TABLE OF CONTENTS

STANDARD INSTRUCTION 02: SPECIALIZED RESPONSE GUIDELINES SECTION 32 SHIPBOARD FIREFIGHTING

I.	PURPOSE
II.	SCOPE
III.	AUTHORITY
V.	POLICY
A.	General
B.	Command and Control
C.	Pier Staging Officer
D.	Systems Control Unit
E.	Marine Branch Director
F.	Burning Ship Contingency Plan
G.	Roles and Responsibilities
Н.	First Alarm Assignment – Considerations
I.	First Alarm Assignment – Unit Deployment Guidelines
J.	Tactics
K.	Indirect Attack Procedures
L.	Direct Attack Procedures
M.	Ventilation Procedures
N.	Special Considerations
0.	Dewatering Procedures
P.	Duration Considerations10
Q.	Communications1
R.	Special Resources
S.	Accountability
T.	Cruise Ship Considerations1
U.	Military Vessel Considerations
V	Fires Onhoard Free Floating Vessels

TITLE OPERATIONS MANUAL		STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 1 of 13		ECTIVE DATE August 15, 2023

I. <u>PURPOSE</u>

To establish policies and procedures for personnel responding to fires onboard a ship of steel or aluminum construction with watertight bulkheads and/or doors.

II. SCOPE

This policy shall apply to all sworn San Diego Fire-Rescue Department (SDFD) personnel.

III. AUTHORITY

The Fire Chief authorizes this policy.

IV. POLICY

A. General

- 1. Significant incidents within the area controlled by the United States Coast Guard (USCG) Captain of the Port will be administered under unified command with at least three parties represented:
 - a. San Diego Fire-Rescue Department (SDFD)
 - b. The Captain or representative of the vessel
 - c. San Diego Harbor Police (SDHP)
- 2. The USCG has authority of the port but will not participate in firefighting efforts. They will be used as a resource. The vessel captain is an integral part of the command structure.
- 3. Any time SDFD has personnel onboard a ship in any jurisdiction, and unified command is established, SDFD shall have a chief officer present at the command location who will serve as the incident commander (IC), liaison, or agency representative.
- 4. When SDFD is dispatched to any shipboard fire, USCG port operations shall be notified.
 - a. There are legal issues to consider when dealing with shipboard emergencies, particularly with privately owned vessels, which include:
 - 1) Fire department access to the ship can be denied or restricted by the ship's captain.
 - 2) Maritime law has substantial differences from laws and regulations that Fire-Rescue personnel are accustomed to.
 - 3) Officers may rely on the USCG regarding maritime operations.

TITLE	STAND.	ARD	DEPARTMENT F I R E-RESCUE
OPERATIONS MANUAL	INSTRU	JCTION 02	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 2 of 13	EFFECTIVE DATE August 15, 2023

B. <u>Command and Control</u>

- 1. Unified command shall be established.
- 2. SDFD high-rise command structure procedures shall be modified during shipboard incidents including the early establishment of the following Incident Command System (ICS) command and general staff positions:
 - a. Operations
 - b. Logistics
 - c. Safety
 - d. Planning
- 3. The following ICS functions should be established as soon as possible:
 - a. Rapid Intervention Crew (RIC) (high priority)
 - b. Accountability Group (accountability officers assigned for each point of entry)
 - c. Fire Attack Group
 - d. Rescue Group (passenger evacuation is a high priority)
 - e. Pier Staging Officer
 - f. Water Supply Group
 - g. Base
 - h. Systems Control Unit
 - i. Medical Group
 - j. Marine Branch Director
 - k. Dewatering Group
 - l. Ground Support Unit
- 4. Consider establishing a Marine Branch and an Air Operations Branch for overboard water rescues, casualty evacuation, exposures, and incident observation.
- 5. The Incident Command Post (ICP) location shall be positioned off the ship and will be determined by the incident commander.
- 6. The Operations Section Chief may be located on or off the ship, but should be positioned off of the ship during large or complex incidents.
- 7. Joint Harbor Operations Center (JHOC) should be requested through the Emergency Command Data Center (ECDC) to notify the captain of the port and their resources.
- 8. The ship's fire control plan should be consulted for guidance. This plan details ship and crew capabilities, construction, incident mapping, and contains pre-planned emergency action plans.

