FLORIDA KEYS
AREA CONTINGENCY PLAN

MARINE FIREFIGHTING PLAN
<table>
<thead>
<tr>
<th>VOLUME V</th>
<th>FLORIDA KEYS AREA CONTINGENCY PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MARINE FIREFIGHTING PLAN</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

**8100** INTRODUCTION ........................................................................................................ 8000-1

**8110** AUTHORITY ............................................................................................................ 8000-1

**8120** GEOGRAPHICAL BOUNDARY .................................................................................. 8000-1

**8130** ABBREVIATIONS ..................................................................................................... 8000-2

**8140** DEFINITIONS .......................................................................................................... 8000-3

**8150** REFERENCES .......................................................................................................... 8000-5

**8160** PROCEDURE FOR REVIEWING AND UPDATING ..................................................... 8000-6

**8200** COMMAND ........................................................................................................... 8000-7

- **8200.1** INCIDENT COMMANDER .............................................................................. 8000-7
- **8200.2** UNIFIED COMMAND .................................................................................... 8000-7

**8210** FEDERAL RESPONSIBILITY .................................................................................... 8000-8

- **8210.1** FEDERAL POLICY .......................................................................................... 8000-8
- **8210.2** REQUESTS FOR FEDERAL RESOURCES ...................................................... 8000-8
- **8210.3** COTP RESPONSIBILITY .................................................................................. 8000-9

**8220** STATE AND LOCAL RESPONSIBILITY ...................................................................... 8000-9

- **8220.1** FIRE DEPARTMENTS ...................................................................................... 8000-9

**8230** NON-GOVERNMENT RESPONSIBILITY .................................................................. 8000-9

- **8230.1** MASTER OF THE VESSEL ............................................................................ 8000-9
- **8230.2** OWNERS/OPERATORS OF VESSELS/WATERFRONT FACILITIES ............... 8000-9

**8240** PRE-DESIGNATION OF RESPONSIBILITIES FOR VARIOUS SCENARIOS .............. 8000-9

- **8240.1** U.S. COAST GUARD SECTOR KEY WEST RESPONSE ORGANIZATION ........ 8000-9
- **8240.2** FIRE DEPARTMENT INCIDENT COMMAND ORGANIZATION ..................... 8000-9

**8250** COMMAND POST .................................................................................................. 8000-9

- **8250.1** SHORESIDE INCIDENTS ................................................................................ 8000-10
- **8250.2** UNDERWAY/AT ANCHORAGE INCIDENTS .................................................... 8000-11
- **8250.3** MOBILE COMMAND POST ......................................................................... 8000-11

**8260** INTERAGENCY SUPPORT ....................................................................................... 8000-11

**8270** POLITICAL CONSIDERATIONS ............................................................................... 8000-12

**8280** PUBLIC AFFAIRS .................................................................................................. 8000-12

**8290** CONSIDERATIONS FOR THE INCIDENT COMMANDER ......................................... 8000-12

- **8290.1** ENROUTE TO INCIDENT ............................................................................... 8000-12
- **8290.2** ON-SCENE .................................................................................................... 8000-13
- **8290.3** ESTABLISH INCIDENT COMMAND SYSTEM (ICS) .................................... 8000-13
- **8290.4** COMMAND STAFF ....................................................................................... 8000-14
<table>
<thead>
<tr>
<th>8400</th>
<th>PLANNING .........................................................................................................................</th>
<th>8000-41</th>
</tr>
</thead>
<tbody>
<tr>
<td>8400.1</td>
<td>HISTORICAL CONSIDERATIONS..................................................................................................</td>
<td>8000-41</td>
</tr>
<tr>
<td>8400.2</td>
<td>TRENDS..................................................................................................................................</td>
<td>8000-41</td>
</tr>
<tr>
<td>8400.3</td>
<td>THREATS...............................................................................................................................</td>
<td>8000-41</td>
</tr>
<tr>
<td>8400.4</td>
<td>RESPONSE PERSONNEL ASSIGNMENTS.......................................................................................</td>
<td>8000-41</td>
</tr>
<tr>
<td>8410</td>
<td>WORST CASE SCENARIO .........................................................................................................</td>
<td>8000-42</td>
</tr>
<tr>
<td>8420</td>
<td>PLANNING CONSIDERATIONS.....................................................................................................</td>
<td>8000-42</td>
</tr>
<tr>
<td>8420.1</td>
<td>INCIDENT SCENE ACCESS........................................................................................................</td>
<td>8000-42</td>
</tr>
<tr>
<td>8420.2</td>
<td>ENVIRONMENTAL CONDITIONS...............................................................................................</td>
<td>8000-43</td>
</tr>
<tr>
<td>8420.3</td>
<td>CONTAMINATED WATER...........................................................................................................</td>
<td>8000-44</td>
</tr>
<tr>
<td>8430</td>
<td>RESOURCES (SEE VOLUME VI) ...............................................................................................</td>
<td>8000-44</td>
</tr>
</tbody>
</table>
INTRODUCTION

This document provides guidance for a coordinated response by the U.S. Coast Guard and other federal, state, local, and civilian forces to a fire on a vessel or at a waterfront facility within the Sector Key West Captain of the Port zone. It provides policies, responsibilities, and procedures for coordination of on-scene responders. It is designed for use in conjunction with other state, regional, and local contingency plans. This plan is referenced as an Annex inclusion in the Florida Keys Area Contingency Plan Section 8000.

8110 – AUTHORITY

The Ports and Waterways Safety Act of 1972 (PWSA) (33 U.S.C. 1221 et seq.) provides that increased supervision of port operations is necessary to prevent damage to structures in, on, or adjacent to the navigable waters of the United States, and to reduce the possibility of vessel or cargo loss, or damage to life, property, and the marine environment. This statute, along with the traditional functions and powers of the Coast Guard to render aid and save property (14 U.S.C. 88(b)), form the basis for Coast Guard firefighting response activities.

42 U.S.C. 1856-1856d provides that an agency charged with providing fire protection for any property of the United States may enter into reciprocal agreements with state and local firefighting organizations to provide for mutual aid. This statute further provides that emergency assistance may be rendered in the absence of a reciprocal agreement, when it is determined by the head of that agency to be in the best interest of the U.S.

The National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300.210) requires Area Contingency Plans to include firefighting resources. The purpose of the plan is to minimize the effects of damage to life and property resulting from a major marine fire and/or explosion.

8120 – GEOGRAPHICAL BOUNDARY

Sector Key West’s office is located in Key West, FL. Its Area of Responsibility is coterminous with its Marine Inspection Zone and Captain of the Port Zone, which start at the outermost extent of the EEZ at latitude 25°11’34" N, longitude 79°41’31" W, proceeding northeast to the Miami-Dade County, FL boundary at latitude 25°24’52" N, longitude 80°19’39" W; thence west along the southern boundary of Miami-Dade County to the western boundary at latitude 25°10’36" N, longitude 80°51’29" W; thence north along the western boundary of Miami-Dade County to the southern boundary of Collier County, FL; thence west along the southern boundary of Collier County to latitude 24°18’57" N, longitude 84°50’48" W; thence southwest to the outermost extent of the EEZ at latitude 24°18’57" N, longitude 84°50’48" W; thence east and then north along the outermost extent of the EEZ to the point of origin. Florida state waters extend 3 nautical miles seaward from the Florida Keys on the Atlantic side; on the Gulf of Mexico side, state waters extend out to 9 nautical miles.
FIGURE 8100-1: SOUTH FLORIDA GEOGRAPHIC BOUNDARIES — AREA OF RESPONSIBILITY

8130 – ABBREVIATIONS

ADCON Administrative Control
BC Battalion Chief
BSU Base Support Unit (Coast Guard)
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CFR Code of Federal Regulations
COTP Captain of the Port
CO Commanding Officer
CWA Clean Water Act
DCM Dangerous Cargo Manifest
DOH Department of Health
DOT U.S. Department of Transportation
FC Fire Chief
FKNMS Florida Keys National Marine Sanctuary
FLDEP Florida Department of Environmental Protection
HEER Hazard Evaluation and Emergency Response.
HM Harbor Master
IC Incident Commander
ICS Incident Command System
IMDG International Maritime Dangerous Goods Code
KWFD Key West Fire Department
MFC Marine Firefighting Coordinator
MSC Military Sealift Command
NESU Naval Engineering Support Unit
NPS National Park Service
NRC National Response Center
NRF National Response Framework
O/O  Vessel Owner or Operator
OPCON  Operational Control
OSC  On-Scene Coordinator
OSHA  Occupational Safety and Health Administration
OCMI  Officer-In-Charge, Marine Inspection
OPA 90  The Oil Pollution Act of 1990
OSLTF  Oil Spill Liability Trust Fund
PIAT  Public Information Assist Team
PWSA  Ports and Waterways Safety Act
SAR  Search and Rescue
SM  Salvage Master
TACON  Tactical Control
USACE  U.S. Army Corps of Engineers
USFW  U.S Fish and Wildlife Service

8140 - DEFINITIONS

ADMINISTRATIVE CONTROL (ADCON). Direction or exercise of authority over subordinate or other organizations in respect to administrative matters such as personnel matters not included in the operational missions of the subordinate or other organizations. See also Operational Control.

BATTALION CHIEF (BC). Fire department employee above Fire Captain and below the Fire Chief, who may assume the role of Incident Commander when a fire involves two or more fire companies.

CAPTAIN OF THE PORT (COTP). U.S. Coast Guard Captain of the Port. The Coast Guard officer designated by the Commandant, U.S. Coast Guard, to exercise federal responsibility for the safety and security of ports and waterways in a specified geographic area.

CARGO INFORMATION CARD. This must be available on the bridge or pilot house of any vessel towing barges loaded with flammable or combustible bulk liquid cargoes, or bulk liquid hazardous material cargoes.

COMMAND POST (ICP). Under the Incident Command System, the single location from which the incident response is directed.

CLASS SOCIETY. Organization that ensures vessels are maintained to particular standards and certifies that the vessel’s critical equipment is fit for service. When repairs are conducted on a vessel, a class representative will often certify that the repairs are completed and in accordance with standards.

DANGEROUS CARGO MANIFEST (DCM). The Dangerous Cargo Manifest is a listing of hazardous material cargoes aboard a vessel and contains information important to emergency response teams. Information included would be the vessel’s name, flag, port of loading and the cargo’s proper shipping name, gross weight, hazard class, type of package, storage locations, and the emergency response telephone number.

FEDERAL ON-SCENE COORDINATOR (FOSC). The federal official, pre-designated by the USCG, to coordinate and direct federal response efforts to an actual or threatened discharge of oil or hazardous materials in the coastal zone. In the case of an actual or threatened oil discharge, which may present a substantial threat to the public health or welfare, the FOSC will direct all public and private response efforts. For the purposes of this plan, FOSC means Commander, Sector Key West.

FIRE CHIEF (FC). Fire Department Employee in charge of all firefighting operations in a geographic area.
FIRE CONTROL PLAN. A vessel overlay or blueprint that illustrate for each deck, the fire control stations, fire resisting bulkheads, including fire detecting, manual alarms, and fire extinguishing systems, fire doors, access doors, ventilation systems, dampers and fan controls. Plans are required to be stored in a weather tight, prominent enclosure outside the deckhouse for assistance of shore side firefighting personnel. See also Section 400.

HARBOR MASTER (HM). An employee of the federal, state, regional, or local government agency, or combination thereof, who manages the operations of the ports under their jurisdiction. Within the port, the harbormaster authorizes and directs movement of vessels.

