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MARINE FIREFIGHTING FOR LAND-BASED FIREFIGHTERS STANDARD

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ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

Table of Contents

Table of Contents2
Purpose of this Standard3
 Acknowledgements3
Chapter I- Introduction4
 1.1 Scope4
 1.2 Purpose4
 1.3 General4
Chapter 2- Definitions.....5
 2.1 General5
Chapter 3- Marine Fire Awareness8
 3.1 General Requirements8
 3.2 Marine Terminals8
 3.3 Piers and Wharves8
 3.4 Vessel Familiarization and Basic Vessel Construction8
 3.5 Types of Vessels9
 3.6 Vessel Fire Control Plans9
 3.7 Marine Environment9
 3.8 Authority of Emergency Responders9
Chapter 4- Marine Firefighter I10
 4.1 General Requirements10
 4.2 Interior Construction: Structural Fire Protection10
 4.3 Access10
 4.4 Response11
 4.5 Communications12
 4.6 Command13
Chapter 5- Marine Firefighter II15
 5.1 General Requirements15
 5.2 Access15
 5.3 Response15
 5.4 Communications19
 5.5 Command19

PURPOSE OF THIS STANDARD

This manual was prepared by the Alaska Fire Standards Council (AFSC) to define the marine firefighter standard for fire service certification in Alaska. The intent of this standard is to provide direction on the necessary qualifications for structural fire fighters who might be expected to participate in land-based fire and rescue operations on marine vessels that are located at a dock or close to land.

This standard is available for download at the AFSC web site: www.firestandards.alaska.gov

Comments or suggestions for revision of this standard can be sent via mail, fax, or by e-mail to:

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This standard will be revised as necessary to address the needs of the Alaska fire service.

ACKNOWLEDGEMENTS

The AFSC would like to thank the Alaska Fire Chief's Association (AFCA) for their assistance with this project. The development of the Alaska Marine Firefighter Standard was initiated at the request of the Alaska Fire Chief's Association (AFCA). The AFCA has been instrumental in supporting the AFSC mission to identify and establish professional fire service standards to meet the needs of Alaska communities.

The AFSC extend our grateful acknowledgment to the National Fire Protection Association, the Washington State Patrol Fire Protection Bureau, the Puget Sound Marine Firefighting Commission, and the Alaska Division of Fire and Life Safety Training and Education Bureau for assistance in preparing this standard.

We also thank the communities of Valdez, Skagway, Petersburg, Sitka, and Juneau for their participation in defining the duties and capabilities of Alaska firefighters that perform land-based marine firefighting activities.

CHAPTER I- INTRODUCTION

1.1 SCOPE.

This standard identifies the elements of a comprehensive marine firefighting response program including, but not limited to, vessel familiarization, training considerations, pre-incident planning, and special hazards that enable land-based firefighters to extinguish vessel fires safely and efficiently. In general, the practices recommended in this publication apply to vessels that call at North American ports or that are signatory to the International Safety of Life at Sea (SOLAS) agreement.

1.2 PURPOSE.

Due to the very complex nature of marine firefighting, this standard is directed at land-based firefighters who respond to shipboard fires aboard marine vessels, typically within a port area.

The strategies and tactics utilized to attack a fire aboard a vessel are similar in many ways to those used in attacking structure fires. However, there are many aspects of marine firefighting that warrant special attention because of the unique environment encountered aboard a vessel.

1.3 GENERAL.

This document is based upon NFPA Standard 1005 and NFPA Guide 1405 and is written in a standardized "Awareness, Marine Firefighter I, and Marine Firefighter II" format so that fire departments, federal agencies, and private enterprises can bring their personnel to the standard level needed for their application.

1.3.1 Due to the ever-increasing familiarity and use of the National Incident Management System (NIMS) by fire service organizations, the Coast Guard and several other response systems the use of Unified Command as part of NIMS will be discussed as it applies to marine fire operations.

1.3.2 There are no prerequisites for entry into marine fire awareness training. Performance of the awareness requirements will be tested by written exams.

1.3.3 Certification at the AK Firefighter II level is a prerequisite for entry into marine firefighter I level training. Marine fire awareness level training is a prerequisite for entry into marine firefighter I level training unless the marine firefighter I training course includes all of the subjects required in marine fire awareness. Marine firefighter I performance shall be tested by written and practical exams.

1.3.4 Successful completion of awareness and marine firefighter I level training is a prerequisite for entry into marine firefighter II level training. Marine firefighter II performance shall be tested by written and practical exams.

CHAPTER 2- DEFINITIONS

2.1 GENERAL.

The terms contained in this standard are aligned with the definition of terms provided by NFPA 1005, 2007 edition and NFPA 1405, 2011 edition. The definitions contained in this section shall apply to the terms used in this standard. Where terms are not defined here or under another heading, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

2.1.1 Action Plan.

2.1.1.1 Incident Action Plan. A written management plan developed or approved by the Incident Commander that establishes the overall strategic decisions and assigns tactical objectives for the incident.