TITLE	STAND.	ARD	DEPARTMENT F I R E-RESCUE
OPERATIONS MANUAL	INSTRU	JCTION 02	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 3 of 13	EFFECTIVE DATE August 15, 2023

9. If available, on board extinguishing systems should be utilized in coordination with the operations plan and dewatering measures in place.

C. <u>Pier Staging Officer</u>

- 1. The Pier Staging Officer (PSO) is responsible for organizing crews and equipment prior to being assigned to the firefighting efforts. This position should be the rank of captain or higher.
- 2. PSO will be in direct communication with Operations on the command channel.
- 3. An organized equipment cache will be established on the pier and will be easily accessible to crews assigned to the fire.
- 4. PSO will control access to keep unnecessary personnel and civilians from interfering with operations and firefighting efforts.
- 5. Crews are responsible for checking in with the PSO and staying together as a unit until requested by Operations.

D. <u>Systems Control Unit</u>

- 1. This unit is responsible for coordinating the ship's personnel and systems (firefighting, electrical, mechanical, ventilation, and dewatering), with the strategic objectives of operations.
- 2. It should consist of one or two SDFD or other fire agency personnel that have experience in shipboard firefighting.
- 3. The systems control unit works with the ship's engineer.
- 4. This unit generally will be located on the bridge of the vessel and reports to Operations.
- 5. The Systems Control Unit should be activated on incidents when Operations is located off the ship. The location will be determined by access to the bridge and safety during an extended incident and will be guided by the Systems Control Unit.

E. Marine Branch Director

TITLE OPERATIONS MANUAL	STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 4 of 13	EFFECTIVE DATE August 15, 2023	

- 1. The Marine Branch is responsible for coordinating all responding vessels utilized during the incident. These include SDHP, lifeguards, tugboats, USCG.
- 2. The Marine Branch will communicate with Operations on the command channel and will establish communication with assigned watercraft on a separate tactical channel.
- 3. The Marine Branch Director will supervise Water Rescue Group, Exposures, and coordinate hull cooling measures with operations and incident command guidance. Water RIC may be established on complex incidents for the purpose of rescuing personnel from the water. Water RIC shall only be staffed by trained personnel, i.e. San Diego Lifeguard Division or Technical Rescue Team (TRT) personnel.
- 4. Marine Branch can be an SDHP, lifeguard, or SDFD officer.

F. Burning Ship Contingency Plan

- 1. Many shipboard emergency scenarios in the Port of San Diego have been preplanned by the USCG and are available in the Burning Ship Contingency plan.
- 2. These plans must be requested through the USCG and can take over 24 hours to receive.

G. Roles and Responsibilities

- 1. SDFD
 - a. Perform search and rescue
 - b. Extinguish fire
 - c. Protect exposures
 - d. Provide other fire and rescue assistance, as needed and authorized
 - e. Participate in unified command and assist with the firefighting portion of the incident
 - f. Fire-Rescue personnel will not operate any systems on board the vessel without supervision of the ship's personnel or Systems Control Officer
- 2. Ship personnel
 - a. Provide guidance to Unified Command
 - b. Operate all shipboard systems
 - c. Dewater vessel
 - d. Calculate stability
 - e. Provide Fire-Rescue personnel with a means of communicating with the bridge if onboard communications are ineffective and the bridge is accessible.

3. USCG

- a. Environmental monitoring
- b. Pollution control booms

TITLE	STAND.	ARD	DEPARTMENT F I R E-RESCUE
OPERATIONS MANUAL	INSTRU	JCTION 02	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 5 of 13	EFFECTIVE DATE August 15, 2023

- c. Legal issues, including contacting responsible owner for cost recovery.
- d. Federalizing an incident to access federal funds for environmental clean-up.
- e. Security Zone enforcement including requests to Federal Aviation Administration (FAA) for Temporary Flight Restrictions in the emergency air space.
- f. USCG does not conduct firefighting efforts but may participate in unified command to ensure the safety and security of the port.