HAZARDOUS MATERIALS. These are materials which, when commercially transported, are designated by the U.S. Department of Transportation as presenting an unacceptable risk to health, safety and property. These materials are required to be carried by vessel in accordance with U.S. Department of Transportation (DOT) or U.S. Coast Guard (USCG) regulations. Regulations applicable to the transportation of hazardous materials by vessel include:

- Title 46, Code of Federal Regulations, Subchapter D (Tank Vessels)
- Title 46, Code of Federal Regulations, Subchapter O (Certain Bulk Dangerous Cargoes)

INCIDENT COMMANDER (IC). Under the Incident Command System, that person responsible for overall coordination and management of incident activities. Such activities include the development and implementation of strategies designed to mitigate the incident. The IC is usually a senior officer of the agency having jurisdiction for the incident. Depending on the incident location and other logistics considerations, the IC must establish a Command Post upon arrival so that representatives from other cooperating agencies may report to this location to provide a point of contact. The IC must establish the functional organization with personnel designated to assist in accomplishing goals of the Incident Action Plan (IAP). [Also see Unified Command.]

INCIDENT COMMAND SYSTEM (ICS). ICS is a response management system for managing a multi-agency or multi-jurisdictional response to an emergency. It consists of procedures for controlling personnel, facilities, equipment and communications.

MARINE FIREFIGHTING COORDINATOR (MFC). A MFC is used to provide the Commander, Sector Key West with expertise and advice during a firefighting situation. The MFC may be a CG Reservist who is employed as a civilian firefighter and would be available on short-term notice. The MFC would be the COTP’s liaison to the local fire department.

MARINE SURVEYORS. Normally private consultants who survey damaged vessels and recommend needed repairs. They have technical expertise and knowledge in vessel construction and repair. Surveyors are normally hired by the vessel owner or operator to ensure that the vessel gets proper and economical repair.

MASTER. The individual ultimately responsible for vessel and her crew. The master has decision-making authority for actions on the vessel. The master will often represent the vessel’s owners or operators. Also called vessel Captain.

OFFICER IN CHARGE, MARINE INSPECTION (OCMI). CG Officer In Charge, Marine Inspection. That CG officer designated by the Commandant, U.S. Coast Guard to exercise responsibility for commercial vessel inspection, marine casualty and personnel investigation, vessel and seaman certification, and vessel documentation. For purposes of this plan, OCMI means the Commander, Sector Key West.
OPERATIONAL CONTROL (OPCON). Those functions of command involving the composition of subordinate forces, the assignment of tasks, the designation of objectives, and the authoritative direction necessary to accomplish the mission. Operational command should be exercised by the use of the assigned normal organizational units through their responsible commanders or through the commanders of subordinate forces established by the commander exercising operation command. It does not include such matters of administration, discipline, internal organization, and unit training, except when a subordinate commander requests assistance. Synonymous with Operational Command.

PRE-FIRE PLAN. A contingency plan developed prior to an incident in order to determine the best possible response methods and tactics to a fire. Pre-fire plans may be conducted by vessel, terminal, or fire department personnel. Large vessels carrying very hazardous cargoes (oil tankers, chemical tankers) will often have a pre-fire plan that would normally be located on the vessel’s bridge.

SALVAGE MASTER (SM). Individual associated with a commercial or military salvage company that has extensive experience and equipment to salvage severely damaged or sunken vessels. Sophisticated equipment available to a salvage master may include floating cranes, inflatable lifting bags, deep diving equipment, and underwater welding and cutting equipment.

SHIPPING AGENT (Agent). Shipping agents are the port’s commercial representative of the vessel’s owner or operator. The agent schedules repairs, orders equipment and supplies for the vessel, and notifies federal agents of the vessel’s arrival. In short, the agent ensures that the vessels needs while in port are met. The agent is in direct contact with the owners or operators of a vessel and can obtain permission for decision concerning the vessel.

SUPERVISOR OF SALVAGE (SUPSALV) Organization within the U.S. Navy that has extensive experience in salvage of vessels.

TACTICAL CONTROL (TACON). The detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned.

UNIFIED COMMAND SYSTEM (UCS). A decision-making body typically composed of the Federal On-Scene Coordinator (USCG), the State Trustee (typically NOAA/FKNMS), and the Responsible Party (facility or vessel owner). For marine firefighting, the local fire department typically serves on the UC as well.

U.S. ARMY CORPS OF ENGINEERS (USACOE). Oversees the dredging of all navigable waters of the U.S., and operates a few dredges located throughout the U.S.

VESSEL OWNERS OR OPERATORS (O/O). There can be many different combinations of owners and operators for a vessel. Owners and operators (o/o) range from individuals to small companies, to large shipping lines. There may be many owners or only one. The owner(s) may or may not be the operator of the vessel. Often the O/O is not the owner of the cargo, and there may be many cargo owners. The vessel’s master usually represents the owner or operator, but may not have authority to make all decisions. Larger companies will often send an owners or operators representative to the scene for an incident involving their vessel.

8150 – REFERENCES

Useful references that may be used for additional information regarding marine firefighting & salvage issues are:

- National Fire Protection Association (NFPA) 1405: Guide for Land-Based Firefighters Who Respond to Marine Vessel Fires
• U.S. Coast Guard Marine Safety Manual (MSM), (COMDTINST M16000.11), Volume VI, Chapter 8, (Details USCG planning responsibilities for marine firefighting.)

8160 – PROCEDURE FOR REVIEWING AND UPDATING

Sector Key West is responsible for this plan and will keep it current by issuing a revised plan. Any errors, suggested improvements, changes in equipment/facilities, or assistance coordinating exercises should be communicated to:

U.S. Coast Guard Sector Key West
100 Trumbo Point
Key West, FL 33040
Attn: Contingency Planning
(305) 292-8722
A major waterfront or shipboard fire in the Florida Keys will likely require involvement of response teams from federal, state and local agencies. The response management system that is flexible enough to organize multiple agencies into a single coordinated response is the Incident Command System (ICS). This system involves five major functions that include Command, Operations, Planning, Logistics, and Finance/Administration Sections. These functions may be applied to any incident whether large or small. The advantage of the ICS system is the ability to fill only those parts of the organization that are necessary for the response, and that the organization may be staffed with experienced personnel from multiple agencies. In addition, the organization may be increased or decreased in size during the incident in order to meet the needs of the incident. ICS establishes lines of supervisory authority and formal reporting relationships. Direction and supervision follows established organizational lines at all times. Detailed information regarding the responsibilities of each position may be found in the U.S. Coast Guard Incident Management Handbook (IMH), and other ICS publications. Other responding agencies will, within limits of operational capabilities and internal policy, provide support to the IC by providing personnel and/or equipment.

**8200.1 – INCIDENT COMMANDER**

On small or single agency incidents, a single Incident Commander (IC) will be present. The Incident Commander will be the overall person in charge of managing the incident. The IC should be selected based upon their qualifications and experience. The IC will often have a deputy who may be from the same agency or a different agency. Deputies must have the same qualifications as the person for whom they work and be able to take over the IC position if needed. The major responsibilities and duties of the IC include:

- Establish an Incident Command Post
- Establish the immediate priorities: life safety, incident stabilization, etc
- Determine incident objectives, strategy, and tactical direction

**8200.2 – UNIFIED COMMAND**

Multi-jurisdictional or multi-agency responses will involve the need to establish a Unified Command. Under a Unified Command, each involved agency may have an Incident Commander that represents their respective agency. Time allowing, command decisions regarding response actions will be decided within the Unified Command. The Unified Command concept is a method to provide a coordinated management team when there are several agencies or jurisdictions involved in a single incident. Often each agency involved will have vital experience, information, or a significant role to play.
The Coast Guard exercises primary federal responsibility for the safety and security of the ports and waterways of the United States. This authority derives from the Ports and Waterways Safety Act of 1972 (PWSA) (33USC 1221). The PWSA and the Coast Guard's traditional functions and powers to render aid and save property (14 USC 88(b)), is the basis of the Coast Guard's firefighting activities as described in the U.S. Coast Guard Marine Safety Manual, Volume VI, Chapter 8. The U.S. Coast Guard, through the local Captain of the Port (COTP) may exercise federal authority in order to protect lives and property in a marine emergency. (Note: Commander, CG Sector Key West is COTP). This authority may include removal of a threat, for example towing a burning vessel to sea, in order to protect lives and port property that would otherwise be endangered. The COTP may also exercise federal authority under the PWSA to take command of firefighting operations if in his estimation the local Fire Department is incapable of controlling the incident, or threatens to cause greater damage, for example by sinking or capsizing a vessel. Safety of the ports and waterways, the public, and other vessels will be a primary concern to the COTP during any marine emergency.

8210.1 – FEDERAL POLICY

The Coast Guard has an interest in fighting fires involving vessels or waterfront facilities, and is routinely called upon to provide assistance at these fires. However, local authorities are principally responsible for providing and maintaining the necessary firefighting capabilities within U.S. ports and harbors. Additionally, vessel and facility owners or operators are ultimately responsible for the safety of the vessel or facility under their control, which includes providing adequate firefighting protection. Federal policy dictates that Coast Guard personnel shall not directly engage in firefighting activities on other than Coast Guard units except when necessary to save a life, or when possible to avert a significant threat, with minimal risk to Coast Guard personnel. Traditionally, the Coast Guard has provided firefighting equipment and training mainly to protect its own vessels and property. The Coast Guard renders assistance as available, based on the level of personnel training and adequacy of equipment. The Coast Guard intends to maintain this traditional 'assistance as available' posture without conveying the impression that the Coast Guard is prepared to relieve local fire departments of their responsibilities. Paramount in preparing for vessel or waterfront fires is the need to integrate Coast Guard planning and training efforts with those of other responsible agencies, particularly local fire departments.

The U.S. Navy and other military units provide in-house firefighting resources to protect U.S. property within their own facilities. They may enter into reciprocal or interagency agreements with local firefighting agencies to provide mutual aid; however, this does not relieve local authorities of the primary responsibility to provide and maintain the primary firefighting capabilities of the port. The U.S. Army Corps of Engineers (ACOE) is charged with maintaining project depths and dimensions for area navigational channels, which includes keeping channels clear for vessel transit. Should a vessel or facility fire lead to blockage of a navigational channel, the ACOE will take appropriate actions to clear the channel. Also, if a vessel fire necessitates the movement or removal of the vessel from the facility, the ACOE would contribute to the decision making process on where to move the vessel.

8210.2 – REQUESTS FOR FEDERAL RESOURCES

All requests for federal resources or equipment should be made to the Coast Guard Captain of the Port (COTP). Refer to the Resource Guide section for the telephone number. For waterside security, the Coast Guard will assist within its capabilities. COTP Sector Key West will coordinate when waterside security is necessary. Should a burning vessel be brought into port, consultation between the state (DOH, DOT, & DLNR), local fire department, and COTP Sector Key West will occur to select the best location for fighting a fire in port.
8210.3 – COTP RESPONSIBILITY

The COTP exercises primary federal responsibility for the safety and security of the port. This responsibility is discharged by enforcing dangerous cargo regulations, marine terminal safety regulations, and pollution prevention regulations. If necessary, the COTP may control the movement of ships and boats establish safety zones, and provide on scene forces. Responsibilities of the COTP in a fire aboard a vessel or waterfront facility include:

- Assume Federal IC for burning vessel underway or at anchor when:
  - The fire department with jurisdiction is unable to respond; or
  - No fire department has jurisdiction.
- Coordinate tactical control of Coast Guard forces on-scene.
- Establish safety or security zones offshore, as necessary.
- Provide information on involved waterfront facilities.
- Provide information on the location of hazardous materials on the vessel, or at the facility, if available.
- Provide technical data on ship’s construction, stability, and marine firefighting techniques through contacts and coordination with the Marine Safety Center.
- Respond to oil or hazardous materials discharges. Actual removal may be delayed until the firefighting operations are terminated.
- Obtain tugs to assist in relocating moored or anchored vessels.
- Alert owners/operators of terminal or vessel at risk.
- Provide portable communications equipment to response personnel, as needed.