2.1.1.2 Initial Action Plan. A verbal or written management plan developed by the initial Incident Commander to an incident and upon which initial incident control actions are based,

2.1.2 Approved. Acceptable to the authority having jurisdiction.

2.1.3 Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

2.1.4 Bow. The front end of a boat or vessel.

2.1.5 Compartment. A subdivision of space or room in a ship.

2.1.6 Control Zones. The areas at an incident that are designated based upon safety and the degree of hazard to the fire fighter.

2.1.6.1 Cold Zone. The control zone of an incident that contains the command post and other support functions deemed necessary to control the incident.

2.1.6.2 Hot Zone. The control zone of an incident that includes the fire area or the area immediately surrounding hazardous materials and that extends far enough to prevent adverse effects from fire, products of combustion and/or hazardous materials releases to personnel outside the zone.

2.1.6.3 Warm Zone. The control zone at an incident that surrounds the hot zone and in which the fire fighter may be exposed to low levels of the products of combustion requiring standard fire fighter personal protective equipment for protection.

2.1.7 Draft. (1) The vertical distance between the water surface and the lowest point of a vessel. (2) The depth of water a vessel needs in order to float,

2.1.8 Fire Department. An organization providing rescue, fire suppression, and related activities. The term fire department shall include any public, governmental, private, industrial, or military organization engaging in this type of activity.

2.1.9 Fire Fighter.

2.1.9.1 Fire Fighter II. A person who has met the requirements of Chapters 1 through 6 of NFPA 1001, Standard for Fire Fighter Professional Qualifications. [1001,2008]

2.1.9.2 Marine Fire Fighter I. A land-based Firefighter at the first level of progression as defined in Chapter 4 who has demonstrated the knowledge and skills to respond to an incident and operate in

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

the proximity of a vessel or dock area or to provide support functions in the cold and warm zone on board a vessel.

2.1.9.3 Marine Fire Fighter II. A land-based Fire Fighter II at the second level of progression as defined in Chapter 5, who has demonstrated the knowledge and skills to respond to an incident and operate on a vessel while performing defensive and offensive functions inside the warm and hot zone on board a vessel.

2.1.10 Hull. The main structural frame or body of a vessel below the weather deck.

2.1.11 Immediately Dangerous to Life and Health (IDLH). Any condition that would pose an immediate or delayed threat to life, cause irreversible adverse health effects, or interfere with an individual's ability to escape unaided from a hazardous environment.

2.1.12 Job Performance Requirement (JPR): A written statement that describes a specific job task, lists the items necessary to complete the task, and defines measurable or observable outcomes and evaluation areas for the specific task.

2.1.13 List. The continuous lean or tilt of a vessel to one side due to an imbalance of weight within the vessel.

2.1.14 Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction

2.1.15 Marine Facility. Any land-based facility that incorporates buildings, personnel, equipment, docks, moorings, and other features to support the docking, loading, unloading, maintenance, and servicing of marine vessels.

2.1.16 Marine Incident. Any fire, explosion, hazardous material, utility, or other type of emergency incident on or in the vicinity of a marine vessel and/or facility to which a fire department can be expected to respond.

2.1.17 Master. The captain of a merchant ship.

2.1.18 Mate. A deck officer on a merchant ship ranking below the master.

2.1.19 Mooring. (1) Permanent anchor equipment (attached by a chain to a buoy) to which a vessel can connect a line, wire, or chain, eliminating the need to use the vessel's anchor'. (2) The act of securing a vessel. (3) The location where a vessel is berthed.

2.1.20 Personal Protective Clothing. The full complement of garments fire fighters are normally required to wear while on an emergency scene including turnout coat, protective trousers, fire-fighting boots, fire-fighting gloves, a protective hood, and a helmet with eye protection.

2.1.21 Personal Protective Equipment. Consists of full personal protective clothing, plus a self-contained breathing apparatus (SCBA) and a personal alert safety system (PASS) device.

2.1.22 Port. General area of a shore establishment having facilities for the landing, loading/unloading, and maintenance of vessels; harbor with piers.

2.1.23 Port Side. The left-hand side of a ship when facing forward.

2.1.24 Port State Control. The government authority having ultimate legal jurisdiction over a port or jurisdictional waterways.

2.1.25 Procedure. The series of actions, conducted in an approved manner and sequence, designed to achieve an intended outcome.

2.1.26 Requisite Knowledge. Fundamental knowledge one must have in order to perform a specific task.

2.1.27 Requisite Skills. The essential skills one must have in order to perform a specific task.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

2.1.28 Secondary Line. A back-up hose line and crew that accompanies the primary attack line and crew into the hot zone at an incident.

2.1.29 Shall. Indicates a mandatory requirement.

2.1.30 Ship's Agent. A person or firm who transacts all business in a port on behalf of ship owners or charterers.

2.1.31 Ship's Engineer. Officer on a mechanically propelled vessel charged with maintenance and efficient operation of main engines and, usually, all powered machinery on board.

2.1.32 Should. Indicates a recommendation or that which is advised but not required.

2.1.33 Standard: Something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality.

2.1.34 Starboard Side. The right-hand side of a ship as one faces forward.

2.1.35 Stern. The after end of boat or vessel.

2.1.36 Structural Fire Fighting. The activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, aircraft, or like properties that are involved in a fire or emergency situation.