4. San Diego Harbor Police

- a. Coordinate with the USCG to provide port and scene security.
- b. Provide personnel, waterfront knowledge and expertise, and act as a communication liaison between marine radio frequencies and fire frequencies.
- c. SDHP vessels can be utilized as a platform for water rescue, water supply, and vessel observation.

H. First Alarm Assignment Considerations

- 1. The first alarm resources should accomplish the following objectives:
 - a. Establish incident command
 - b. Establish appropriate apparatus staging locations
 - c. Investigate and contain the incident
- 2. First arriving unit should confirm with the ship's personnel or Federal Fire when the fire was first reported and obtain an accurate burn time.
- 3. Interior attacks should only be attempted after boundaries are secured and the fire is contained to a specific area, and the IC believes the attack will be successful.
- 4. Securing boundaries include closing hatches and doors, shutting off ventilation and power to the fire compartment and cooling boundary bulkheads and decks.
- 5. Arriving units shall stage near the incident and stand-by for assignments by the IC.
- 6. Except for the first in unit, no apparatus shall drive onto the pier or wharf area until directed to do so by the incident commander.
- 7. In selecting apparatus location, company officers should consider the weight limitations of the pier.

TITLE OPERATIONS MANUAL	STANDARD INSTRUCTION 02			DEPARTMENT F I R E-RESCUE
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 6 of 13	EFF	ECTIVE DATE August 15, 2023

- 8. Avoid spotting apparatus near mooring lines, as the lines can be dangerous due to changing tidal conditions and when weight is changed onboard the ship.
 - a. If the ship's personnel cannot control the mooring lines due to mechanical failure or fire conditions, safety zones shall be established to prevent personnel and apparatus from entering these areas.
 - b. Safety zones should be of sufficient size to prevent apparatus or personnel from being hit by parting mooring lines.
- 9. Consideration should be given to cranes and heavy equipment that may need to enter the area to offload cargo or load damage and fire control materials onboard.
- 10. Consider using on board extinguishing systems (Foam, Halon, etc.)

I. <u>First Alarm Assignment Unit Deployment Guidelines</u>

Units of the first alarm assignment arriving on scene at a shipboard fire should operate under the following guidelines:

- 1. First-in Engine
 - a. Establish I.C.
 - b. Investigate/report extent of the incident.
 - c. Consult with ship's Captain and/or the ship's Engineer and get a report on conditions, time fire was first reported, and actions taken.
 - d. Determine hazards and exposures.
 - e. Direct the ship's crew to activate isolation/extinguishing systems, if appropriate.
 - f. Obtain the fire control plan (should be located at the gangway).
 - g. Assign units after determining if the fire is offensive or defensive and meeting with ship's personnel to coordinate apparatus placement.
 - h. Initial alarm should use the first two engines and the first truck for investigation or fire attack. This shall occur once an Accountability Officer has been established

2. 2nd Engine

- a. Lay a supply line
- b. Establish initial accountability at the gangway entrance
- c. If possible, establish routes of ingress and egress
- d. Consult with ship's crew who may control ventilation systems. NOTE: Fire Engineers on the first two engines shall establish a water supply to their engines.
- 3. 3rd and 4th Engines
 - a. An Accountability Officer should be established.
 - 1) For large vessels, multiple Points of Entry (POE) may be used.
 - 2) One company should be considered for this duty.

