 296-304-02011 Warning signs and labels.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-02011, filed 09/05/2017, effective 10/06/2017. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-02011, filed 1/18/95, effective 3/10/95; Order 74-25, § 296-304-02011, filed 5/7/74.]

**WAC 296-304-02013 Appendix B-Compliance assistance guidelines for confined and enclosed spaces and other dangerous atmospheres.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 12-24-071 (Order 12-20), § 296-304-02013, filed 12/04/12, effective 01/04/13. Statutory Authority: RCW 49.17.010, .020, .040, .050, and .060. 07-17-034, (Order 07-12), § 296-304-02013, filed 08/07/07, effective 12/01/07. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-304-02013, filed 1/18/95, effective 3/10/95.]

**WAC 296-304-02015 Appendix C-Confined and enclosed spaces and other dangerous atmospheres in shipyard employment.**

[Statutory Authority: RCW 49.17.010, .020, .040, .050, and .060. 07-17-034, (Order 07-12), § 296-304-02015, filed 08/07/07, effective 12/01/07. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-304-02015, filed 1/18/95, effective 3/10/95.]

**WAC 296-304-030 Surface preparation and preservation—Scope and application.**

[Order 74-25, § 296-304-030, filed 5/7/74.]

**WAC 296-304-03001 Toxic cleaning solvents.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-03001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-03-093, § 296-304-03001, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-03001, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-03001, filed 1/18/95, effective 3/10/95; WSR 93-19-142 (Order 93-04), § 296-304-03001, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03001, filed 3/1/76; Order 74-25, § 296-304-03001, filed 5/7/74.]

**WAC 296-304-03003 Chemical paint and preservative removers.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-03003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-03003, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-03003, filed 5/7/74.]

**WAC 296-304-03005 Mechanical paint removers.**

[Statutory Authority: RCW 49.17.010, RCW 49.17.040, RCW 49.17.050, RCW 49.17.060. 22-23-144, (Order 22-29), § 296-304-03005, filed 11/22/22, effective 12/26/22. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-03005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-12-074, § 296-304-03005, filed 6/6/06, effective 9/1/06; WSR 05-03-093, § 296-304-03005, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. WSR 99-10-071, § 296-304-03005, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-03005, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-03005, filed 1/18/95, effective 3/10/95; WSR 93-19-142 (Order 93-04), § 296-304-03005, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03005, filed 3/1/76; Order 74-25, § 296-304-03005, filed 5/7/74.]

**WAC 296-304-03007 Painting.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-03007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-03-093, § 296-304-03007, filed 1/18/05, effective 3/1/05; WSR 03-04-099, § 296-304-03007, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-03007, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-03007, filed 1/18/95, effective 3/10/95; WSR 93-19-142 (Order 93-04), § 296-304-03007, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03007, filed 3/1/76; Order 74-25, § 296-304-03007, filed 5/7/74.]

**WAC 296-304-03009 Flammable liquids.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-03009, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-03009, filed 5/7/74.]

**WAC 296-304-040 Welding, cutting and heating—Scope and application.**

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-16-106, § 296-304-040, filed 8/1/06, effective 9/1/06; Order 74-25, § 296-304-040, filed 5/7/74.]

**WAC 296-304-04001 Ventilation and protection in welding, cutting and heating.**

[Statutory Authority: RCW 49.17.010, RCW 49.17.040, RCW 49.17.050, RCW 49.17.060. 22-23-144, (Order 22-29), § 296-304-04001, filed 11/22/22, effective 12/26/22. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 05-03-093 (Order 04-41), § 296-304-04001, filed 01/18/05, effective 03/01/05. Statutory Authority: RCW 49.17.010, 49.17.040, RCW 49.17.050, and 49.17.060. 03-04-099 (Order 02-31), § 296-304-4001, filed 02/04/03, effective 08/01/03. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-304-04001, filed 1/18/95, effective 3/10/95; 93-19-142 (Order 93-04), § 296-304-04001, filed 9/22/93, effective 11/1/93; Order 74-25, § 296-304-04001, filed 5/7/74.]