8220 – STATE AND LOCAL RESPONSIBILITY

Crowd control and pier security is the responsibility of the state, which is enforced through the local police departments. Should a burning vessel be brought into port, consultation between the state, local fire department, and Sector Key West will occur to select the best location for fighting a fire in port. Evacuations, if necessary, are the responsibility of the local Civil Defense authorities.

8220.1 – FIRE DEPARTMENTS

Local fire departments are responsible for fire protection within their jurisdictional boundaries. In most areas, this responsibility includes any marine terminals and facilities.

8230 – NON-GOVERNMENT RESPONSIBILITY

8230.1 – MASTER OF THE VESSEL

The vessel’s master has the primary responsibility for fighting any fire aboard the vessel. The master also has critical information regarding the vessel, its systems, and cargo that is vital to any firefighting operation. The master is always in charge of his vessel and the actions of his crew, but is not in charge of the firefighting efforts of non-vessel personnel. In order to effectively fight any shipboard fire, it is vital that a coordinated effort occur between the master, the fire department, the Coast Guard, and other involved agencies. Since the master, officers, and crew have vital knowledge regarding the vessel, they shall remain on-scene to assist the fire department with firefighting activities. The master shall provide assistance to the Coast Guard and local fire department by providing: guides to help firefighters locate and access ship’s spaces, personnel to locate and operate ship’s fire suppression systems, and assistance in reviewing the ship’s fire control plan and pre-fire plan, if one exists.
Note that: The presence of local firefighters does not relieve the master of command of, or transfer the master’s responsibility for overall safety on, the vessel. However, the master should not normally countermand any orders given by the local firefighters in the performance of firefighting activities on board the vessel, unless the action taken or planned clearly endangers the safety of the vessel or crew.

8230.2 – OWNERS/OPERATORS OF VESSELS/WATERFRONT FACILITIES

These individuals are always a critical source of vessel/facility information. Regardless of other response resources, the owners/operators of vessels and facilities retain a fundamental responsibility for safety and security.

8230.3 – VESSEL AGENTS

A vessel agent is designated for each port a vessel visits. Agents can be a wealth of information concerning a vessel’s status, history, & legal paperwork (Certificate of Financial Responsibility, vessel registry, etc.)

8240 – PRE-DESIGNATION OF RESPONSIBILITIES FOR VARIOUS SCENARIOS

8240.1 – U.S. COAST GUARD SECTOR KEY WEST RESPONSE ORGANIZATION

Regardless of the scenario, the COTP will provide overall guidance and direction to any Coast Guard response effort. Figure 200-5 at the end of this section depicts how Sector Key West will organize for an incident. Depending upon the severity of the incident, the response organization may be larger or smaller than that indicated. The duties of the positions within the response organization are described in the Coast Guard Incident Management Handbook.

8240.2 – FIRE DEPARTMENT INCIDENT COMMAND ORGANIZATION

In instances where a local fire department has assumed the role of IC and established a command post, the Sector Key West response organization will integrate into that ICS organization, as appropriate.

8250 – COMMAND POST

A command post (CP) must be established as soon as possible to effectively combat a major fire. For effectiveness, the command post should be located as close to the scene as possible without endangering command post personnel. For serious incidents, a command post will need to be established at a facility able to accommodate large numbers of personnel, such as a hotel ballroom or the response spaces at one of the Monroe County EOC’s.

When a Sector Key West command post is established, the size of the command post organization will be determined by the location and severity of the incident. For those incidents when a local fire department has assumed IC and established a command post, CG personnel will be assigned to that command post.

A command post provides several critical services:

- A generally recognized, single site for command and control of the response, which reduces confusion among response personnel,
- Ready access to continuous communications between on-scene and off-scene personnel,
- A filtering of critical information from non-critical information.
8250.1 – SHORESIDE INCIDENTS

For fires at a facility or on vessel moored to a facility, there should be one command post. It should be established as close to the incident as safety permits. Ideally, the command post would be located in an office at the facility. At a minimum, it should:

- Accommodate multiple telephone lines,
- Provide a large open area to permit maintaining status boards
- Provide adequate lighting, heating, etc.

8250.2 – UNDERWAY/AT ANCHORAGE INCIDENTS

For incidents involving vessels underway or at anchor, the command post may be afloat. If afloat, the CP enhances the ICs’ ability to:

- Specifically direct response forces afloat and on the burning vessel,
- Control enforcement of the safety zone,
- Assess status of the burning vessel, and the effectiveness of tactical units; and
- Control the timing of the deployment of shore-side staged personnel and equipment.

The command post should have Coast Guard and firefighting communication frequencies available. In addition, communications are essential with:

- Shoreside staging areas
- Shoreside planning units
- Logistics support to afloat units
- Public Affairs Officer

The COTP will request a fire department liaison be provided aboard any Coast Guard floating command post to provide technical advice on scene.

8250.3 – MOBILE COMMAND POST

If an adequate building is not available for a command post, mobile command posts should be brought as close to the incident scene as possible. At a minimum, the following CG positions should be staffed when the mobile command post is dispatched:

- CG Incident Management Division member (liaison to Fire Dept. IC)
- CG Duty Marine Inspector (liaison to Operations) with shipboard firefighting advice

8260 – INTERAGENCY SUPPORT

The Coast Guard will assist local public safety agencies and make available its facilities or other resources which may be useful in a response situation to the extent resources permit. They will also assist in the identification, location, and acquisition of any other appropriate federal agency facility or resource. In some cases, support from other federal agencies may be governed by the National Contingency Plan (NCP).

Should an incident involve an actual or threatened discharge of oil or hazardous materials, however, it is expected that the federal agencies of the Regional Response Team (RRT) will make their facilities and resources available, upon request of the COTP, as set forth in the National Contingency Plan and the Regional Contingency Plan.

Regardless of the nature of the incident, in some instances federal support may be loaned or donated to state or local governments. In other instances, reimbursement must be sought by the federal agency providing the assistance.
8270 – POLITICAL CONSIDERATIONS

Generally, no one agency has sufficient resources to solely combat a major vessel fire. Consequently, material assistance and cooperation is a prerequisite for a successful attack and extinguishment. In addition, multiple jurisdictions will likely be affected by a vessel or facility fire depending upon the location, meteorological conditions, and cargoes involved.

It is apparent from the public’s reaction to vessel casualties, including the T/V Exxon Valdez and the Deepwater Horizon incident that the public expects an aggressive, coordinated, and fully committed response by involved parties to minimize the threat to public safety and the environment. All agencies with public safety responsibilities must be prepared to fulfill these expectations.

8280 – PUBLIC AFFAIRS

During the course of a major fire, it will become necessary to establish a Joint Information Center (JIC) for coordinated news releases among the participating agencies and the vessel/facility owner or operator. It is in the best interest of the vessel/facility owner or operator to quickly assign capable public affairs personnel to an incident. When a JIC is established, or as necessary, additional public affairs support for the U.S. Coast Guard will be sought from the Seventh Coast Guard District Public Affairs staff. In addition, the Coast Guard’s Public Information Assistance Team (PIAT) is available to assist upon request. These additional support resources will allow for the staffing of an information center and direct support and assistance to the COTP at the Command Post.

Additional Public Affairs guidance is provided in Section 2300 of Volume I.

8290 – CONSIDERATIONS FOR THE INCIDENT COMMANDER

8290.1 – ENROUTE TO INCIDENT

1) Evaluate initial report:
   • Location
   • Type of vessel
   • Reported situation
   • Environmental pollution occurring?
   • Reported casualties or rescue situation
   • Request ambulances
   • Weather conditions (wind direction/speed)
   • Any other alarm information
   • Numerous calls
   • Report from Police on scene
   • Report from Coast Guard already on scene
   • Time of day

2) Start incident size-up process

3) Request additional information enroute – updates

4) Request additional resources based on size-up:
   • Upgrade response, if necessary
   • Call additional alarms

5) Notify Coast Guard, request/confirm your response with Sector Key West.
6) **Consult contingency plans:**
   - Terminal Preplans
   - Vessel Preplans
   - Marine Firefighting Plan (MFFP)
   - Available Resources Plan
   - Disaster Plan - Activate, if needed
   - Multi-casualty Plan - Activate, if needed be
   - Mutual Aid Plan - Activate, if required
   - Other contingency plans

8290.2 – ON-SCENE

1) **Report on conditions - obvious visual indicators**
   - Incident location
   - Scene conditions
   - Vessel type and name: ____________________ ____________________
   - Vessel conditions:
     - Smoke showing - from where?
     - Obvious stability problems, such as listing?
     - Initial reports from people on scene
     - Type and extent of the emergency
     - Rescue or Medical situation
     - Exposure situation
   - Periodically issue updated reports on conditions throughout/during incident

8290.3 – ESTABLISH INCIDENT COMMAND SYSTEM (ICS)

1) **Identify Command Post location.** Consider:
   - Accessibility
   - Safe location
   - View of scene
   - Protected from elements/weather
   - Communications
   - Sanitary facilities
   - Size

2) **Consider using a U.S. Coast Guard cutter as a command post for a fire on board a vessel at sea or at anchorage.**

3) **Name command after terminal, vessel, or street name where terminal located.**

4) **Advise Communications/Dispatch of your initial actions.**

5) **Assign tasks/responsibilities to other incoming units or have them stage until needed.**

6) **Divide the incident as necessary into appropriate functional elements; Divisions, Groups, Task Forces, Staging Areas, etc, to accomplish objectives and maintain appropriate span of control.**

7) **Identify staging area location.**
   - Is it accessible, have sufficient area, have sanitary facilities?
• Assign staging responsibility to an incoming officer or company

8) **Identify access route into staging, and to the incident.**

• Have law enforcement close the designated primary route into the incident area to all but emergency and authorized vehicle traffic.

9) **Continue size-up process.**

10) **Request additional alarms, resources, equipment, specialized resources, agencies, organizations or individuals, as needed.**

11) **Expand Incident Command System (As Necessary).**

Note: Consult the Incident Management Handbook (IMH) for a detailed description of responsibilities for each section/staff.

**8290.4 – COMMAND STAFF**

**Incident Commander (IC):**
• Determine who has primary jurisdiction/responsibility for incident
  • Consider a Joint/Unified Command
  • Transfer command as necessary

**Safety Officer:**
• Identify hazardous areas, eliminate/stop unsafe operations

**Public Information Officer/Public Affairs Officer**

**Fire Department, Coast Guard, Vessel Owner:**
• Set up a Press Area, with view of the incident from safe location
  • Provide periodic information reports/news releases

**Liaison Officer:**
• Meet responding organizational and agency representatives; direct them to proper location in ICS structure, or area of incident.

**8290.5 – GENERAL STAFF**

**Operations Section/Chief:**
• Directs firefighting, rescue, and other incident mitigation activities
  • Divide incident into manageable units, span of control
  • Set up division, groups, branches, sectors
  • Identify objectives for each division, group, branch, sector
  • Continually reevaluate incident operations and plans, making changes as necessary:
    o Are incident activities, strategy/plan working, and having positive effects?
    o If NO, reevaluate situation and implement secondary strategy.

**Planning Section/Chief:**
• Collect, evaluate, disseminate tactical information
  • Provide/use technical experts
  • Evaluate vessel plans and other informational materials
• Develop primary and secondary action plans
• Maintain accurate record, document use of resources and how incident progresses chronologically.