2.1.37 Task. A specific job behavior or activity.

2.1.38 Team. Two or more individuals who have been assigned a common task and are in proximity to and in direct communications with each other, coordinate their activities as a work group, and support the safety of one another.

2.1.39 Trim. (1) The longitudinal angle of a vessel. (2) The relation of the vessel's floating attitude to the water considered from front to back. (3) The difference between fore and aft draft readings. (4) To cause a vessel to assume a desirable position in the water by arrangement of ballast, cargo, or passengers.

2.1.40 Vessel. The general term for all craft capable of floating on water and larger than a rowboat.

CHAPTER 3- MARINE FIRE AWARENESS

3.1 GENERAL REQUIREMENTS.

Portions of the requirements for the Marine Fire Awareness level are referenced to material within NFPA 1005, 2007 Edition and NFPA 1405 2011 Edition. Marine Fire Awareness Level is designed to enable responders to understand the differences encountered at incidents in the marine environment as opposed to land-based operations providing information to enhance safety during marine incidents. The following information is directed to personnel who wish to obtain the "Marine Fire Awareness Level" of Marine Firefighting for Land Based Firefighters certification.

A) Requisite Knowledge. Marine terminals, piers and wharves, vessel construction, types of vessels, vessel fire control plan, structural fire protection, interior arrangements, marine environment, problems associated with marine responses and authority of emergency responders.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.2 MARINE TERMINALS.

In general, a marine terminal is the place where a merchant vessel moors to conduct business. Differences in type, size, construction, cargo-handling, and firefighting equipment make each marine terminal unique.

A) Requisite Knowledge. Identify marine terminal type given a picture, slide, or definition of the terminal; identify marine terminal hazards given a terminal type.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.3 PIERS AND WHARVES.

Piers and wharves may be constructed from varying materials. Creosote-soaked wood pilings are often the in-water foundations for either wood, concrete, or steel-framed piers and wharves.

A) Requisite Knowledge. Identify the problems, and risks associated with piers and wharves; identify fixed firefighting equipment and potable water systems in use on piers and wharves.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.4 VESSEL FAMILIARIZATION AND BASIC VESSEL CONSTRUCTION.

Large vessels are constructed of steel or aluminum plates welded together. This includes the side shell or hull, the decks, and the internal framing. The interior bulkheads can be made of steel or other materials to meet certain fire-resistive requirements established by both national law and international convention.

Smaller vessels—such as pleasure craft and fishing vessels—may be constructed of fiberglass, wood, concrete, or aluminum. These vessels may be modified by their owners and the use of fire-resistive materials in bulkheads may be limited or non-existent.

A) Requisite Knowledge. Identify different materials used in construction of vessels; identify vessel structural components, including: keel, frames, hull, beam, decks, platforms, stringers, girders, and coamings; identify areas of vessels: aft, bow, superstructure, weather deck, 'tween deck, amidship, and forecastle; identify how vessels are flagged and provide information on where you would find information on the different regulations each vessel must follow.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.5 TYPES OF VESSELS.

The types of vessels are numerous and diverse. These vessels may come from any country and be in various states of repair or disrepair. Vessels can be classified into several general categories.

A) Requisite Knowledge. Identify the types of vessels found in the response area, such as dry bulk carriers, break bulk carriers, roll on/roll off vessel, container vessel, bulk liquid carriers, passenger vessel, ferries, barges, tug/tow boat, car carriers and fishing vessels.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.6 VESSEL FIRE CONTROL PLANS.

The vessel's fire control plan identifies the fire protection features and arrangement of the vessel. Fire control plans are generally required for large commercial vessels. Typically, this does not include tugs, barges, and commercial fishing vessels.

A) Requisite Knowledge. Identify the location of fire control plans on board a vessel, and how response personnel can utilize them during operations; identify, fire extinguishing systems, portable extinguishers, fire stations, and the international shore connection.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.7 MARINE ENVIRONMENT.

Response to a vessel fire involves environmental considerations which cause unique risks in addition to those faced in a land-based response.

A) Requisite Knowledge. Describe the effects of weather, wind and tide on a vessel; describe the effects of a vessel incident on the environment; describe the unique differences between structural firefighting on land and firefighting on a vessel; describe the unique firefighter safety issues involved in a vessel fire; describe and/or demonstrate personal safety on a vessel and at a port facility.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

3.8 AUTHORITY OF EMERGENCY RESPONDERS.

Given International Maritime Organization Conventions and national, state, and local legislation, the candidate shall:

A) Requisite Knowledge. Identify the authority of the vessel master; identify the authority of the emergency responder as it relates to a vessel incident; identify the authority of the national agency.

B) Requisite Skills. There are no skill requirements in this section for Marine Fire Awareness

CHAPTER 4- MARINE FIREFIGHTER I

4.1 GENERAL REQUIREMENTS.

Portions of the requirements for the Marine Firefighter I level are referenced to material within NFPA 1005, 2007 Edition and NFPA 1405, 2011 Edition. To meet the requirements for Marine Firefighter II the candidate shall meet: all requirements for certification as a Firefighter II (defined in Chapter 6, NFPA 1001, *Standard for Professional Firefighter Qualifications*); all requirements in Chapter 3 of this standard; and all requirements in Chapter 4 of this standard.