**WAC 296-304-04005 Welding, cutting and heating in way of preservative coatings.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-04005, filed 1/24/07, effective 4/1/07. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-04005, filed 1/18/95, effective 3/10/95; WSR 93-19-142 (Order 93-04), § 296-304-04005, filed 9/22/93, effective 11/1/93; Order 74-25, § 296-304-04005, filed 5/7/74.]

**WAC 296-304-04007 Welding, cutting and heating of hollow metal containers and structures not covered by WAC 296-304-02003.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04007, filed 09/05/2017, effective 10/06/2017. Order 76-7, § 296-304-04007, filed 3/1/76; Order 74-25, § 296-304-04007, filed 5/7/74.]

**WAC 296-304-04009 Gas welding and cutting.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04009, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-04009, filed 5/7/74.]

**WAC 296-304-04011 Arc welding and cutting.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-04011, filed 5/7/74.]

**WAC 296-304-04013 Uses of fissionable material in ship-breaking, shipbuilding and ship repairing.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-04013, filed 09/05/2017, effective 10/06/2017. Order 76-7, § 296-304-04013, filed 3/1/76; Order 74-25, § 296-304-04013, filed 5/7/74.]

**WAC 296-304-050 Scaffolds, ladders and other working surfaces-Scope and application**

[Order 74-25, § 296-304-050, filed 5/7/74.]

**WAC 296-304-05001 Scaffolds or staging.**

[Statutory Authority: RCW 49.17.010, RCW 49.17.040, RCW 49.17.050, RCW 49.17.060. 22-23-144, (Order 22-29), § 296-304-05001, filed 11/22/22, effective 12/26/22. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 18-04-096 (Order 17-26), § 296-304-05001, filed 02/06/2018, effective 03/09/2018. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-05001, filed 2/4/03, effective 8/1/03; Order 76-7, § 296-304-05001, filed 3/1/76; Order 74-25, § 296-304-05001, filed 5/7/74.]

**WAC 296-304-05003 Ladders.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 18-04-096 (Order 17-26), § 296-304-05003, filed 02/06/2018, effective 03/09/2018. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-05003, filed 1/24/07, effective 4/1/07; WSR 03-04-099, § 296-304-05003, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-05003, filed 5/7/74.]

**WAC 296-304-05005 Guarding of deck openings and edges.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-05005, filed 06/02/2020, effective 10/01/2020.] Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-05005, filed 1/24/07, effective 4/1/07; WSR 03-04-099, § 296-304-05005, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-05005, filed 5/7/74.]

**WAC 296-304-05007 Access to vessels.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-05007, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-05007, filed 5/7/74.]

**WAC 296-304-05009 Access to and guarding of dry docks and marine railways.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-05009, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-05009, filed 5/7/74.]

**WAC 296-304-05011 Access to cargo spaces and confined spaces.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-05011, filed 5/7/74.]

**WAC 296-304-05013 Working surfaces.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-05013, filed 06/02/2020, effective 10/01/2020. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-05007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-05013, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-05013, filed 12/26/97, effective 3/1/98; Order 76-7, § 296-304-05013, filed 3/1/76; Order 74-25, § 296-304-05013, filed 5/7/74.]

**WAC 296-304-060 General working conditions—Scope and application.**

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-060, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-060, filed 5/7/74.]

**WAC 296-304-06001 Housekeeping.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06001, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06001, filed 5/7/74.]

**WAC 296-304-06002 Sanitation.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06002, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06002, filed 6/5/12, effective 8/1/12.]

**WAC 296-304-06003 Illumination.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06003, filed 6/5/12, effective 8/1/12. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-06003, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-06003, filed 5/7/74.]



**WAC 296-304-06005 Utilities.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06005, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06005, filed 5/7/74.]

**WAC 296-304-06007 Work in confined or isolated spaces.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06007, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06007, filed 5/7/74.]