Logistics Section/Chief:
• Stockpile, move resources and equipment being used in incident
• Set up and coordinate Staging, Base, Rehab, and other incident facilities (Command Post, Press Area, etc.)
• Set up Incident Communications System
• Food, liquid refreshments, sanitary facilities, rehab area for personnel
• Set up divisions, groups, sectors, as needed – See Incident Management Handbook(IMH)
• Divide incident into manageable units, span of control
• Establish interagency communications (loaner radios, Communications Officer):
  o Tactical Channel(s) - Operations/IC to Divisions/Groups/Sectors
  o Command Channel - Incident Commander to Operations, Planning, Logistics, Safety, Liaison, and Information
  o Logistic Channel - Supplies and services
  o Other radio channels, as needed - Marine, Air, etc.
OPERATIONS

Operational response priorities, in order of precedence:
1) Life Safety/Accountability
2) Confinement
3) Protect Exposures
4) Extinguishment
5) Dewatering

8300.1 – INITIAL RESPONSE ACTIONS

Initial response actions that must be addressed include:
- Determine worst case scenario and urgency of situation.
- If the incident appears imminent and substantial, response resources must be dispatched before making routine notifications and obtaining additional information.

Specific Response Guides follow this and other sections of this plan. These guides provide either additional or more detailed incident activities, considerations, tactics, and strategies that may be necessary when dealing with a marine fire.

8310 – COORDINATION WITH TECHNICAL SPECIALISTS

Requests for Federal resources and technical specialists should be submitted through the COTP (Sector Key West). All resources and technical specialists made available will normally come under the direction and control of the COTP, unless otherwise agreed upon by the IC.

State and local agency resources and technical specialists made available during an incident will normally come under the directions and control of the Fire Department Incident Commander, unless otherwise agreed upon by the Fire Department IC and the COTP.

8320 – VESSEL/FACILITY/CARGO INFORMATION

In order to conduct safe firefighting operations, the following information should be quickly obtained for use by the Operations Section Chief and Incident Commander:

Hazardous Material Placard Information. Applies to all containerized cargo. Includes hazard classification number, contents, UN/NA four digit ID number, and additional placard information, for example, flammability, oxidizing ability, use of water on contents, etc.

8320.1 – MATERIAL DATA SAFETY SHEET (MSDS)

The MSDS summarizes the chemical’s properties, the health and physical hazards, and related safety information. It is designed to provide both workers and emergency personnel with the proper procedures for handling or working with a particular substance. It includes information such as physical data (melting
point, boiling point, flash point etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill/leak procedures.

8320.2 – SHIPPING PAPERS

Shipping papers are required for packaged hazardous material cargoes, liquid bulk hazardous material cargoes, and flammable or combustible bulk liquid cargoes. The shipping paper for packaged hazardous material (49 CFR 172) is not required aboard the vessel but must be maintained by the water carrier. This is usually at its U.S. port facility where the cargo is loaded or discharged. The shipping papers must, at a minimum, contain the following:
- Hazardous Material Description including proper shipping name, hazard class or division, identification number, packing group and total quantity;
- Shipper name; and
- 24 Hour Emergency Response Telephone Number.

Shipping papers for bulk liquid cargoes must be carried on board the vessel. Required information includes:
- Name of Consignee,
- Location of delivery point, and
- Kind, grades, and approximate quantity of each cargo.

8320.3 – DANGEROUS CARGO MANIFEST

The Dangerous Cargo Manifest (DCM) is a listing of all hazardous material cargo on a vessel and contains a great deal of information of interest to emergency response teams. Vessel information includes name, call sign, flag, port of loading and discharge and date. Cargo information includes proper shipping name, gross weight of cargo, hazard class, type of package, storage locations and an emergency response telephone number. Only hazardous materials subject to 49 CFR or the International Maritime Dangerous Goods (IMDG) code may be listed on the DCM.

Copies of dangerous cargo manifests are held on the vessel and generally by the shipping line and terminal operator. The vessel’s DCM is required to be held in a designated holder on the bridge. The shipping company or terminal operator should also hold a copy of the manifest in the local office.

Accuracy during loading: During loading or unloading operations, the manifest will not indicate whether the cargo is on the vessel or on the dock.

8320.4 – CARGO INFORMATION CARD

This, or its equivalent, must be available at the bridge or pilot house of any vessel towing barges loaded with flammable or combustible bulk liquid cargoes, or barges loaded with bulk liquid hazardous material cargoes. Cargo information for bulk liquefied, liquefied gas or compressed hazardous gas cargoes carried on board tank vessels requires greater detail. Required cargo information for barges includes:
- Cargo identification and characteristics,
- Emergency procedures, and
- Firefighting procedures.

8320.5 – PERMITS

Permit Information. A COTP approved "Application and Permit to Handle Hazardous Materials", Form CG-4260, is required to load a vessel with Division 1.1 or 1.2 explosives (classes A and B Explosives) at a
waterfront facility. Information concerning Coast Guard issued permits can be obtained by calling Sector Key West at (305) 292-8727.

Local Permits. Local fire departments control the movement of hazardous materials through the port. These permits apply to a wider range of materials than Coast Guard permits. Contact the local fire department for information on specific permits.

Fire Control Plan. The vessel fire control plan is stored in a weather tight container at the top side of the gangway. This plan is available for use by shore side firefighting personnel. The plan shows the layout of each deck and the fire protection systems aboard the vessel.

Facility Operations Manual. Owners of facilities which transfer oil products are required to have a facility operations manual. A copy of the manual is held by the COTP. The manual provides a physical description of the facility, locations of firefighting equipment, product information and points of contact at the facility.

8330 – OIL AND HAZARDOUS CHEMICAL RELEASE

8330.1 – FEDERAL ON-SCENE COORDINATOR RESPONSIBILITIES

The COTP is designated as the Federal On-Scene Coordinator (FOSC) for both oil discharges and hazardous material releases in coastal zone within Sector Key West’s jurisdiction. The FOSC is charged with insuring that all releases are responded to and, when feasible, cleanup is properly conducted. The FOSC also has access to the CERCLA “Superfund” and the Oil Spill Liability Trust Fund (OSLTF) which may be used to pay for removal costs when the Responsible Party is unknown or refuses to conduct cleanup. Ultimately, the discharger is held liable for costs incurred by the Federal Government.

8330.2 – FIRE DEPARTMENTS

Fire Departments are typically called in to respond to hazardous chemical releases. They are often well trained and equipped to respond to chemical releases of limited size and hazard. However, they may be unable to handle a major release without additional assistance. They should not hesitate to contact the FOSC for assistance, support or transfer of operational control.

8330.3 – ON-SCENE SUPERVISION - HAZMAT RELEASE

Cleanup of hazardous materials and evaluation of the hazards is made under the supervision of the local agency having jurisdiction and/or the FOSC. In practice, the majority of releases are very limited in size and the incident is often over by the time FOSC response personnel can arrive at the scene. They are readily handled by local government response agencies and the responsible party without active federal involvement. For larger releases, beyond the capabilities of local agencies, the FOSC plays a more active role and may call in an extensive response organization, including the Coast Guard Gulf Strike Team, to assist local agencies. In all hazardous substance releases the FOSC will evaluate the hazard present and assist local response agencies as necessary.

8330.4 – SPILL/RELEASE REPORTING

Notice of an oil discharge or release of a hazardous substance in an amount equal to or greater than the reportable quantity must be made immediately in accordance with 33 CFR part 153, Subpart B, and 40 CFR part 302, respectively. Notification must be made to the National Response Center (NRC) Duty Officer, Headquarters, United States Coast Guard, Washington, D.C. See the Resource Guide section for the telephone number. All notices will be relayed immediately by telephone to the cognizant FOSC. Federal law requires that oil and hazardous chemical releases be reported to the appropriate FOSC.
Failure to report a release may lead to criminal penalties and fines of up to $50,000. The National Response Center receives reports of all discharges and relays them to the appropriate FOSC.

**8330.5 – RESPONDERS**

OSHA requires that the responsible party (spiller) employ qualified, well equipped, and highly trained personnel to respond. Generally, this will involve hiring a third party cleanup company. Smaller companies or operations such as small trucking services are not encouraged to attempt a response to hazardous material spills. It is highly dangerous for such personnel to respond and recommended they hire a contractor capable of handling the hazardous materials release. Larger companies with well-trained response personnel and sufficient equipment and resources should the spiller use in-house personnel familiar with the released chemicals to respond.

**8330.6 – HIGH RISK AREAS**

In the Port of Key West, the main threat of a vessel fire would primarily occur at one of the cruise ship terminals. The other high risk areas would be Key West Pipeline facility and Keys Energy services generation plant on Stock Island.

**8340 – LOCATING A VESSEL FOR FIREFIGHTING**

The success or failure of shipboard firefighting operations may be determined by the vessel's location. If the ship is remotely located or otherwise inaccessible, the opportunity for saving it may be lost. The COTP will confer with fire departments, port officials and other agencies to identify the best sites for positioning a burning vessel given the facts of a particular incident. Such sites may include piers, anchorages or predetermined grounding sites.

It should be noted that a waterborne fire incident (by its very nature) is more difficult to extinguish than a pier-side fire. Waterborne firefighting requires the marshaling of resources offshore which is time consuming and subject to additional logistical considerations not found during shore side firefighting.

**8340.1 – GROUNDING SITES**

Due to the environmentally sensitive area of the Florida Keys, a uniform decision from the Executive Committee of the Florida Keys Area Committee must be obtained prior to intentionally grounding any burning vessel. These members include: USCG COTP, FKNMS Superintendent, FLDEP Rep, USFW Rep, NPS representative. If the decision may be made to either ground or sink a vessel. In choosing grounding sites, several factors must be considered. The possibility of the vessel sinking or becoming derelict must be considered. Such events could become a greater hazard to the marine ecological system through resultant pollution than the total loss of a single ship in a pre-designated area, or a navigational hazard effecting commerce.

Other important considerations for grounding include:
- **Bottom Material** - Soft enough that the ship’s hull will not rupture.
- **Water depth** - Shallow enough that the vessel will not sink below the main deck, yet deep enough that fire boats, salvage barges and tugs can approach.
- **Weather** - Areas not known to have strong winds or currents which could hamper firefighting or salvage efforts.
8340.2 – LOCATIONS OFFSHORE FOR INTENTIONALLY SINKING VESSELS

When a vessel and cargo are deemed a total constructive loss it may be best to sink it in an area where environmental damage is minimized. These areas will be pre-selected by a Regional Response Team (RRT). The COTP may request this team be convened when intentional sinking of a vessel is considered.

8340.3 – CONTROL OVER WATERFRONT AREAS

The COTP may find it helpful to control or restrict traffic in an affected area to provide safety for the waterfront facilities or vessels. 33 CFR 165 sets forth procedures for establishing safety zones for the protection of vessels and shore areas. The COTP has sole authority to establish a safety zone. Enforcement of a safety zone may be a joint effort involving Coast Guard Sector Key West and the local Harbor Master.

8350 – FIREFIGHTING PIERS

Piers are not the only sites that can or should be considered for locating a burning ship. However, piers offer the greatest potential to maximize use of shore-based firefighting resources. The following factors should be considered when selecting a pier:

- The severity of the fire;
- The proximity of the pier to populated areas;
- Bridges, highways, and environmentally sensitive areas;
- Availability of the pier for an extended period;
- Availability of water and electricity;
- Construction of the pier;
- Prevailing winds;
- Availability of firefighting staging areas;
- Presence of hazardous materials at the pier and on the vessel
- Availability of special equipment.

8350.1 – RECOMMENDED FIREFIGHTING PIER

Recommended pier for firefighting in the Port of Key West is the East Quay Wall, in the Navy Mole Pier. The Quay Wall contains concrete waterfronts, ample space, nighttime lighting, and limited risk of flammable/hazardous materials being stored on site. At a minimum, a decision on the placement of burning vessel entering port must be discussed with representatives of:

- The vessel,
- The facility,
- The appropriate Port Authority,
- The appropriate Fire Department,
- The Coast Guard, and
- Other agencies, depending on the particular situation.

