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FIRE SUPPRESSION: SHIPBOARD FIREFIGHTING,
STANDARD INSTRUCTION 02, SECTION 32


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## I. PURPOSE

To establish policies and procedures for Fire-Rescue personnel when responding to fires onboard a ship.
A ship for shipboard firefighting purposes, is defined as being 120' in length or more, steel or aluminum construction and with watertight bulkheads and/or doors.

## II. SCOPE

This policy shall apply to all SDFD Personnel.

## III. AUTHORITY

The Fire Chief in coordination with the Assistant Fire Chief of Operations, Deputy Chief Shift Commanders authorizes the information within this policy.

## IV. POLICY

A. General

1. Within the area controlled by the United States Coast Guard (USCG) Captain of the Port, incidents of any significance will be administered under a Unified Command with at least three parties represented:
    a. USCG
    b. San Diego Fire-Rescue Department (SDFD)
    c. The Captain or Representative of the vessel
2. The USCG has overall authority over where, when, and how the emergency will be handled.
3. The vessel Captain is an integral part of the Command structure.
4. 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 Liaison or Agency Representative.
5. When SDFD is dispatched to any shipboard fire, the USCG Port Operations shall be notified. There are many complex legal issues to consider when dealing with shipboard emergencies, particularly with privately owned vessels, some of these issues include:
    a. Fire department access to the ship can be denied or restricted by the ship's Captain
    b. Maritime law is substantial differences from laws and regulations that fire-rescue personnel may be accustomed to.
    c. Complex incidents require a reliance on the United States Coast Guard for legal advice

B. Command and Control

1. Unified Command shall be established
2. SDFD Highrise command structure procedures shall be utilized during shipboard incidents including the early establishment of the following Incident Command System (ICS) general staff positions:

    a. Operations
    b. Logistics
    c. Safety
    d. Planning

3. The following ICS functions should be established as soon as possible:

    a. RIC (should be a high priority)
    b. Lobby Control Unit (accountability and passenger evacuation is a high priority)
    c. Staging
    d. Systems Control Unit
    e. Medical Unit
    f. Water Supply Unit
    g. Dewater Unit
    h. Ground Support Unit
    i. Base

4. Consider establishing a Marine Branch and an Air Operations Branch for overboard water rescues, casualty evacuation and incident observation.
5. The Incident Command Post (ICP) location shall be positioned off of the ship
6. The ICP location will be determined by the USCG, and may be at the USCG Operations Center at the USCG base on Harbor Drive.
7. The Operations Section Chief may be on or off the ship. The Operations Section Chief should be located off the ship during large or complex incidents.
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.

C. Systems Control Unit

1. This unit is responsible for coordinating the ships 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 Federal Fire Department has expertise and training in shipboard firefighting. If they are not already on scene, consider requesting them for technical assistance.
4. The Systems Control Unit works with the ship's Engineer and the USCG Marine Firefighting Coordinator (MFC).

5. This unit shall be located on the Bridge of the vessel and reports to Logistics. The Systems Control Unit should be activated on incidents when Operations is located off of the ship.

D. Burning Ship Contingency Plan

1. Many shipboard emergency scenarios in the Port of San Diego have been pre-planned by the USCG and are available in the Burning Ship Contingency plan.
2. SDFD maintains three copies of this plan at the following locations:

   a. Battalion 1 vehicle
   b. Battalion 1 office
   c. Station 1 library

E. Roles and Responsibilities

1. SDFD

   a. Performs search and rescue
   b. Extinguish fire
   c. Protects exposures
   d. Provide any other fire-rescue assistance as needed
   e. Participate in Unified Command and assumes responsibility for the firefighting portion of the incident
   f. Fire-Rescue personnel will not operate any systems on board the vessel

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

3. USCG

   a. Overall scene control
   b. Dewatering methods
   c. Pollution control
   d. Legal issues
   e. Provide experts in shipboard technical systems as well as Marine Firefighting Coordinator (MFC).

4. San Diego Harbor Police

   a. Coordinate with the USCG to provide port and scene security.

b. Provide personnel, waterfront knowledge and expertise, and be 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.