TITLE OPERATIONS MANUAL	STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 7 of 13	EFFECTIVE DATE August 15, 2023

- b. Lay supply lines as needed (to truck companies at each end of vessel)
- c. Stretch interior supply and attack lines
- d. One company shall assume RIC

4. Truck Company Operations

- a. Primary/secondary search and rescue
- b. Establish secondary means of ingress and egress utilizing the aerial ladder if conditions allow
 - 1) Consider tidal and wave movement when placing ground and aerial ladders.
 - 2) Avoid placement near mooring lines.
 - 3) The engineer will stay with the truck and continue to monitor conditions
- c. Provide for water supply to the main deck of the ship if needed and if conditions allow.
 - 1) The aerial ladder supplying water should not be considered a secondary ingress and egress point
- d. Establish elevated streams, if necessary. When utilizing aerial operations, no truck should be left unattended due to the movement of the vessel during the incident which may damage aerial ladders.
- e. Ventilation
- f. Forcible entry

J. Tactics

Fire Rescue crews should incorporate the following tactics during fire-rescue operations involving shipboard fires:

- 1. Isolate the incident as much as possible by taking advantage of the ship's construction
- 2. Create safe zones for routing personnel and equipment to the incident area
- 3. Move smoke and heat to the outside as directly as possible (considering the location of crew and passengers) while maintaining safe zones and incident boundaries as much as possible
- 4. Attack lines shall come from SDFD established water supplies unless the shipboard firefighting system status is confirmed as operational and effective.
- 5. Exposure and boundary cooling lines may come from the ship's fire control system or from SDHP/USCG sources if it is safe to do so

K. <u>Indirect Attack Procedures</u>

TITLE	STAND.	ARD	DEPARTMENT F I R E-RESCUE
OPERATIONS MANUAL	INSTRU	JCTION 02	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 8 of 13	EFFECTIVE DATE August 15, 2023

- 1. Shipboard firefighting systems may be used for hull cooling measures
- 2. Thermal imaging cameras (TICs) are a key component of shipboard firefighting, and many ships are equipped with them
 - a. Fire attack companies, as well as RIC, shall utilize TICs as early as possible in the incident
- 3. Secure ventilation systems and all watertight openings (with unified command approval). All ventilation activities should be coordinated through Operations with input from the ship's personnel.
- 4. Direct the ship's crew to activate extinguishing systems if they have not done so.
- 5. Establish boundaries as if at a hazardous material incident.
 - a. The primary boundary is to contain the fire
 - b. The secondary boundary is to protect our working environment by channeling smoke and heat away from staging, supply areas, hose lines and escape routes.
- 6. Protect all six sides of the area plus one additional deck above, with at least one hose line per area
 - a. Initial use of the ships fire main and hoses is acceptable.
 - b. As resources arrive on scene these hoses should be replaced with fire department hose lines whenever possible.
- 7. Do not apply more water than necessary to control the incident.
- 8. Dewatering capacity is as critical as water delivery capacity.
- 9. Excess steam generation may make firefighting conditions untenable

L. Direct Attack Procedures

- 1. May be attempted by first alarm and additional alarm companies when there is a high probability of success
 - a. If unsure, back off and secure boundaries
- 2. After boundaries are protected and fire attack is initiated, the use of three teams should be incorporated.
 - b. These teams consist of:
 - 1) RIC
 - 2) Fire attack team
 - 3) Backup team

TITLE OPERATIONS MANUAL		STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 9 of 13	EFF	ECTIVE DATE August 15, 2023

- 3. Eight to ten minutes after the fire attack team enters, the backup team should begin entry.
 - a. When the backup team arrives at the fire the fire attack team should back out
 - b. This procedure is used to provide a continuous firefighting effort while maintaining equipment and hose lines in place
 - c. These times should be used as a guideline and modified to fit the incident particulars, such as difficulty of ingress, working conditions for the attack teams, etc.
- 4. Attack teams should enter at a level equal to or lower than the fire area if possible.

M. Ventilation Procedures

- 1. An attempt should be made to establish ventilation in the fire area.
- It will be extremely difficult to ventilate through the top of any compartment (most decks are $\frac{1}{2}$ " steel plate).
- 3. Crews performing ventilation should anticipate backdraft conditions.
- 4. Ventilation should not be initiated until an offensive attack is attempted and a plan is developed to remove or channel the smoke and heat.
- 5. Unified command or Operations shall be notified prior to initiating ventilation.
- 6. Additional exposure lines may be needed in the areas where smoke and heat are being routed.