8360 – FIREFIGHTING SCENARIOS

Many types of fires can occur; therefore, when developing response strategies for fighting marine fires, an infinite number of possible scenarios arise. Initial actions should address safety, rescue of endangered persons, protection of exposures, confinement, and the containment of the initial fire location. Other tactics and strategies, and their order of precedence, vary depending on the type of fire situation and location on the vessel. In addition, the response to every scenario will differ, depending on the personality, experience, and the strengths and weaknesses of the organization assembled to mitigate the incident. Sizing up an incident takes place in six
steps: gathering of facts, assessing probabilities, determining resources, applying basic firefighting principles, deciding a course of action, and formulating a plan of operations.

The following scenarios describe possible actions of waterfront facilities and marinas located throughout the Florida Keys. These scenarios are provided to generate discussion and review an Florida Keys fire response capability. They should not be viewed as the “textbook” response for marine fires. However, the reviewers should examine their own response organization’s capacity, authority and policies in light of the actions described in the following scenarios. Ask the following questions:

1) Do I have enough available trained personnel to mount a similar response?
2) Do I have the equipment?
3) Do existing policies prohibit the types of response described below?
4) Is mutual aid needed?
5) Is communication between the various response organizations adequate to get the type of inter-agency coordination described here?

8360.1 – SMALL BOAT FIRE AT A MARINA/DOCK

A 48-ft FRP/Wooden lobster boat was reported burning in the marina at 3:00 a.m. Four fire apparatus and a Battalion Chief (BC) are dispatched. Upon arrival, the responders observed heavy black smoke coming from the wheelhouse. Concerned that the occupants may still be aboard, the Battalion Chief directed one of the fire companies to search the vessel. One of the remaining companies, with the assistance from the Harbormaster, established a water supply using hose lines from the pumper and a nearby pier standpipe. The search did not find any occupants. With the search party off the vessel, water was then directed into the pilot house through a partially open window. Two additional hose lines were charged and placed on standby to protect the surrounding vessels. With the help of Coast Guard personnel, the Harbormaster began making notifications to other vessels moored at the docks. The fire was extinguished within 20 minutes and the boat did not sink. Containment Boom was placed around the vessel to capture contaminated debris and oily water run-off. The Harbormaster used some of the City’s 12-inch Harbor Boom. The Containment Boom was in place by 4:00 a.m. The owner of the vessel could not be located or immediately identified. Once the fire was considered extinguished, the Battalion Chief relinquishes Incident Command to the Coast Guard Captain of the Port for oil and HAZMAT clean-up actions. During the next 5 days, a Basic Ordering Agreement contractor removed the oil/fuel/water mix, three propane tanks and 200 gallons of fuel and lube oil. The clean up was completed quickly and relatively inexpensively because the fire team had taken action to ensure that the firefighting efforts did not sink the vessel. Three months later, when efforts to get the owner to take responsibility for the vessel were unsuccessful, the Harbormaster obtained permits from the Environmental Protection Agency and others to have the vessel towed and properly disposed.

If this vessel were adrift with no owner/operator or crew onboard, the Coast Guard Captain of the Port would assume control of the vessel and fire suppression.

8360.2 – WATERFRONT FACILITY FIRE

In the middle of the night, the local fire department received a 911 call reporting smoke and fire at the marina building at XXX fuel facility. The 911 operator reports that XXX fuel facility has a tank farm and the reporting party only indicated seeing smoke and fire emanating from the building office by the dock. The Key West Police Department was dispatched and the owner/operator notified. Upon arrival, the fire department confirmed the office building as being fully engulfed and an adjoining dock on fire. The Battalion Chief establishes Incident Command and set up a staging area on the street for arriving fire personnel, apparatuses/equipment and other first responders. As the owner/manager was not on scene, the fire department cut the gate lock to access the facility and began applying water streams onto the dock and building area. Additional fire apparatus with foam were requested for the cooling of adjoining tanks as a precaution to prevent the fire from spreading closer to the tank farm.
Shortly afterwards, the owner arrived and confirmed the manifold system to the tanks was secured from the dock. The owner also alerted the fire department to the presence of waste oil drums in the building and the location of a 50-gallon gas tank at the dock area. The fuel tanks were reported to be at 76% capacity as they received a barge transfer earlier in the day. Two fuel trucks are parked in a designated parking area away from the tank farm and fire area. The Battalion Chief ensured that notifications were made to the Coast Guard Captain of the Port and applicable Port partners/responders. The Captain of the Port established a 1,000-yard Safety Zone perimeter from the shore, out seaward. A Coast Guard Station small boat was dispatched for waterside enforcement of the Zone. Upon arrival, the Coast Guard duty personnel were briefed by the Incident Commander on the status of the fire. Fire tactics included extinguishment of the building fire, extinguishment of the dock fire, and cooling of fuel storage tanks if needed. Within 2 hours, the Battalion Chief reported the fire out. The Coast Guard small boat reported no observed pollution in the water. However, the owner deployed containment boom around the facility to contain any pollution which may occur from water runoff. The Captain of the Port lifted the Safety Zone restrictions and ordered Coast Guard personnel to return to the unit following an on scene debrief with the fire department’s Incident Commander. Coast Guard Sector Key West briefed the situation to the 7th District, Environmental Protection Agency, and a press release. Three days later, a —hot was was held at Sector Key West where in addition to the response, the Marine Firefighting & Salvage Plan was reviewed and revised according to lessons learned.

8360.3 – HIGH CAPACITY PASSENGER VESSEL FIRE

While underway enroute to Key West, the cruise ship Conch Shell (800’ LOA, 2800 passengers and crew) experienced an engine room fire that the crew was unable to immediately extinguish. The crew evacuated the spaces, closed the watertight doors, an implemented the ship’s emergency plan to contain the fire in the engine room. The Ship Captain requested that the vessel be allowed to tie up in Key West after assessing stability. The Captain of the Port initiated the establishment of the Unified Command composed of the Key West Fire Department, Monroe County Department of Health and the cruise line agency rep. The Bureau of Customs and Border Protection was notified in case of foreign passengers and/or crews are involved. An Incident Command Post and Joint Information Center are established at Key West Police/Fire Department Center EOC and key positions are filled with a 12-hour operational period. Unified Command priorities are developed and initial instructions conveyed to the staff. A medical plan is immediately created to indicate appropriate hospitals to be used which will maintain accountability of injured passengers or crew. After consultation with the Coast Guard Captain of the Port, the C/S Conch Shell assured the Captain of the Port/Unified Command that the engine room fire is isolated with primary and secondary fire boundaries. The UC and allow the cruise ship to tie up to the city’s pier. Using its bow thrusters and one assist tug, the cruise ship was able to tie up to the pier. All passengers and non-essential crew were removed from the vessel and housed at the cruise ship terminal. Prior to passenger and crew evacuation, the Unified Command insisted on a strict accountability system using manifests and disembarkation check-off lists. After initial processing at the shelter, out-of-state passengers and crew were temporarily placed in available hotels, restaurants, churches and community centers until appropriate transportation could be found. Using the international shore connection, the cruise ship fire mains were re-charged through the city water supply. Containment boom is placed around the vessel to prevent oils from spreading into the harbor. The Key West Fire Department does not immediately board the vessel, but provides a continuous supply of water and charged air bottles for the ship’s fire crew. KWFD also provides support for cooling the main deck above the engine room. The KWFD fire boat is alongside the vessel to support water cooling efforts from the vessel’s ocean side. The vessel’s Master and Chief Engineer constantly monitors ship stability while firefighting water is pumped off and discharged overboard into the boomed area. The Firefighting team leader and crew along with a Key West Fire Department Battalion Chief re-enter the engine room when thermal imaging equipment could no longer detect interior hot spots. Initial findings indicated suspicious causes for the fire. Following an investigation and approval by the Unified Command, the C/S Conch Shell was towed to a shipyard for repairs. A hot wash was held at Key West EOC and lessons learned and best practices were captured.
Had a fire occurred while the cruise ship was moored to a pier, KWFD would be support team to the shipboard fire suppression teams. KWFD would stage their fire pumps and lay hoses so they could provide water, foam, cool the hull, extinguish pier side fires, and preserve mooring lines. They would also provide any shore side emergency medical services. The Key West Police Department and Harbormaster office would establish shoreside security boundaries. A Unified Command would still be established composed of the Captain of the Port, KWFD, Monroe County Health Department, On Scene Coordinator, and a Responsible Party representative.

8370 – VESSEL FIREFIGHTING CONSIDERATIONS

The following checklists should be used throughout an incident to assist the Operations Section Chief, but are not all inclusive.

8370.1 – ENROUTE TO INCIDENT
___ Evaluate initial report, what follows on radio, and what you see.
___ Upgrade response, if necessary.
___ Notify Coast Guard Sector Key West Command Center (See Resource Guide for phone number).

8370.2 – ON-SCENE
___ Establish and identify Command Post location.
___ Establish Incident Command System (ICS).
___ Establish security perimeter: Shoreside and Waterside.
___ Determine nature, location, and extent of flooding.
___ Notify Monroe County Dept of Health of the incident (See Resource Guide for phone number).
___ Contact responsible persons for information and assistance.
___ Gather necessary information to deal with incident/situation.
___ Identify, record, and begin monitoring vessel position related to sea surface.
___ Secure electrical power to flooded areas.
___ Determine cause of flooding and mitigate, if possible.
___ Monitor progress of flooding and vessel stability.
___ Evaluate what effect flooded waters will have on marine environment (Pump, or do not pump overboard).
___ Consider alternatives to pumping overboard (tank trucks, another vessel).
___ Begin dewatering operations.
___ Determine condition of ship’s systems which may be used during dewatering operations.
___ Review cargo considerations.
___ Determine if Grounding or Beaching may be necessary - consult CG COTP or Army Corps of Engineers.
___ Expand Incident Command System to handle incident, as needed.
___ Determine primary jurisdiction/responsibilities for incident.
___ Continually reevaluate operations and make changes, as required.
___ Evaluate incident concerning use of an Infrared Camera (CG District Seven DRAT, District Response Advisory Team, or Air Station Miami). Camera can identify hot spots, display liquid levels in tanks, and display temperature ranges.

8370.3 – VESSEL INFORMATION
- Fire Plan - found near top of gangway in a water-tight container, or in Master's or Chief Mate's Office
- General Arrangement Plan
- Capacity Plan
- Dangerous Cargo Manifest - found near vessel bridge, or in Chief Mate’s Office
- General Cargo Manifest
- Cargo Stowage Plan
- Trim and Stability Booklet - Stability information and computations unique to the involved vessel
- Stability and liquid cargo computer programs and hardware
- Crew and passenger lists
- Material Safety Data Sheets for Hazardous and Dangerous Cargo
- Other applicable plans (Electrical, Ventilation, etc.)

8370.4 – FIRE SITUATION

Complete a Vessel Information Sheet

Complete an Incident Scene Information Sheet

Board the vessel to investigate situation:
- Establish Safety Officer(s)
- Develop escape/evacuation/abandon ship plan
- Ensure all response personnel understand & recognize abandon ship signal
- Provide for and maintain escape routes:
  - gangways, jacob ladders
  - ramps to vessel
  - aerial and ground ladders to vessel in several locations
  - helicopters standing by
  - rescue vessels in water around stricken vessel

Fire Location - indicated by:
- Red hot metal
- Blistering paint
- Smoke, flames (if showing from ventilation ducts, determine area served by ducts
- Temperature readings
- Heat scanners, Thermal imagers, Infra-Red (IR) Cameras

Interview crew:
- What happened?
- Where did it happen?
- When and Why did it happen?
- What has been done prior to fire department arrival?
- What was fire department’s effects on incident?