4.1.1 The Marine Firefighter I shall have general knowledge of the following:

A) Requisite Knowledge. Marine vessel types and potential products to be carried on those vessels; marine facility types and potential vessels and products that can be present in those facilities.

B) Requisite Skills. There are no general skill requirements for this section.

4.2 INTERIOR CONSTRUCTION: STRUCTURAL FIRE PROTECTION.

This duty involves identification of structural fire protection elements in vessel construction and design, so that the construction and design elements which inhibit the movement of fire are identified according to the JPRs of 4.2.1.

4.2.1 Using the fire control plan (for applicable vessels), vessel plans, pre-incident plans or other aids or combination thereof, so that the construction and design elements are identified and potential control points or contributions to the spread of the fire are identified.

A) Requisite Knowledge. Identify different bulkhead ratings as to classification, fire resistance, smoke resistance, and where typically found; identify interior arrangements as to ladders, companionways, passageways, cabins, machinery spaces, and cargo holds; identify exits from each compartment, machinery space, and cargo hold.

B) Requisite Skills. There are no skill requirements in this section for Marine Firefighter I.

4.3 ACCESS.

This duty involves making safe access to the scene of an incident and evaluating and securing the scene on or around an involved vessel so that it can be safely boarded, if necessary, according to the JPRs of 4.3.1 through 4.3.3

4.3.1 Locate and access the scene of an incident, given an incident, pre-incident plans, a facility map, navigational charts, a specified response vehicle or other aids or combination thereof, used by the AHJ, so that the scene of the incident is identified and potential delays in or hazards to the response are identified and avoided.

A) Requisite Knowledge. Hazards associated with marine facilities and vessels; appropriate access points for marine facilities; marine facility layout; describe the function of navigational charts.

B) Requisite Skills. Read and use maps and plans.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

4.3.2 Board a vessel, given a vessel; personal protective equipment; a ladder, gangway or other access device; and an assignment, so that the hazards are assessed, the access device is positioned and secured according to procedures and the personnel and equipment necessary to perform the assignment are transferred to the vessel without falling or being dropped.

A) Requisite Knowledge. Effect of vessel movement due to tide, wakes, currents or other factors on laddering or accessing a vessel; criteria of a safe foundation for ladder placement on a marine vessel; reliable structural components on the vessel for top placement of a ground ladder; positioning of ladders; assisting with positioning of gangways; effects of water depth and draft.

B) Requisite Skills. Climbing techniques for gangways; the ability to carry, raise and climb ground ladders in a marine environment.

4.3.3 Access a specified location on a vessel, given a vessel, a plan of the vessel, and an assignment, so that hazards are assessed, the location is identified and accessed and the personnel and equipment are transferred from the vessel boarding location to the designated location without falling or being dropped.

A) Requisite Knowledge. Vessel construction terminology; marine terminology (bow, stern, port, starboard and so forth); hazards associated with various locations on a vessel.

B) Requisite Skills. Negotiating vessel ladders, decks and corridors; operating vessel doors and hatches.

4.4 RESPONSE.

This duty involves the placement of apparatus and equipment at an incident, establishing the water supply for firefighting operations, rescuing personnel onboard the vessel, establishing effective incident communications, protecting exposures and cargo, controlling utilities, and assessing and controlling vessel stability and movement, according to the JPRs of 4.4.1 through 4.4.6.

4.4.1 Position the apparatus at a marine incident, given an incident in a specified location, an assignment, an apparatus, pre-incident plans, a facility map, standard operating procedures or other resources used by the AHJ, so that the hazards are avoided, the apparatus is spotted for the given assignment according to procedures and access for later arriving vehicles is not unnecessarily blocked.

A) Requisite Knowledge. Water supply sources for marine incidents; hazards within the port or facility; designated vehicle access routes within the port or facility; vehicle length, height and weight limits; safe vehicle placement relative to the vessel and mooring lines; ability to read pre-incident plans and maps of marine facilities; strategic and tactical positioning for various types of fire apparatus.

B) Requisite Skills. Recognizing hazards that are present in a marine environment.

4.4.2 Establish connections for the water supply at an incident given a static or pressurized water supply source; a pumping-type fire apparatus; appropriate hose, adapters, international shore connections and other fittings; agency procedures; and an assignment, so that an uninterrupted supply of water is established and all hoses are connected and positioned according to procedures.

A) Requisite Knowledge. Location and capacity of hydrants at marine facilities; availability and capabilities of alternative water supply sources such as tankers/tenders, fire boats and fire pumps; safe drafting locations relative to the location of the involved vessel; effects of tidal movements on drafting operations; agency procedures.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

B) Requisite Skills. Connecting hoses to fire boats and vessel inlets; placing hard intake hoses over dock edges or other drafting locations; stretching supply hoses to the vessel.

4.4.3 Remove a victim from a vessel as a member of a team, given a vessel, a team, an assignment, a victim, a ladder or gangway, a litter or other devices specified by the AHJ, so that the equipment is used in its intended manner and the victim is removed without further injury.

A) Requisite Knowledge. Likely location of crew members, passengers, shipyard workers and contractors on a vessel or in a marine facility; positioning for ladders and gangways to be used for rescue operations; effects of vessel movements on ladder, aerial device and gangway placement.