**WAC 296-304-06009 Work on or in the vicinity of radar and radio.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06009, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06009, filed 5/7/74.]

**WAC 296-304-06011 Work in or on lifeboats.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06011, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06011, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06011, filed 5/7/74.]

**WAC 296-304-06013 Hazardous materials.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 18-04-096 (Order 17-26), § 296-304-06013, filed 02/06/2018, effective 03/09/2018. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06013, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-304-06013, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06013, filed 6/5/12, effective 8/1/12. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-06013, filed 1/24/07, effective 4/1/07. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 01-11-038, § 296-304-06013, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-06013, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-06013, filed 1/18/95, effective 3/10/95; WSR 88-14-108 (Order 88-11), § 296-304-06013, filed 7/6/88; Order 76-7, § 296-304-06013, filed 3/1/76; Order 74-25, § 296-304-06013, filed 5/7/74.]

**WAC 296-304-06015 First aid.**

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 17-18-075, § 296-304-06015, filed 9/5/17, effective 10/6/17. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06015, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-06015, filed 5/7/74.]

**WAC 296-304-06016 Control of hazardous energy (lockout/tags-plus).****WAC 296-304-06017 Retention of DOT markings, placards, and labels.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06017, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-304-06017, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06017, filed 6/5/12, effective 8/1/12.]

**WAC 296-304-06018 Motor vehicle safety equipment, operation, and maintenance.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-06018, filed 09/05/2017, effective 10/06/2017. RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-06018, filed 6/5/12, effective 8/1/12.]

**WAC 296-304-070 Gear and equipment for rigging and materials handling—Scope and application.**

[Order 74-25, § 296-304-070, filed 5/7/74.]

**WAC 296-304-07001 Inspection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-07001, filed 5/7/74.]

**WAC 296-304-07003 Ropes, chains and slings.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07003, filed 09/05/2017, effective 10/06/2017. RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and chapter 49.17 RCW. WSR 12-24-071, § 296-304-07003, filed 12/4/12, effective 1/4/13; Order 76-7, § 296-304-07003, filed 3/1/76; Order 74-25, § 296-304-07003, filed 5/7/74.]

**WAC 296-304-07005 Shackles and hooks.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and chapter 49.17 RCW. WSR 12-24-071, § 296-304-07005, filed 12/4/12, effective 1/4/13; Order 76-7, § 296-304-07005, filed 3/1/76; Order 74-25, § 296-304-07005, filed 5/7/74.]

**WAC 296-304-07007 Chain falls and pull-lifts.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07007, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-07007, filed 5/7/74.]

**WAC 296-304-07009 Hoisting and hauling equipment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-07009, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-07009, filed 5/7/74.]

**WAC 296-304-07011 Use of gear.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07011, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 12-24-071 (Order 12-20), § 296-304-07011, filed 12/04/12, effective 01/04/13. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-04-099 (Order 02-31), § 296-304-07011, filed 02/04/03, effective 08/01/03. Order 74-25, § 296-304-07011, filed 5/7/74.]

**WAC 296-304-07013 Qualifications of operators.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-07013, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-07013, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-07013, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-07013, filed 5/7/74.]

**WAC 296-304-080 Tools and related equipment-Scope and application.**

[Order 74-25, § 296-304-180, filed 5/7/74.]

**WAC 296-304-08001 General precautions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-08001, filed 2/4/03, effective 8/1/03; Order 76-7, § 296-304-08001, filed 3/1/76; Order 74-25, § 296-304-08001, filed 5/7/74.]

**WAC 296-304-08003 Portable electric tools.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-08003, filed 5/7/74.]

**WAC 296-304-08005 Hand tools.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-08005, filed 5/7/74.]

**WAC 296-304-08007 Abrasive wheels.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-08007, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-08007, filed 5/7/74.]