N. Special Considerations

- 1. Water supply
 - a. Shipboard firefighting may require large volumes of water.
 - b. Consider placing 4" supply lines to the main decks from multiple sides of the ship.
 - c. Consider at least one 1 3/4" hose line for each of the six sides of the fire
 - d. Avoid placing hose lines on gangways and/or accommodation ladders, if possible.
 - e. A minimum of two dedicated attack lines from fire department sources shall be used if direct attack is attempted.
 - f. Utilize fire department ground ladders, aerial ladder waterways and/or ropes to support the weight of water supply hoses.
 - g. The use of the ships firefighting system shall be limited to boundary cooling/exposure protection.

TITLE OPERATIONS MANUAL	STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 10 of 13	EFFECTIVE DATE August 15, 2023

h. Lines shall be laid as close to the edges of wharfs and piers as possible to maximize working area.

2. Alternative Water Supplies

- a. Alternative water supplies that may considered during emergencies involving shipboard fires include:
 - 1) Tugboats
 - 2) SDHP
 - 3) Lifeguard vessels may be called from Mission Bay
- b. These resources, when used, will be coordinated by the Marine Branch Director or the IC as a resource to the firefighting effort.

O. <u>Dewatering Procedures</u>

- 1. SDFD personnel should not participate in making dewatering calculations, other than to provide the vessel engineer with information on how much water is being pumped into the ship.
- 2. The vessel engineer is responsible for making stability computations.
- 3. The USCG also has specialists available.
- 4. The ship's dewatering capabilities should be considered before a large-scale sustained attack is initiated.
- 5. Dewatering capacity must be equal to or greater than the amount of water being used to attack the fire.
- 6. Each ship has specific design features and mathematical factors for stability that must be considered early in the incident.
- 7. The USCG and salvage companies can provide additional pumping capacity.
- 8. In most cases it is more harmful to sink the ship than to let it burn.

P. Duration Considerations

- 1. Shipboard firefighting operations are often long duration incidents.
- 2. Several shipboard firefighting incidents involving large professional fire departments have lasted up to a week or more.
- 3. Consider utilizing an incident management team (IMT) for extended incidents.

Q. <u>Communications</u>

TITLE	STAND.	ARD	DEPARTMENT F I R E-RESCUE
OPERATIONS MANUAL	INSTRU	JCTION 02	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 11 of 13	EFFECTIVE DATE August 15, 2023

- 1. Communication problems with 800 MHz radio transmissions are likely during operations onboard and within ship compartments.
- 2. Consider using direct channels early for tactical operations.
- 3. Ship's personnel may be able to supply communications between the tactical operation area and the bridge of the ship.
 - a. There are various communications systems on board, such as voiceactivated phones, intercoms, and low-output portable radios.

R. <u>Special Resources</u>

- 1. Private contractors can provide additional firefighting supplies of Halon, foam, and CO2.
- 2. Private tug and barge companies, welders, stevedores, merchant marine engineers, terminal managers, translators, and other resources may be required to assist in shipboard firefighting efforts.
- 3. Requests for these resources shall be made through unified command.
- 4. The Burning Ship Contingency Plan can be requested through the USCG for extended firefighting efforts if needed.

S. <u>Accountability</u>

- 1. Each area of operation shall initiate accountability procedures in addition to the initial accountability at the ship entrance.
- 2. SDFD high-rise accountability procedures shall be incorporated.

T. <u>Cruise Ship Considerations</u>

The following general information is specific to cruise ships and should be taken into consideration when responding to fires onboard a cruise ship.

- 1. Firefighting resources and training of the crew on a cruise ship vary widely from ship to ship.
- 2. Newer ships may be able to provide up to 100 trained crewmembers with significant amounts of firefighting equipment and SCBAs.
- 3. Smaller, older ships have very limited firefighting resources on board.
- 4. Cruise ships may have more than 1000 passengers aboard as well as large amounts of crew members.