B) Requisite Skills. Moving conscious and unconscious victims within and off vessels; moving victims on ladders and gangways; moving and positioning ladders and gangways for rescue within and off vessels.

4.4.4 Protect an exposure at a marine fire incident as a member of a team, given an incident; a team; an exposure; a water supply source; fire apparatus, fire hose, nozzles and equipment; and an assignment, so that the apparatus and equipment are positioned and deployed according to procedures and the exposure is protected.

A) Requisite Knowledge. Effects of conducted, convected and radiated heat on marine facility and vessel exposures; effects of weather on fire behavior and marine exposure protection; exposure hazards presented by various structures and equipment at marine facilities and on vessels; positioning around marine facilities and vessels.

B) Requisite Skills. Connecting hoses and apparatus to marine facility water supply sources; deploying hoses and nozzles for exposure protection within a marine facility or vessel.

4.4.5 Collect and report vessel stability information, given a vessel, an incident, measuring devices, standard operating procedures and an assignment so that any current or potential hazards to stability are recognized and reported to according to procedures.

A) Requisite Knowledge. Effect of tide, wakes/waves, currents, firefighting agents, vessel movement or combinations thereof on vessel stability; procedures for reporting the information; vessel draft marking systems.

B) Requisite Skills. Visualizing the position of a vessel and estimating any deviation from the normal position; using measuring devices and communications equipment.

4.4.6 Control vessel movement, given a vessel, mooring equipment, standard operation procedures and an assignment so that the vessel is prevented from moving from the desired location.

A) Requisite Knowledge. Effect of tide, wakes/waves, currents, movement of nearby vessels, weather or combinations thereof on vessel movement; methods for securing a vessel to a land-based mooring or another vessel; roles and responsibilities for personnel who secure the vessel.

B) Requisite Skills. Operating mooring lines and equipment for vessels under 100 ft; assist with mooring lines and equipment for vessels over 100 ft.

4.5 COMMUNICATIONS.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

This duty involves communicating with marine facilities and vessels. Land-based fire departments utilize their own communication systems however the marine firefighter I must know the communication capabilities of marine facilities and vessels.

4.5.1 Transmit and receive messages, given a marine facility or vessel, fire department communication system and standard operation procedures so that the information is accurate, complete, clear and relayed within the time established by the AHJ.

A) Requisite Knowledge. Understanding marine communication terminology and procedures; proper marine radio frequencies to be used; types and capabilities of vessel communications systems; methods for overcoming language barriers.

B) Requisite Skills. Operating marine communication systems; operating marine radios.

4.5.2 Locate a marine facility or vessel representative when applicable, given a marine facility or vessel and an assignment, so that a line of communication is established between the fire department and the facility or vessel representatives.

A) Requisite Knowledge. Locations on a vessel where the ship's master, mate, engineer or ship's agent can be located; marine frequencies monitored by the vessel master; locations where facility representatives are normally located; methods for contacting representatives after normal working hours.

B) Requisite Skills. Operating marine communications equipment; boarding the vessel; negotiating or traveling through the facility or vessel (with crew assistance for vessels greater than '50).

4.5.3 Retrieve a vessel fire control plan (on applicable vessels) and other specified documents from a cold zone on the vessel, given a vessel, an assignment, a fire control plan (on applicable vessels) and other documents and any necessary equipment so that the fire control plan and documents are located and brought to the Incident Commander within the time specified by the AHJ.

A) Requisite Knowledge. Location(s) on the vessel where the fire control plan and other documents, such as dangerous cargo manifests; primary and alternate routes to reach the location(s) where the fire control plan (on applicable vessels) and other documents are stored; understanding of response personnel utilization of the fire control plan on applicable vessels; location of the command post.

B) Requisite Skills. Boarding and negotiating or traveling through the vessel; recognition of the fire control plan (for applicable vessels) and other types of documents.

4.5.4 Transmit and receive messages to vessel personnel and other agencies responding to an incident, given an incident, a list of the other agencies responding to the incident, communications equipment and standard operating procedures so that the information is accurate, completed, clear and relayed within the time established by the AHJ.

A) Requisite Knowledge. Marine communications terminology and procedures; proper marine radio frequencies to be used; other agencies that respond to marine incidents.

B) Requisite Skills. Operating vessel and mobile communication systems, marine radios and fire department communications equipment.

4.6 COMMAND.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

This duty involves deploying the National Incident Management System (NIMS) at an incident, as well as establishing site control and information exchange procedures, according to the JPRs of 4.6.1 through 4.6.4.

4.6.1 Establish command at an incident, given an incident and the National Incident Management System (NIMS), so that all major parties involved in the incident and their responsibilities are identified and an initial command post is established.

A) Requisite Knowledge. Working knowledge of NIMS; parties to be included in the unified command structure at an incident; unified command procedures; roles and responsibilities of the fire department, ship's master, US Coast Guard or other marine agency for the jurisdiction, and facility representative.

B) Requisite Skills. Locating facility and vessel representatives; attend incident command and/or unified command meetings, briefings and operations.