**WAC 296-304-08009 Powder-actuated fastening tools.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-08009, filed 1/24/07, effective 4/1/07; WSR 03-11-060, § 296-304-08009, filed 5/19/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-08009, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-006, § 296-304-08009, filed 1/18/95, effective 3/10/95; Order 76-7, § 296-304-08009, filed 3/1/76; Order 74-25, § 296-304-08009, filed 5/7/74.]

**WAC 296-304-08011 Internal combustion engines, other than ship's equipment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-08011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-08011, filed 5/7/74.]

**WAC 296-304-090 Personal protective equipment (PPE)—General requirements.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-090, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-090, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-090, filed 5/7/74.]

**WAC 296-304-09001 Hazard assessment and equipment selection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09001, filed 12/26/97, effective 3/1/98; Order 76-7, § 296-304-09001, filed 3/1/76; Order 74-25, § 296-304-09001, filed 5/7/74.]

**WAC 296-304-09003 Training.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09003, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. WSR 93-19-142 (Order 93-04), § 296-304-09003, filed 9/22/93, effective 11/1/93. Statutory Authority: RCW 49.17.040 and 49.17.050. WSR 83-24-013 (Order 83-34), § 296-304-09003, filed 11/30/83; Order 74-25, § 296-304-09003, filed 5/7/74.]

**WAC 296-304-09005 Eye and face protection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 10-09-088, § 296-304-09005, filed 4/20/10, effective 6/1/10. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09005, filed 12/26/97, effective 3/1/98; Order 74-25, § 296-304-09005, filed 5/7/74.]

**WAC 296-304-09007 Respiratory protection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 05-20-055, § 296-304-09007, filed 10/3/05, effective 12/1/05; WSR 05-03-093, § 296-304-09007, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09007, filed 12/26/97, effective 3/1/98; Order 76-7, § 296-304-09007, filed 3/1/76; Order 74-25, § 296-304-09007, filed 5/7/74.]

**WAC 296-304-09009 Hearing protection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09009, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-11-060, § 296-304-09009, filed 5/19/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09009, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09011 Head protection.**

Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09011, filed 09/05/2017, effective 10/06/2017. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 14-03-013, § 296-304-09011, filed 1/7/14, effective 2/10/14; WSR 10-09-088, § 296-304-09011, filed 4/20/10, effective 6/1/10. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09011, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09013 Foot protection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09013, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 10-09-088, § 296-304-09013, filed 4/20/10, effective 6/1/10. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09013, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09015 Hand and body protection.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09015, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09015, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09017 Lifesaving equipment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09017, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-09017, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09017, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09019 Fall protection—General requirement.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-09019, filed 06/02/2020, effective 10/01/2020. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09019, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09019, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09021 Personal fall arrest systems (PFAS).**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-09021, filed 06/02/2020, effective 10/01/2020. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09021, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-09021, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09021, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-09023 Positioning device systems.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 20-12-091 (Order 19-05) § 296-304-01001, filed 06/02/2020, effective 10/01/2020. Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-09023, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-09023, filed 2/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. WSR 98-02-006, § 296-304-09023, filed 12/26/97, effective 3/1/98.]

**WAC 296-304-100 Ship's machinery and piping systems—Scope and application.**

[Order 74-25, § 296-304-100, filed 5/7/74.]

**WAC 296-304-10001 Ship's boilers.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-11001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-10001, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-10001, filed 5/7/74.]

**WAC 296-304-10003 Ship's piping systems.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-10003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-10003, filed 6/5/12, effective 8/1/12. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-10003, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-10003, filed 5/7/74.]

**WAC 296-304-10005 Ship's propulsion machinery.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-10005, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-10005, filed 6/5/12, effective 8/1/12; Order 76-7, § 296-304-10005, filed 3/1/76; Order 74-25, § 296-304-10005, filed 5/7/74.]

**WAC 296-304-10007 Ship's deck machinery.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-10007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 03-04-099, § 296-304-10007, filed 2/4/03, effective 8/1/03; Order 74-25, § 296-304-10007, filed 5/7/74.]