Determine type and size of area involved

Determine extent of involvement:
- Decks
- Spaces
- Zones
- Frames

Determine danger of fire extension and/or direction of fire spread

Determine fire load, type and amount of materials involved

Determine effect fire has had, and project its continued effects
8370.5 – VESSEL FIRE PROTECTION SYSTEMS

(Consult with Vessel Engineering Officers)

Fire Main:
___ Looped or single main
___ International shore connection and manifold location
___ Supplement ship’s fire main system with shoreside water and pressure, if it will be used
___ Fire station location and equipment (TYPES OF COUPLINGS/ THREADS)
___ Compatibility with fire department equipment
___ Fire pumps
___ Main or ___ emergency
___ Diesel or ___ electric

Water spray or sprinkler systems
Foam systems
HALON localized and total flooding systems
Carbon Dioxide localized and total flooding systems
Dry Chemical systems, twin agent systems
Steam smothering

Fixed Monitors:
___ Manual or remote controlled
___ Foam, or water

Emergency gear lockers and contents
Damage control lockers and bracing materials (wood, metal jacks, etc.)

Heat detection systems, Smoke detection systems

Fire rated bulkheads, zones, doors

Determine areas covered by fire protection systems

Identify locations of control valves, agent storage containers

Determine methods of operation of fire protection systems

Activate fire protection system to extinguish or control fire according to proper procedures, if chance it can control fire

Remote control water tight and fire doors

Inert Gas systems
If any of ship’s fire protection or extinguishing systems can extinguish or help control fire, then:
___ Set fire boundaries around fire, and
___ Activate system

8370.6 – VESSEL STATUS

(Consult with Vessel Engineering Officers)
Vessel Fixed Systems and Pumps:
___ Dewatering system, pumps

05/01/2012
Butterworth system
Crude Oil Wash System
Liquid cargo system and pumps
Bilge pumps
Ballast pumps

Vessel Portable Pumps and Equipment:
Eductors
Submersible pumps
Other portable pumps

Main Propulsion System - Operational?
Can vessel be moved under its own power?

Type of propulsion system:
Marine diesel
Steam turbine
Gas turbine
Other:__________________________________________

Fuel:
Types?
Heated?

Amount of fuel onboard and location:
Fuel tanks
Day tanks
Settling tanks

Ventilation Systems:
Dampers and method of operation
Control locations
Location and routes of ducting identified
Locations or spaces served by ventilation outlets on deck, especially if issuing smoke, identified

Generators:
Main
Auxiliary
Emergency
Location
Method of operation
Portable generators
Can they power pumps, lights?

Communication Systems:
Sound powered phones
Marine radios
Portable radios
Public Address systems
Bull horns
Telephones
Voice tubes
Cargo Handling Equipment:
- Pumps and liquid cargo hoses
- Cranes
- Cargo rigging
- Winches

Mooring systems - Determine condition of and monitor mooring lines at all times; keep personnel, apparatus, and equipment clear of mooring lines
- Slack or take up mooring lines, as necessary
- Drop anchor(s), if needed
- Vessel drains, scuppers, and drainage systems
- Remote controlled watertight and fire doors:
  - Marine vertical zones
  - Fire rated bulkheads

8370.7 – FIREFIGHTING OPERATIONS

Establish water supply to vessel
- Hoselines
- Consider using aerial ladder trucks as standpipes
- Fire boats
- Portable pumps
- Consider supply and using ship’s fire main system
- International shore connection and manifold

Set fire boundaries on all six (6) sides of fire area
- Hoselines cooling decks and bulkheads continually throughout incident duration

Use minimum amount of water to accomplish task

Take actions to remove/dewater firefighting water
- Rotate personnel, as needed
- Move combustibles away from primary fire boundary
- Identify and prepare secondary fire boundaries
- Continually investigate all areas of fire boundary for fire spread!

Do not interrupt fire boundary maintenance activities
Consider using thermal imagers and taking temperature readings, request Infra-Red camera from local U.S. Coast Guard DRAT or Air Station Miami.

Secure ventilation and all openings to fire area

Secure utilities, electrical, and any fuel supplies to fire area

Investigate for concealed spaces and avenues of fire spread through boundaries

Make frequent inspections of all sides of fire area

Install floating booms around vessel or incident scene to contain debris and pollution

Monitor vessel stability throughout incident
Note changes in draft marks, inclinometers, etc.
___ Beware of large accumulations of water above vessel's waterline
___ Secure openings in hull to prevent water entering vessel, should list occur
___ Obtain technical assistance to determine stability situation and recommend corrective actions
___ Begin adequate dewatering operations

Mobilize and position sufficient personnel and hose lines, appliances, and extinguishing agents to control and extinguish the fire

Coordinate ventilation of fire area with fire attack

Provide for sufficient rotation of personnel to maintain a continuous extinguishing effort

Beware of pressure buildup in secured spaces and maintain escape routes

Begin necessary salvage operations

When possible, set a fire watch and begin overhaul and fire cause investigation

8370.8 – TERMINAL AND PIER CONDITIONS

Condition, construction (wood, concrete, steel, etc.), configuration

Can vessel be moved to a better terminal/pier location?

Move obstructions from pier or terminal:
___ Cargo
___ Vehicles
___ Trains
___ Unnecessary equipment

Maintain clear operational area and access to incident scene

Move nearby shipping and vessels, if needed

Investigate condition, and contents, of all accessible spaces
___ Note all personnel hazards

Structural condition of vessel - Note need for shoring, bracing, or other control actions:
___ Dunnage, wood shoring materials, large timbers, railroad ties
___ Jacks
___ Power tools, saws, chain saws
___ Portable generators to power tools

Consider abandoning vessel and let incident stabilize itself
Warning: Throughout any vessel firefighting operation, strong consideration must be given to dewatering operations. As firefighting operations proceed, excess firefighting water must be removed to prevent the vessel from listing and potentially sinking or capsizing. A vessel exhibiting a list is a warning that a serious situation is occurring. Without correction action, a vessel presenting a list may result in a more serious situation than allowing the fire to continue unchecked.

8380.1 – VESSEL STABILITY

Stability is the tendency of a floating vessel to return to an upright position when inclined from the vertical by an external force. Throughout an incident it is desirable to maintain vessel stability and minimize list. The ability of a vessel to resist heeling from the upright position is determined by its initial stability. Expert advice should be sought anytime a vessel’s stability is in question. They will be especially interested in the Center of gravity—The location where the sum of all the weights of the vessel is equal to zero with respect to any axis through this point.

Whether a liquid is high, low, forward or aft, on centerline of off centerline it’s reduction of stability due to free surface effect will be the same. The strongest threat to a vessel’s stability from water induced due to firefighting is when it can travel a long distance across the beam and when it is confined high in the vessel. The most important stability consideration is maintaining the vessel’s list at a reasonable level. Walking on listing decks in the dark or heavy smoke becomes very difficult.

Establish a baseline reading of the vessel’s list as soon as possible (possibly from the Inclinometer). Have someone continuously monitor the list and make reports on:

- Draft-- the amount of ship in the water, as opposed to
- Freeboard-- the amount of the ship out of the water
- Draft Marks-- Most large vessels will have draft marks (vertical numbers on both sides of the hull at the bow and stern). They will be in increments of feet or meters.

The bottom of the number is the zero line, the top of the number is 6” for one foot draft marks.

It is recommended to establish a base line on draft and list immediately upon arrival by recording draft readings on both sides of the ship both fore and aft. Monitor the vessel’s draft throughout the firefighting efforts for list as well as for weight gain due to firefighting water. Note that true list will not be apparent if the vessel is leaning against the pier! Note that true list will not be apparent if the vessel is leaning away from the pier and is being held back by the vessel’s mooring lines. This is a potentially dangerous situation it that the mooring lines may break with great force (snap back).

Firefighting factors affecting stability:
- Introduction of large amounts of water
- Intentional flooding of compartments
- Opening of watertight doors to move equipment or personnel (Potential flooding due to being left open)

Stability factors affecting firefighting:
- Poor footing on slippery decks
- Inability to apply foam blankets that will stay in place
- Potential closure problems with automatic fire doors
- Strain and possible failure of mooring lines (SNAP BACK)
• Damage and possible injury from falling equipment
• Restriction or loss of vessel entry or egress

Stability information and resources:
• Vessel’s officers, Captain, Chief mate or Chief engineer
• Port captain for the vessel’s owner or operator
• Pilots, docking masters
• Salvage masters
• Marine consultants
• Marine firefighting schools

If a list is due solely to the water being introduced to the vessel in firefighting, the preferred method of correction is de-watering (removing the water you are putting on). Preferred actions to limit and improve stability and listing problems due to firefighting water are as follows:

1) Determine what the flooding boundaries are and prevent them from increasing if possible
2) Remove water from partially flooded compartments first (reduces free surface effect)
3) Jettison topside weight
4) Remove all water from solidly flooded areas
5) Transfer weight as appropriate (this last is the last desired)

Calculate the amount of water being put on board the vessel as “tons per hour” rather than GPM. Long tons would be even better as this is what is used for vessel’s weight (long ton=2240 lbs.). One 1 1/2” hose delivering 125 GPM has the potential of putting 28.46 long tons on board in one hour. A 2 1/2” hose could then be capable of placing 57 long tons on board per hour. Multiply this by 2 or 4 or 12 lines and you can see why stability and list is so important. Although every hose may not be flowing all the time, the combined effects of all hoses flowing part of the time will add weight and may cause stability problems.

• Tons per inch immersion-- Will usually be included in a hydrostatic table on board the vessel
• These figures will represent the weight in tons, necessary to lower the vessel one inch
• These may be used to confirm the weight of water being trapped on board.

8380.2 – VESSEL STABILITY MONITORING

- Forecast future stability situations
- Note, record, and continually monitor position of vessel on sea surface:
  ___ Draft marks (hourly at fore and aft, both port and starboard)
  ___ Plimsoll marks
  ___ Inclinometer
  ___ Etc.

- Obtain Stability & Trim Booklet for vessel (in Masters or Chief Mate’s office)
- Use onboard computers and computer programs to evaluate stability situation
- Determine critical angle of list:
  ___ When will list become dangerous?
  ___ When will it be time to ABANDON SHIP?

- Sources of assistance and expertise regarding determination of stability situation:
  ___ Vessel Master/Mates
  ___ Marine Architects
  ___ Marine Surveyor
  ___ Coast Guard and Navy
Salvors, Salvage Companies
Other specialized Consultants

Sources of information about the vessel:
- Fire Plan (found near top of gangway in a water tight container, or in the Master's or Chief Mate's office).
- General Arrangement Plan
- Capacity Plan
- Dangerous Cargo Manifest (near Bridge, or Chief Mate's office).
- General Cargo Manifest
- Cargo Stowage Plan
- Trim & Stability Booklet (Stability info and computations unique to the vessel)
- Stability and Liquid Cargo computer programs

8380.3 – DEWATERING

Water being brought on board must be taken off, preferably before it causes stability problems. Choices for removal will depend on how much water and where it is located. If the water is being introduced to the engine room or other lower spaces (it may be possible to use the bilge pump or pumps). If electrical power has been secured due to firefighting activities the ship’s bilge pumps may not be available. Portable pumps may be needed for water removal. Moving portable pumps on board will require hoisting equipment and multiple personnel.

If the vessel has swimming pools, remove the water from pools, starting with the highest pool first. Toilets may be removed in accommodation spaces to allow water to drain to sanitary tanks which will be well below the water line, this will also lower the center of gravity.

Cutting holes in the skin of the ship should be done only after careful consideration and only after consulting with the ship’s senior officer to get permission (cutting a hole in a door is the only positive way to know there is nothing such as hydraulic lines, fuel lines, or air lines installed behind it). Be aware of potentially explosive atmospheres on the other side of bulkheads or watertight doors, Explosions have occurred in the past when cutting access or dewatering holes.