4.6.2 Develop and monitor an initial action plan for an incident, given an incident, standard operating procedures, and fire department communications equipment, so that an accurate size up of the incident is performed, the nature and location of the incident are accurately reported, hazards are identified, required resources are identified and ordered, assignments to other responders are made, incident progress is monitored and the information is accurately transferred to the next Incident Commander.

A) Requisite Knowledge. Radio procedures used by the AHJ; resource requirements for various types of incidents; basic marine firefighting and emergency incident tactics; hazards associated with marine incidents; National Incident Management System used by the AHJ; size-up procedures; transfer-of-command procedures.

B) Requisite Skills. Formulating and transmitting a size-up report.

4.6.3 Control access to a vessel, given a vessel, an incident, an accountability system, NIMS and response personnel so that all emergency responders boarding the vessel are noted and accounted for, unauthorized personnel are prevented from boarding the vessel and emergency personnel accountability reports (PARs) can be completed.

A) Requisite Knowledge. NIMS and the accountability systems used by the AHJ; knowledge of personnel who are authorized to operate at a marine incident.

B) Requisite Skills. Differentiating between authorized and unauthorized personnel attempting to board the vessel; maintaining personnel accountability; reporting on personnel accountability.

4.6.4 Evacuate a vessel or exposure, given an occupied vessel or exposure, an incident, a personnel accountability system, NIMS and response personnel so that all nonessential personnel are removed from the hazard area to an area of refuge.

A) Requisite Knowledge. Vessel and facility evacuation procedures; likely locations of passengers and crew members on the vessel; NIMS and the accountability procedures used by the AHJ.

B) Requisite Skills. Operating onboard communications equipment; identifying safe routes of egress and locations of safe refuge on a vessel.

CHAPTER 5- MARINE FIREFIGHTER II

5.1 GENERAL REQUIREMENTS.

Portions of the requirements for the Marine Firefighter II level is referenced to material within NFPA 1005, 2007 Edition and NFPA 1405, 2011 Edition. To meet the requirements for Marine Firefighter II the candidate shall meet: all requirements for certification as a Firefighter II (defined in Chapter 6, NFPA 1001, *Standard for Professional Firefighter Qualifications*); all requirements in Chapter 3 of this standard; all requirements in Chapter 4 of this standard; and all requirements of Chapter 5 this standard.

5.1.1 The Marine Firefighter II shall have general knowledge of the following:

A) Requisite Knowledge. Stability characteristics of various types of vessels; relationship of stability to trim, list, hull deflection and draft.

B) Requisite Skills. There are no general skill requirements for this section.

5.2 ACCESS.

This duty involves making safe access to the scene of an incident and evaluating and securing the scene on or around an involved vessel so that it can be safely boarded, if necessary, according to the JPRs of 5.2.1.

5.2.1 Access a fire compartment operating as a member of a team, given a vessel, a team, an assignment, an incident, personal protective equipment, forcible entry tools and a guide rope or hose line so that team integrity is maintained, doors and hatches are opened, tools are used, barriers are removed and the opening is made ready for entry.

A) Requisite Knowledge. Construction and normal operation of vessel doors and hatches; forcible entry techniques for vessel doors, hatches and compartments; safety procedures for securing vessel doors and hatches to prevent them from closing behind firefighters; desired entry methods for various tactical operations, including ventilation, observation, dewatering and agent applications.

B) Requisite Skills. Transporting and operating forcible entry tools; operating, forcing and securing vessel doors and hatches; breaching decks and walls.

5.3 RESPONSE.

This duty involves the control and extinguishment of fires onboard vessels, including fire attack, ventilation, reconnaissance operations, dewatering operations and rescue of vessel occupants according to the JPRs of 5.3.1 through 5.3.14.

5.3.1 Control marine facility utilities, given a vessel or marine facility, an incident, standard operating procedures, tools and an assignment so that the utilities are controlled and command is notified.

A) Requisite Knowledge. Properties, principles and safety concerns for electric, gas, sanitary and water systems at marine facilities; utility disconnect methods and safety precautions specific to marine facilities.

B) Requisite Skills. Identifying and operating utility controls found a marine facilities and on vessels; assessing the marine facility for utility hazards.

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

5.3.2 Coordinate cargo transfer to and from a vessel, given a vessel, cargo, vessel or facility crew, equipment, standard operating procedures and an assignment, so that the cargo transfer status is identified, hazards to firefighting operations are recognized and mitigated, and the information is relayed to the Incident Commander.

A) Requisite Knowledge. Hazards presented by various types of cargo, cargo-handling equipment; procedures for securing and coordinating the transfer of various types of cargo; vessel and facility personnel roles and responsibilities.

B) Requisite Skills. There are no skill requirements in this section for the Marine Firefighter II.

5.3.3 Advance hose lines for boundary protection and other defensive fire operations onboard a vessel operating as a member of a team, given a vessel, a team, an incident, an assignment, personal protective equipment, sufficient hose and a nozzle, standard operating procedures and other equipment necessary to access the intended deployment location so that team integrity is maintained, the hose lines is deployed for advancement and operation, effective agent application practices are used, techniques are appropriate for the type of fire being fought, hazards are recognized and avoided and the fire is brought under control or the boundary is sufficiently cooled.