**WAC 296-304-110 Portable, unfired pressure vessels, drums and containers, other than ship's equipment—  
Scope and application.**

[Order 74-25, § 296-304-110, filed 5/7/74.]

**WAC 296-304-11001 Portable air receivers and other unfired pressure vessels.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-11001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-11001, filed 5/7/74.]

**WAC 296-304-11003 Drums and containers.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-11003, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-11003, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-11003, filed 5/7/74.]

**WAC 296-304-120 Electrical machinery—Electrical circuits and distribution boards.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-120, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 12-12-060, § 296-304-120, filed 6/5/12, effective 8/1/12; Order 74-25, § 296-304-120, filed 5/7/74.]

**WAC 296-304-130 Gear certification—General provisions.**

[Order 74-25, § 296-304-130, filed 5/7/74.]

**WAC 296-304-13001 Purpose and scope.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-13001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-13001, filed 5/7/74.]

**WAC 296-304-13003 Definitions of terms.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-13003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-13003, filed 5/7/74.]

**WAC 296-304-140 Procedure governing accreditation—Scope and application.**

[Order 74-25, § 296-304-140, filed 5/7/74.]

**WAC 296-304-14001 Application for accreditation.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-14001, filed 5/7/74.]

**WAC 296-304-14003 Action upon application.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-14003, filed 5/7/74.]

**WAC 296-304-14005 Duration and renewal of accreditation.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-14005, filed 5/7/74.]

**WAC 296-304-14007 Criteria governing accreditation to certificate vessels' cargo gear.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14007, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-14007, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-14007, filed 5/7/74.]

**WAC 296-304-14011 Suspension or revocation of accreditation.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-14011, filed 5/7/74.]

**WAC 296-304-14013 Reconsideration and review.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-14013, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-14013, filed 5/7/74.]

**WAC 296-304-150 Duties of persons accredited to certificate vessels' cargo gear—Scope and application.**

[Order 74-25, § 296-304-150, filed 5/7/74.]

**WAC 296-304-15001 General duties—Exemptions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-15001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-15001, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-15001, filed 5/7/74.]

**WAC 296-304-15003 Recordkeeping and related procedures concerning records in custody of accredited persons.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-15003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-15003, filed 5/7/74.]

**WAC 296-304-15005 Recordkeeping and related procedures concerning records in custody of the vessel.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-15005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-15005, filed 5/7/74.]

**WAC 296-304-160 Certification of vessels' cargo gear—Scope and application.**

[Order 74-25, § 296-304-160, filed 5/7/74.]

**WAC 296-304-16001 General.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-16001, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-16001, filed 5/7/74.]

**WAC 296-304-16003 Initial tests of cargo gear and tests after alterations, renewals or repairs.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16003, filed 5/7/74.]

**WAC 296-304-16005 Periodic tests, examinations and inspections.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16005, filed 5/7/74.]

**WAC 296-304-16007 Heat treatment**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16007, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16007, filed 5/7/74.]

**WAC 296-304-16009 Exemptions from heat treatment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16009, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16009, filed 5/7/74.]

**WAC 296-304-16011 Grace periods.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16011, filed 5/7/74.]

**WAC 296-304-16013 Gear requiring welding.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16013, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16013, filed 5/7/74.]

**WAC 296-304-16015 Damaged components.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16015, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16015, filed 5/7/74.]

**WAC 296-304-16017 Marking and posting of safe working loads.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16017, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16017, filed 5/7/74.]

**WAC 296-304-16019 Requirements governing braking devices and power sources.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16019, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16019, filed 5/7/74.]

**WAC 296-304-16021 Means of derrick attachment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16021, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16021, filed 5/7/74.]

**WAC 296-304-16023 Limitations on use of wire rope**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16023, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16023, filed 5/7/74.]

**WAC 296-304-16025 Limitations on use of chains.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-16025, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-16025, filed 5/7/74.]