F. 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. 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.
3. Arriving units shall stage near the incident and stand-by for assignments by the IC.
4. With the exception of the first in unit, no apparatus should stage on the pier or wharf area.
5. In selecting apparatus location, company officers should consider the weight limitations of the pier.
6. Avoid spotting apparatus near mooring lines, as they can be very dangerous due to changing tidal conditions or adding or reducing weight onboard the ship.

   a. If ships 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.

7. 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.

G. First Alarm Assignment – Unit Deployment Guidelines

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 ships Engineer–get a report on conditions and actions taken.
   d. Determine hazards and exposures.
   e. Direct the ship's crew to activate isolation/extinguishing systems, if appropriate.

f. Consult with ship's crew to control ventilation systems.
g. Obtain the fire control plan (should be located at the gangway).
h. Assign units after determining if the fire is offensive or defensive, and meeting with ship's personnel to coordinate apparatus placement.

2. 2nd Engine

a. Lay a supply line
b. Establish lobby control/ initial accountability onboard the ship at the gangway entrance
c. Establish and control routes of ingress and egress
d. Control civilian traffic
e. Control elevators
f. Control on and off loading of cargo

NOTE: Fire Engineers on the first two engines shall establish a water supply to their engines and to the international shore connection located near the gangway.

3. 3rd and 4th Engines

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

4. Truck Company Operations

a. Primary/secondary search and rescue
b. Provide ingress and egress routes at both ends if conditions allow

1) Consider tidal and wave movement when placing ladders.
2) Avoid placement near mooring lines.

c. Provide for water supply to the main deck of the ship at both ends if conditions allow.
d. Establish elevated streams, if necessary
e. Ventilation
f. Forcible entry

H. 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 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

   Exception: It may be acceptable to use the ship's firefighting system in very minor incidents

5. Exposure and boundary cooling lines may come from the ship's fire control system or from Harbor Police/Coast Guard sources if it is safe to do so

I. Indirect Attack Procedures

1. Utilize shipboard construction and firefighting systems to contain the fire
2. Thermal imagery 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)
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 what is necessary to control the incident.
8. Dewatering capacity is as critical as water delivery capacity.
9. Also excess steam generation may make firefighting conditions untenable.

J. 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 three (3) teams should be incorporated

a. These teams consist of:

1) RIC team
2) Fire attack team
3) Backup team

3. Staging will monitor/manage Fire Attack air supply
4. 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.

5. Attack teams should enter at a level equal to or lower than the fire area if possible.

K. Ventilation Procedures

1. An attempt should be made to establish ventilation in the fire area
2. It will be extremely difficult to ventilate through the top of any compartment (most decks are ½" 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 shall be notified prior to initiating ventilation
6. Additional exposure lines may be needed in the areas where smoke and heat are being routed.

L. Special Considerations

7. 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 ¾" hose line for each of the 6 sides of the fire.
d. Avoid placing hose lines on gangways and/or accommodation ladders, if possible.
e. A minimum of two (2) 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.

h. One of the first alarm units shall connect to the international shore connection.

1) This system supplies and augments the ships fire main system as well as supplying sprinkler systems.

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

M. Alternative Water Supplies

1. Alternative water supplies that may considered during emergency involving shipboard fires include:

a. Tug boats
b. SDHP
c. USCG
d. Lifeguard vessels may be called from Mission Bay

2. These resources, when used, will be under IC control as a resource to the firefighting effort
3. The USCG also identifies resource information in the Burning Ship Contingency Plan

N. Dewatering Procedures

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
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 lines flowing
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

O. 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

P. Communications

1. Communication problems with 800 MHz radio transmissions are likely during operations onboard and within ship compartments
2. Consider using direct talk (Conventional, FIREMARS, CARS) 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 voice activated phones, intercoms, and low output portable radios

Q. Special Resources

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. The USCG has a list of available resources in the Burning Ship Contingency Plan
4. Requests for these resources shall be made through Unified Command.

R. Accountability

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

S. Cruise Ship Considerations

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
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 ships 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