A) Requisite Knowledge. Principles of fire streams; types, design, operation, nozzle pressure effects and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire on a vessel; observable results of a fire stream that has been applied; dangerous vessel conditions created by fire; principles of exposure protection on a vessel; types and applications of attack lines used on vessels; effects of fire steams on various materials/fuel configurations; safe locations for operating fire streams on a vessel; recognition of the need to control fire movement aboard a vessel; characteristics and operation of vessel fixed water supply and fire protection systems.

B) Requisite Skills. Preventing water hammers when shutting down nozzles and valves; opening, closing and adjusting flow and stream pattern on spray nozzles; advancing charged and uncharged hose lines up and down vessel ladders and stairs, through corridors and across decks; applying the fire stream to the marine fire area; opening and securing watertight doors and hatches and other doors and hatches onboard a vessel.

5.3.4 Ventilate smoke from a vessel operating as part of a team, given a vessel, a team, an incident, an assignment, personal protective equipment, ventilation tools, equipment, ladders, standard operating procedures and onboard ventilation systems so that all equipment is positioned for ventilation, team integrity is maintained, a specified ventilation opening is created and left unobstructed, tools and onboard ventilation equipment are used as designed, all possible ventilation barriers are removed, products of combustion are removed from the vessel, and the team retreats to a safe location once the ventilation opening is made.

A) Requisite Knowledge. Construction principles of a vessel that affect ventilation operations; principles, advantages, limitations and effects of horizontal, vertical, natural and forced ventilation; safety considerations when venting a vessel; operation of onboard ventilation systems; signs, causes, effects and prevention of backdrafts; products of combustion commonly found in vessel fires; methods of heat transfer and principles of thermal layering in vessels; effects of vessel construction on fire behavior and heat transfer.

B) Requisite Skills. Transporting and deploying ventilation equipment on a vessel; opening marine doors and hatches; breaching vessel structural components (on vessels <50'), operating onboard ventilation systems.

5.3.5 Assist with operation of onboard vessel fixed fire suppression systems as a member of a team, given a vessel, a member of the vessel's crew familiar with the system, a team, an incident, a fixed fire suppression

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

system, an assignment, personal protective equipment, standard operating procedures and communications equipment so that the system is activated or shut down when directed by the Incident Commander.

A) Requisite Knowledge. Types of fixed suppression systems found on vessels; appropriate times to activate fixed suppression systems on vessels; hazards associated with operating fixed suppression systems and agents.

B) Requisite Skills. Assist with the operation of fire suppression system controls; operating communication equipment located at the fire suppression system control room.

5.3.6 Assess fire conditions onboard a vessel while operating as a member of a team, given a vessel, a team, an assignment, an incident, personal protective equipment, a hose or safety line and communications equipment so that team integrity is maintained and the current size, intensity, location, rate and direction of spread and other pertinent fire information are relayed to the Incident Commander within the time frame and format established by the AHJ.

A) Requisite Knowledge. Fire behavior onboard vessels; safety procedures for operating in or near fire compartments on vessels; vessel construction and arrangement.

B) Requisite Skills. Negotiating vessel ladders, stairs, corridors and decks; operating in high heat and vision-obscured areas; accurately estimating compartment and fire size and percent of involvement.

5.3.7 Confirm the location and identity of exposures, hazards or hazardous materials from vessel documents or personnel as a member of a team given a vessel, a team, an assignment, crew members, an incident, a dangerous cargo manifest (DCM), shipping papers, stowage plan and appropriate reference materials so that the exposures, hazards or hazardous materials are identified and the information is conveyed to the Incident Commander.

A) Requisite Knowledge. Terminology and symbols used in fire control plans; use for and difference between vessel arrangement diagrams and fire control plans; purpose of watch station bills and crew/passenger lists and how they can be used by response personnel in an emergency; location, use and limitations of a DCM and cargo stowage plan; location where these documents are likely to be found and who will utilize them in an emergency; implications of changes in vessel draft, trim, list and hull deflection; container numbering systems; placarding and labeling systems; ship layout and construction.

B) Requisite Skills. Reading and using vessel documents, labels and placards; identifying various types of containers.

5.3.8 Interpret marine facility and vessel documents, given vessel fire control plans (for applicable vessels), passenger and cargo manifests, crew information or other types of documents, communications equipment and appropriate reference materials so that the information is interpreted and conveyed to the Incident Commander.

A) Requisite Knowledge. Terminology and symbols used in fire control plans; use for and difference between vessel arrangement diagrams and fire control plans; purpose of watch station bills and crew/passenger lists and how they can be used by response personnel in an emergency; location, use and limitations of a DCM and cargo stowage plan; location where these documents are likely to be found and who will utilize them in an emergency; implications of changes in vessel draft, trim, list and hull deflection.

B) Requisite Skills. Locating specific items on fire control plans (for applicable vessels), such as fire control lockers, agent storage rooms and fire main connections; using the fire control plan to develop the rescue plan;

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

reading information on a DCM, including hazardous material shipping name, package type, weight, location, hazard class and UN number.