**WAC 296-304-170 Certification of vessels—Tests and proof loads—Heat treatment—Competent persons—Scope and application.**

[Order 74-25, § 296-304-170, filed 5/7/74.]

**WAC 296-304-17001 Visual inspection before tests.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17001, filed 5/7/74.]

**WAC 296-304-17003 Unit proof test—Winches, derricks and gear accessory thereto.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17003, filed 5/7/74.]

**WAC 296-304-17005 Unit proof tests—Cranes and gear accessory thereto.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17005, filed 5/7/74.]

**WAC 296-304-17007 Limitations on safe working loads and proof loads.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17007, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17007, filed 5/7/74.]

**WAC 296-304-17009 Examinations subsequent to unit tests.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17009, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17009, filed 5/7/74.]

**WAC 296-304-17011 Proof tests—Loose gear.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17011, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-17011, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-17011, filed 5/7/74.]

**WAC 296-304-17013 Specially designed blocks and components.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17013, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17013, filed 5/7/74.]

**WAC 296-304-17015 Proof tests—Wire rope.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17015, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17015, filed 5/7/74.]

**WAC 296-304-17017 Proof tests after repairs or alterations.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17017, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17017, filed 5/7/74.]

**WAC 296-304-17019 Order of tests.**

[Order 74-25, § 296-304-17019, filed 5/7/74.]

**WAC 296-304-17021 Heat treatment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17021, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17021, filed 5/7/74.]

**WAC 296-304-17023 Competent persons.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-17023, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-17023, filed 5/7/74.]

**WAC 296-304-180 Accreditation to certificate shore-based equipment—Scope and application.**

[Order 74-25, § 296-304-180, filed 5/7/74.]

**WAC 296-304-18001 Eligibility for accreditation to certificate shore-based material handling devices covered by chapter 296-56 WAC of the safety and health regulations for longshoring.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-18001, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-18001, filed 5/7/74.]

**WAC 296-304-18003 Provisions respecting application for accreditation, action upon the application, and related matters.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-18003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-18003, filed 5/7/74.]

**WAC 296-304-190 Duties of persons accredited to certificate shore-based material handling devices—General duties, exemptions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-190, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-190, filed 5/7/74.]

**WAC 296-304-200 Certification of shore-based material handling devices—Scope and application.**

[Order 74-25, § 296-304-200, filed 5/7/74.]

**WAC 296-304-20001 General provisions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20001, filed 09/05/2017, effective 10/06/2017. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-304-20001, filed 1/24/07, effective 4/1/07; Order 74-25, § 296-304-20001, filed 5/7/74.]

**WAC 296-304-20003 Unit proof test and examination of cranes.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20003, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20003, filed 5/7/74.]

**WAC 296-304-20005 Annual examination of cranes.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20005, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20005, filed 5/7/74.]

**WAC 296-304-20007 Unit proof test and examination of derricks.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20007, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20007, filed 5/7/74.]

**WAC 296-304-20009 Annual examination of derricks.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20009, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20009, filed 5/7/74.]

**WAC 296-304-20011 Determination of crane or derrick safe working loads and limitations in absence of manufacturer's data.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20011, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20011, filed 5/7/74.]

**WAC 296-304-20013 Safe working load reduction.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20013, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20013, filed 5/7/74.]

**WAC 296-304-20015 Safe working load increase.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20015, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20015, filed 5/7/74.]

**WAC 296-304-20017 Nondestructive examination.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20017, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20017, filed 5/7/74.]

**WAC 296-304-20019 Wire rope.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20019, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20019, filed 5/7/74.]

**WAC 296-304-20021 Heat treatment.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20021, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20021, filed 5/7/74.]

***WAC 296-304-20023 Examination of bulk cargo loading or discharging spouts or suckers.***

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20023, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20023, filed 5/7/74.]

***WAC 296-304-20025 Documentation.***

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 17-18-075 (Order 16-17), § 296-304-20025, filed 09/05/2017, effective 10/06/2017. Order 74-25, § 296-304-20025, filed 5/7/74.]