8380.4 – DEWATERING RESOURCES

- Vessel fixed pumps & systems:
  - Emergency bilge pumps (main or aux. circ. pumps)
  - Bilge pumps and system
  - Emergency bilge/fire pump
  - Fire pumps and Fire Main
  - Ballast pumps and system
  - Butterworth system
  - Crude Oil Wash System
  - Liquid cargo pumps and system

- Vessel portable pumping equipment:
  - Eductors
  - Submersible pumps
  - Various portable pumps (P250, etc.)

- Verify whether vessel main generator(s) and/or emergency generator(s) are operational, and if they can power pumps and vessel lighting systems
  - Provide portable generators and lights, as needed
- Coast Guard Gulf Strike Team (pumps, containment equipment, booms, communication equipment, monitoring equipment, protective gear, pollution cleanup equipment, small boats, and Hazardous Material control equipment).

- Coast Guard Sector Key West (small boats & cutters, portable pumps, eductors, damage control expertise, towing capabilities, waterside rescue, and waterside scene security).

- Commander Atlantic Area (large cutters, damage control expertise, portable pumps, hoses, eductors, towing capabilities, shoring materials and equipment, floating Command Post).
- Salvors, Marine Salvage Companies (Pumps, eductors, divers, heavy lift equipment, welders, shoring equipment and materials).

- Vessel Repair Companies, Dry Docks (welders, divers, heavy lift equipment, shoring equipment and materials).

- U.S. Navy Superintendent of Salvage (damage control expertise, salvage vessels, divers, welders, hull technicians, pollution control equipment, skimmers, booms, other containment equipment, portable pumps, eductors, hose, submersible pumps, shoring materials and equipment)

- Fire boats (fire pumping apparatus, portable pumps)
- Oil Spill Cleanup Companies (boats, containment equipment, skimmers, portable tanks)
- Tug companies
- Crane companies
- Fire Department Hazardous Material Response Teams
- Equipment rental/leasing companies

**8380.5 – FLOODING CONTROL**

- Secure electrical power to flooded areas or eliminate electrical shock hazards!
- Determine source and correct, if possible
  - Close affected valves
  - Plug leak/opening
- Determine/establish flooding boundaries
- Prevent incident from enlarging
- Close necessary watertight doors, hatches, brace/shore as necessary
- Identify and monitor vertical zones
- Control horizontal and vertical shafts, ventilation, and other openings
- Identify and control openings in hull which may drop below sea surface, if vessel list continues
- Maintain integrity/compartmentation of vessel (shore & brace where needed)
8390 – VESSEL TYPE/SPACE FIRE STRATEGIES

8390.1 – MACHINERY AND ENGINEERING SPACE FIRE

These types of spaces and compartments usually have extensive amounts of fuel piping, lubricating oils, and electrical systems and wiring. There are also numerous sources of ignition and re-ignition. These spaces also may have large, open areas than can encompass several decks.

Determine cause of fire
___ Leaking fuel
___ Electrical
___ Other: ______________________________________________________

Shut off all fuel flow to the space.
Secure electrical power to the space.
Close and secure all doors, hatches, ventilation ducts, dampers, and other openings to the space.

Determine fire conditions.
___ Interview the crew.
___ Visual indicators
___ Actual investigation

QUICK ATTACK
Fire is small enough to extinguish with portable extinguishers, large fixed extinguishers, and/or 1 - 2 hoselines. Conditions include minimum smoke, heat, and adequate visibility.
NOTE: Firefighting in any enclosed space, especially a machinery or engineering space is extremely dangerous and difficult.

FIRE TOO LARGE FOR QUICK ATTACK
___ Rescue any trapped persons, if possible
___ Secure all openings to space until minimal smoke is escaping
___ Establish primary and secondary fire boundaries
___ Activate Fixed Fire Extinguishing System for involved space, if available (May involve several valves, in different locations to discharge the agent).

Use a vessel engineering officer, if available, or other experienced person from another vessel or the marine community to activate the system. If any smoke is escaping from the involved space, so will the extinguishing agent consider supplementing the fixed system with shoreside supplies of extinguishing agent (bulk Carbon Dioxide trucks, see Resource Guide).

FIXED SYSTEM FAILED TO CONTROL FIRE, FIRE SMALL ENOUGH FOR INTERIOR ATTACK
Identify entry points/doors into involved space.

Have one of vessel engineering officers describe and map out route to fire area, obstructions, hazards to personnel, etc.

Identify escape route, signal, and procedure.

Minimum personnel and equipment:
___ Two (2) 1 1/2” or 1 3/4” hose lines minimum per entry point, per hose team
___ Full protective gear and breathing apparatus
___ Each foam hose team to consist of:
   - One fire officer with radio communication
   - One nozzle person per hose line
   - Two hose persons per hose line
   - One person to feed and take up hose at entrance to space for each hose line
   - Total of nine (9) persons per team
Number One hose will be for fire attack.

Number Two hose will be for personnel protection primary and with fire attack secondary.

Both hose lines on each team will enter involved space side-by-side (hose teams may have to zipper together in order to enter space through door).

Officer in charge of hose teams can be anywhere he/she can effectively supervise, direct, and coordinate the teams. Officer may want to be between both teams, and holding onto both nozzle person’s Self Contained Breathing Apparatus (SCBA) straps.

Have backup foam hose lines laid out, charged, and staffed to protect and/or rescue primary attack hose team.

Provide for regular relief of personnel on active attack hose team

___ Have minimum of one set of fresh personnel ready, in full protective gear, to relieve, or rescue if necessary, the active attack hose team.

___ Rotate personnel on attack team every 10 minutes, if need be.

As teams advance into space, make sure hose follows access route.

Movement to and from the attack team, both in and out of the space, is done along the hose line. The hose is the lifeline.

Continue the attack until the fire is controlled, or until obvious that control is not possible.

UNABLE TO CONTROL/EXTINGUISH FIRE WITH ATTACK HOSE TEAMS
Space is too involved with fire to safely enter. There is no visibility because of darkness and smoke. This is the most likely scenario. This type of fire will be fought from outside the space using multiple foam application devices.

Continue to maintain and cool fire boundaries.

Secure all openings to involved space and continually investigate/monitor for any fire spread past the boundaries.

Obtain and mobilize sufficient:

___ Water supply;
___ Foam concentrate supply;
___ Foam proportioning equipment; and
___ Application devices to deliver the following MINIMUM APPLICATION RATE

BACKGROUND INFORMATION - MINIMUM APPLICATION RATE
There is no recognized minimum foam application rate for combating flammable liquid fires in enclosed spaces aboard vessels. The following is a very liberal rule of thumb developed using foam application rates listed in National Fire Protection Association (NFPA) Standard 11 for Spill and Storage Tank fires.

In an engineering/machinery space fire, if the fuel flow has been secured to the space, the bulk of the fire will be burning in the bilge or lower area of the compartment. Fuel flow is usually secured by control valves located outside the space. There may be ordinary Class A materials burning throughout the space. The ship’s structure will be very hot.
The object during foam application is to spray foam around the space from the upper area. As it cascades down to the bilge, it will cool the hot metal structures and extinguish the residual fires. Any existing opening to the space can be used, or holes can be cut in the deck above the involved space to apply the foam.

**8390.2 – RECOMMENDED MINIMUM FOAM APPLICATION RATE**

For every **1000 Square Feet** of machinery/engineering space deliver **200 gallons per minute** (GPM) of foam solution for **30 minutes**.

This represents **6 gallons** of foam concentrate and **194 gallons** of water every minute when using **3%** foam concentrate, or **12 gallons** of foam concentrate and **188 gallons** of water every minute when using **6%** foam concentrate.

This minimum application rate must be capable of being delivered for up to **30 minutes Uninterrupted**.

Total foam concentrate needed is **180 gallons** of 3% foam concentrate (6 GPM X 30 minutes) or **360 gallons** of 6% foam concentrate (12 GPM X 30 minutes).

200 GPM of foam solution can be delivered with two 1 1/2 inch or one 2 1/2 inch foam hose lines.

For a 2000 square foot engine room, double the above flow and concentrate requirements. For a 3000 square foot engine room, triple the amounts, etc.

Remember, these are only Minimum amounts.

The more foam that is applied over these amounts, the faster the fire should be extinguished.

If less than the Minimum is applied, the fire may burn up the foam as fast as it is applied, and the fire may never be extinguished.

Once the required application rate has been identified and sufficient water supply, foam concentrate supplies, proportioning and application devices have been procured, set up for the foam operation.

**Identify the foam application points/locations.**

Machinery/engineering spaces will usually have from 1 to 6 doors, usually watertight, into the space from various decks. Note that:
- Some doors may give access from interior decks. These may be hot or jammed.
- One or more doors may access the space for the weather deck
- There may also be a large hatch or skylight above the space for lowering and lifting machinery parts into and out of the space
- The above noted weather access points are recommended to apply foam through
- Do not open these devices until prepared to apply foam in the proper quantity
- Prepare for and protect personnel from possible backdrafts when the space is opened up
- Stay out of the swing of any doors or hatches when they are opened under fire conditions
- Six to 12 inch holes can be cut into the overhead deck above the involved space to insert the tips of the foam nozzles
- Cellar nozzles may also be used
- Make sure the holes are cut above open areas in the space

During cutting and foam operations, the deck directly above the fire may be extremely hot and it, as well as personnel in the area, will require constant cooling.
Begin foam application and do not stop until fire is controlled. Any pause in the application or fire attack may allow the fire to burn up existing foam blanket and regained headway.

Periodically check quality of foam from the nozzles on the deck to make sure proportioning and aerating is proper, and line is not just pumping water into the space.

Alternatively, use inline eductors set up on board the vessel.

Once the fire is controlled, continue to periodically reapply and maintain foam blanket, and cool the space.

Prior to opening the space and entering to overhaul and perform fire investigation, analyze it for oxygen content, associated fire gases, and temperature. A Marine Chemist can help with this.

___ Open space up carefully, under protective hose streams.
___ Ventilate space with blowers.
___ Send in hose teams to further cool space, overhaul, and perform other required functions.
___ Use same procedure listed above for interior attack with hose teams.
___ Set up portable lights.

UNABLE TO EXTINGUISH FIRE

Take defensive posture.

Maintain fire boundaries.

Let fire burn out.

**8390.3 – ACCOMMODATION SPACE FIRE**

(Fire in the vessel’s crew or passenger living areas)

Perform any rescue of possible endangered persons.

Determine fire conditions and location(s):
___ Interview crew
___ Visual indicators
___ Investigation
___ QUICK ATTACK possible
___ QUICK ATTACK not possible, then:
    ___ Set primary and secondary fire boundaries
    ___ Secure electrical power to area
    ___ Control and secure all doors, hatches, ventilation ducts and dampers, and other openings to the space

Activate any fixed fire protection systems - if available.

Identify access points to the fire area.

Set up hose teams:
Set up and use team in same manner as described under Machinery/Engineering Space Fire.
Hose teams should enter at windward access points.

Do not open fire area until all hose lines are in place, charged, fully staffed, and ready to attack the fire. If possible, openings should be opened on the leeward, downwind side of the vessel - to allow steam and hot fire gases to escape ahead of the advancing firefighters.

Consider turning the vessel to take advantage of existing wind direction and force, or using smoke blowers/ejectors to positively pressure the fire area behind the attack teams, to direct escaping smoke and combustion products out through the controlled exit point.

Hose teams and protective water streams may have to be positioned to prevent fire spread at the smoke and heat exit point(s).

Determine arrangement of fire area hazards - compartments, passageways, ladders (stairs).

Consult ship's plans and interview crew to get mental picture of interior of fire area.

Set necessary hose lines and hose teams:

- Use a minimum of one hose team (2 hose lines with an officer) at each entry point, with necessary backup lines.
- Avoid opposing hose lines. All hose teams should enter from same direction.
- A hose team consists of one officer with radio communications, two 1 1/2" or 1 3/4" hose lines, each staffed with one nozzle person, two hose handlers, and one person to feed and take up hose at the entrance to the involved passageway or space. Two hose lines will be controlled by one officer. This represents a total of nine firefighters minimum.