5.3.9 Remove water from, or transfer water within, a vessel while operating as a member of a team, given a team, a vessel containing water, an assignment, dewatering equipment and personal protective equipment so that hazards to the vessel and personnel are identified, equipment is used in the manner for which it was designated, the water is moved or removed, and vessel stability is maintained.

A) Requisite Knowledge. Methods for removing or transferring water; safety precautions to be taken when working in water; hazards associated with water collecting in various portions of a vessel; hazards associated with water removal or transfer in a vessel.

B) Requisite Skills. Deploying and operating dewatering equipment.

5.3.10 Attack a fire within a vessel operating as a member of a team, given a vessel, a team, an incident an attack line, a secondary line, personal protective equipment, ladders or other required equipment and an assignment so that team integrity is maintained, the attack line is deployed for advancement, ladders are placed when needed, access is gained to the fire compartment, effective water application practices are used, the fire is approached, attack techniques facilitate suppression given the level of the fire, hidden fires are located and extinguished, hazards are recognized and managed and the fire is extinguished.

A) Requisite Knowledge. Principles of fire streams; types, design, operation, nozzle pressure effects and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire on a vessel; observable results of a fire stream that has been applied; dangerous vessel conditions created by fire; principles of exposure protection on a vessel; types of fuels found on a vessel; types and applications of attack lines used on vessels; effects of fire streams on various material/fuel configurations; safe locations for operating fire streams on a vessel; recognition of the need to control fire movement aboard a vessel.

B) Requisite Skills. Preventing water hammers when shutting down nozzles and valves; opening, closing and adjusting flow and stream pattern on spray nozzles; advancing charged and uncharged hose lines up and down vessel ladders and stairs, through corridors and across decks; applying the fire stream to the marine fire area; attacking fires on, above and below the main deck level; advancing multiple hose lines for fire attack, secondary lines in coordination or both.

5.3.11 Conduct a search and rescue operation for a missing or downed firefighter on a vessel operating as a member of a team, given a vessel, a team, an assignment, an incident, standard operating procedures, a vessel fire plan or other documents, a downed or missing firefighter, personal protective equipment, a flashlight, a portable radio, forcible entry tools, a hose or safety line and other equipment available to the AHJ so that ladders are placed when needed; all equipment is used as designed; areas where the firefighter could be located are searched; the firefighter is located, supported and removed; team integrity is maintained; and the team members respiratory protection is not compromised.

A) Requisite Knowledge. Psychological effects of operating in obscured-vision conditions; methods to determine if the area is tenable; rapid intervention search techniques and strategies for locating and removing downed or missing firefighters.

B) Requisite Skills. Using forcible entry tools and ladders during search and rescue operations; using self-contained breathing apparatus (SCBA) while negotiating restricted passages; setting up and using ladders for various rescue situations; rescuing a firefighter with functioning respiratory protection; rescuing a firefighter without functioning respiratory protection; accessing remote or enclosed compartments; advancing charged

ALASKA MARINE FIREFIGHTING FOR LAND BASED FIREFIGHTERS STANDARD

and uncharged hose lines up and down vessel ladders and stairs, through corridors and across decks; removing firefighters using carries and drags; operating, forcing and securing vessels doors and hatches.

5.3.12 Conduct a search and rescue operation for a missing victim on a vessel operating as a member of a team, given a vessel, a team, an assignment, an incident, a vessel fire plan or other documents, a missing victim, personal protective equipment, a flashlight, forcible entry tools and other equipment available to the AHJ so that ladders are placed when needed, all equipment is used as designed, areas where the victim could be located are searched, the victim is located and removed, team integrity is maintained and the team members respiratory protection is not compromised.

A) Requisite Knowledge. Psychological effects of operating in obscured-vision conditions; methods to determine if the area is tenable; primary and secondary search techniques on vessels; victim removal methods (including various drags and carries); likely locations of passengers, crew members, ship yard workers and contractors.

B) Requisite Skills. Using forcible entry tools and ladders during search and rescue operations; using SCBA while negotiating restricted passages; setting up and using ladders for various rescue situations; rescuing victims without functioning respiratory protection; accessing remote or enclosed compartments; advancing charged and uncharged hose lines up and down vessel ladders and stairs, through corridors and across decks; removing victims using carries and drags; operating, forcing and securing vessel doors and hatches.

5.3.13 Determine the need for and deploy special extinguishing agents needed to attack a fire on a vessel, given a vessel, an incident, an assignment, a selection of special extinguishing agents and their use instructions, special agent application equipment and information allowed by the AHJ so that the need is identified and communicated to the Incident Commander, the agent is selected for the fire being attacked, the equipment needed to apply the agent is requested and assembled and a sufficient quantity of agent is applied to extinguish the fire and prevent re-ignition.

A) Requisite Knowledge. Classes of fire and the appropriate extinguishing agents for each class and fuel; effects of various extinguishing agents on cargo and life safety; delivery methods for various special agents; including onboard systems; sources of bulk special extinguishing agents.

B) Requisite Skills. Reading cargo manifests; reading technical information on extinguishing agents; deploying and operating special extinguishing agent equipment.

5.4 COMMUNICATIONS.

This duty involves no requirements for the Marine Firefighter II.

5.5 COMMAND.

This duty involves no requirements for the Marine Firefighter II.