TITLE OPERATIONS MANUAL	0	STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE	
SUBJECT: SHIPBOARD FIREFIGHTING	SECTION 32	PAGE 12 of 13	EFF	ECTIVE DATE August 15, 2023	

- 5. Consider that there will be many high-value areas of the ship, i.e., banks, casinos, wine cellars, art galleries, etc.
- 6. Evacuation procedures will be very time-consuming.
- 7. Consider using the ship's lifeboats, as well as other large passenger vessels such as Harbor Tour and sport fishing boats to evacuate passengers from the water side of the ship.

U. <u>Military Vessel Considerations</u>

The following information is specific to military vessels and should be taken into consideration when responding to fires onboard a military vessel.

- 1. If a fire is reported, onboard naval personnel will attempt to locate and extinguish the fire.
 - a. If fire increases, Federal Fire Department (FFD) is dispatched.
 - b. If FFD cannot locate and extinguish or additional alarms are needed, San Diego Fire-Rescue will be dispatched.
 - c. Consider that the fire will be well established when arriving on scene.
- 2. Verify that the water supply is sufficient for the operation.
 - a. Consider relay pumping from hydrants off the pier.
 - b. Minimum 4" supply lines should be used.
 - c. Consider additional engines used for pumping operations.
- 3. Prior to entry on the ship, a vessel map and possible location of the fire should be reviewed.
- 4. If vehicle access on the pier is available, apparatus should be placed in a location that does not block additional vehicle, hose line or personnel movement.
- 5. Prior to entry, Operations should be established on the pier using a command vehicle, Tablet Command, and/or similar programs for accountability and efficient operations.
- 6. A pier staging officer should utilize barrier tape to limit access to the entry and avoid overwhelming the Operations Chief. Pier staging should be organized by crews with an established equipment cache available on the pier.
- 7. Military and FFD communications do not share a common communication plan.

TTLE PERATIONS MANUAL		STANDARD INSTRUCTION 02		DEPARTMENT F I R E-RESCUE	
SUBJECT: SHIPBOARD FIREFIGHTING	SE	ECTION 32	PAGE 13 of 13	EFF	ECTIVE DATE August 15, 2023

- a. SDFD crews should be using SDFD frequencies, including direct channels, when entering the vessel.
- b. FFD personnel shall be assigned to Operations to relay any necessary communications to interior crews.
- 8. Helicopter Forward Looking InfraRed (FLIR) may be useful for locating the fire or heat signatures.
- 9. Consider requesting Unmanned Aerial System (UAS) for aerial reconnaissance on long-duration incidents.
- 10. The ICP should be located off the pier and have limited access. Only personnel actively running the incident should be present.
- 11. When utilizing aerial ladders, no truck should be left unattended due to the movement of the vessel during the incident.

V. Fires Onboard Free-Floating Vessels

The following information is specific to fires onboard vessels that are underway, free-floating, or otherwise inaccessible by land.

- 1. If necessary, SDFD personnel are permitted to be transported by SDHP and SDFD Lifeguard Services Division vessels to provide EMS, rescue, and firefighting emergency services for incidents on board vessels that are not moored to a pier or dock.
- 2. Any time SDFD has personnel onboard a vessel in any jurisdiction or unified command is established, SDFD shall have a chief officer present at the command post who will serve as the unified incident commander, liaison, or agency representative.

3. San Diego Bay

- a. SDHP has the responsibility to fight fires onboard free-floating vessels within the jurisdiction of the Port of San Diego.
- b. SDHP may request SDFD resources to support the incident as needed.
- c. A communications plan shall be developed to include radio channels that are available to both SDFD and SDHP.

4. Mission Bay

- a. SDFD Lifeguard Services Division has the responsibility to fight fires onboard free-floating vessels within Mission Bay.
- b. The first arriving SDFD officer will establish command and communicate with Lifeguard personnel to assess the incident and develop a plan of action.
- SDFD Lifeguard Services Division has the capability to communicate on all SDFD fire and medical channels.