The number 1 line will be for fire attack. The number 2 hose line will be primarily for personnel protection, and secondarily for fire attack. Both hoselines will enter space side-by-side. The officer in charge can be anyplace where the hose team can be effectively supervised and directed. The officer may want to be between both hose teams, and hang onto both nozzle persons' shoulder straps.

Backup lines should be in place, charged, and staffed to protect and rescue the fire attack team, if necessary. Consider having a second hose team to follow primary attack team, to overhaul fire, and prevent rekindle behind the primary attack team.

Provide for regular relief and rotation of attack personnel. Relief may need to occur every 10 minutes. There should always be a fully staffed team ready to fill in and continue the fire attack. Any pause in firefighting operations may allow fire to regain momentum.

Start the fire attack when: all the required attack, backup, and exposure fire lines are in place, charged, and staffed; ventilation equipment or method is set up; and all crews understand escape signal and procedure.

Cool and carefully open secured watertight doors and hatches at fire area access points and smoke/heat exit points. Stay out of arc of swing of any doors or hatches being opened to secured fire areas. Be prepared for smoke, explosion, or backdraft when space/area is opened up.

When involved space has vented built up pressure, start fire attack.

Continue the fire attack uninterrupted by rotating crews on hose lines until fire is controlled. After fire is controlled and space has cooled down, begin overhaul operations. Monitor oxygen and fire gas content in involved space (use Marine Chemist for this). Continue to cool and ventilate space throughout overhaul and fire investigation.
Dewater and remove all buildup of firefighting water in involved space or anywhere on the vessel (see *Dewatering Guide*)

Set up portable lights as necessary

**8390.4 – CARGO HOLD FIRE**

Determine fire conditions:
What is burning and where:
___ Interview crew and other eye witnesses
___ Open hatch to investigate - prepare for possible smoke, explosion, backdraft with protective hose lines

Are Cargo Hatches:
___ Closed
___ Operational
Type of cargo hatch system: _______________________________

If not operational, they
___ can be lifted open with a crane
___ cannot be lifted with a crane

Is there an entry scuttle or door into the cargo space?

Type of cargo:
___ Containers
___ Bulk liquid
___ Dry bulk
___ Break bulk - type of packaging______________________________
___ Break bulk - individual containers

If Hazardous Materials are involved:
___ Obtain copy of Dangerous Cargo Manifest (on Bridge, or in Master or Chief Mates office, and in Terminal office)
___ Obtain copy of Stowage Plan
___ Determine and use other cargo information sources

Nature of Hazardous Materials:
___ Water reactive
___ Thermal reactive
___ Pressure reactive
___ Explosive
___ Flammable
___ Toxic - need for evacuation downwind?

Other hazards: ____________________________________________
___ Proper spelling
___ UN number: ____________________________

Identify Hot, Warm, Cold zones and Decontamination Area, if necessary

Work from upwind area.

Do not touch or come in contact with any released materials.
Wear proper protective clothing and breathing apparatus.

Perform rescue of trapped person(s) only if this can be done safely without being overly risky to emergency personnel.

Establish fire boundaries around cargo hold.

Is fixed fire protection system available? If so, after consulting with the Master, have crewmembers:

___ Secure all openings to cargo space (vents, openings, etc.)
___ Ensure fixed system valves are properly aligned to release system into appropriate space
___ Activate the system

Consider supplementing existing system or flooding the cargo hold with bulk carbon dioxide from shoreside tank trucks. See Resource Guide for sources of supply.

Evaluate potential for fire to spread to uninvolved cargo
___ Protect or move exposed cargo, containers

Use vessel or shoreside cargo handling gear and equipment
___ Is it operational?
___ Are there qualified personnel available to operate cargo handling equipment?
___ Ship’s Mates and deck personnel operate ship’s cargo gear - use them
___ Longshoremen operate shoreside cargo handling gear

If vessel or shoreside terminal cargo equipment is not operational, or qualified operators are not available, or refuse to assist, can independent cranes and related equipment be used on a contract basis?
___ Derrick barges
___ Shoreside motorized cranes

Consider cutting holes in cargo hold bulkheads, overhead decks, or hatch covers, and inserting cellar nozzles.

Dry bulk materials (Coal, Sawdust, Wood Chips, Coke, etc.)
___ Beware of burned out cavities in bulk material.
___ Beware of steam explosions when water is injected into deep seated fires in bulk materials.
___ Use thermal imagers, heat cameras to locate hot spots in materials, and in the cargo hold.

Monitor oxygen content and fire gases in cargo hold.
___ Use a Marine Chemist for this.

Ordinary combustibles, Class A materials - consider using wetting agents or Class A firefighting foams to maximize penetration and effectiveness of fire streams.

Possible to access space and fight fire with handlines?
___ Use same hose team concept listed in previous sections.
___ When opening secured hatch covers under fire conditions, prepare for a possible backdraft.
___ Set up and work from upwind.
___ Consider moving the vessel to take advantage of the wind smoke bellowing towards side of vessel.

Dewater, remove any accumulated firefighting water.
___ Cargo space may have a dewatering or liquid cargo pump and piping system.
___ Lower submersible pumps and/or eductors into space to dewater. For small cargo spaces or holds, consider flooding entire compartment with water, only if it will not dangerously affect the vessel's stability.

If fire cannot be extinguished with conventional firefighting methods or equipment:
___ Remove exposed cargo and let involved cargo burn out.
___ Let cargo burn out and maintain fire boundaries.

If fire is within a cargo container, consider using piercing nozzles.
Vessel fires resulting in the total loss of the vessel and its cargo or significant loss of life continue to occur throughout the world. A few incidents in this country include the T/V Mega Borg fire off Texas, the P/V PRINSENDAM fire off Alaska, the M/V PROTECTOR ALPHA fire in the Columbia River and the T/V PUERTO RICAN explosion and fire off the approach to San Francisco.

Waterfront fires at shore facilities have been both less frequent and less dramatic. Nevertheless, incidents such as the fire aboard the T/V PUERTO RICAN indicate that catastrophic incidents are typified by confusion, the need for the highest order of communication, and the commitment of all available regional resources.

A large number of high-capacity cruise ships have operations in Key West. Keeping in mind the number of crew per ship is normally 40-50% of passenger capacity, the number of persons per cruise ship averages 2,500 or more. Although the relatively small volume of cruise ship visits to these ports indicates there may be less probability for casualty, the potential consequences of a casualty are considerably more significant due to island remoteness and limited availability of response resources.

Marine firefighting threats in the Key West AOR include commercial fishing vessels, small passenger vessels and large cruise vessels. Of these, the large cruise vessels are of particular concern. A marine fire at sea or at one of these locations would present significant difficulties in part due to the large vessel size, remote locations, and large number of passengers. Key West is also extremely limited in its firefighting capabilities.

This plan is based on the assumption that a major marine fire, particularly a vessel fire, may require resources beyond those locally available. Previous marine related incidents demonstrate this and the necessity for contingency planning. The T/V Puerto Rican explosion and fire off the approaches to San Francisco Bay and the T/V Mega Borg explosion and fire off Galveston, Texas are examples of such incidents, and associated problems (i.e. difficulty in getting proper equipment on-scene, weather complications, etc.). Contingency planning identifies the means and methods necessary to make resources available from federal, state, and local agencies.

Prior coordination is particularly applicable to the Key West for several reasons:
1. The geographic isolation of the Florida Keys from the U.S. mainland.
2. The large geographic area covered.
3. The variety of marine activities that occur within the zone.
The worst case scenario for the Florida Keys involves a large cruise ship underway either 20+ miles offshore. Safety of passengers is the primary concern. Significant challenges are presented due to remote location, limited or no available trained or equipped marine firefighting response or rescue resources.

Most Likely Scenario(s): Cruise Ship Fire/Tank Ship Fire
The pertinent issues to consider in these types of scenario include:
- Rapid notification of stakeholders
- Potential need for mass evacuation and availability/deployment of public/private air and afloat resources to accomplish
- Survivor processing
- Availability of Harbors of safe refuge
- In port or offshore firefighting response potential
- Availability & sustainability of adequate/sufficient marine firefighting/salvage resources (personnel and equipment)
- Structural technical support
- Pollution response/prevention

8420 – PLANNING CONSIDERATIONS

8420.1 – INCIDENT SCENE ACCESS

Primary Designated route into incident scene:
_______________________________________________________________________________________

Secondary routes into incident scene:
_______________________________________________________________________________________

Waterside routes into and out of incident scene:
_______________________________________________________________________________________

Security perimeter (Be liberal. It is easier to reduce it than to enlarge the perimeter after it has been established):
_______________________________________________________________________________________
___________________________________________________________________________________

Access Control:

SHORESIDE - LAW ENFORCEMENT, TERMINAL SECURITY:
___ Primary response route into & out of incident scene closed to all but emergency or authorized traffics?
___ Vehicle traffic control?
___ Scene security?
___ Operational area clear of unauthorized persons?
___ Crowd control?

WATERSIDE - COAST GUARD:
___ Need to clear operational area of unauthorized vessels/boats?
___ Need to establish a SAFETY Zone?
___ Need vessel traffic control?
___ Notice to Mariners?
___ Marine radio broadcast?

AIRSPACE - FAA:
___ Notice to Airmen?
___ Restricted Airspace?

ACCESS/OPERATIONS OBSTRUCTIONS:
___ Gates - Locked:
___ Keys obtained
___ Keys - location(s): _______________________________________
___ Combinations obtained

Combinations are: _______________________________________________
___ Forcible entry?
___ Vehicles - Trucks, Automobiles
___ Tow truck?
___ Cargo, Cargo Containers:
___ Contact Longshoremen, Stevedore companies
___ Cargo handling equipment operational and available?
___ Limitations on emergency apparatus movement or use?
___ Crowd, Spectators, Unauthorized Persons: Use law enforcement
___ Construction Areas

Wharf/Terminal Load Limits:
___ Will operational area support weight of emergency apparatus and equipment?

Wharf/Terminal Age: ____________________________________________

___ Defects:
______________________________________________________________________________________

___ Faults:
______________________________________________________________________________________

___ Weaknesses:
______________________________________________________________________________________

8420.2 – ENVIRONMENTAL CONDITIONS

Wind: _______________
Speed: _______________
Direction: _____________
Temperature: ___________
Weather: (clear, rain, fog, inversion, etc.) ____________________________

Tidal conditions (ebb, flood, slack): __________________________
Next High tide at: ___________ Height (ft): _________________
Next Low tide at: ___________ Height (ft): _________________
Currents: ________________________________
Affect on incident: ________________________________
Anticipated environmental changes in:
12 hours: ________________________________________________
24 hours: ________________________________________________
48 hours: ________________________________________________
Water depth: _______________
Channel depth: _______________
Distance from wharf deck to water: _________________________
Bottom conditions:
___ Soft or Rocky
___ Flat or sloped
___ Water depth, and Mean Low Water
Adjacent shore conditions:
___ Accessible?
___ Sensitive areas? Environmental, Economic, Recreational, Cultural
___ Exposed marine animal and plant life?
___ Evaluate difficulty to protect from incident caused pollution
Can vessel be moved to a shallower location with better bottom conditions?
Scuttling or Beaching - consult:
___ Coast Guard Captain of the Port
___ Army Corps of Engineers

8420.3 – CONTAMINATED WATER

Water pollution:
___ Type(s)

Effect on marine environment:
___ Shore conditions
___ Sensitive areas
___ Marine animal life

Effect of natural elements:
___ Tides
___ Currents
___ Wind

Alternative discharge arrangements:
___ Barges
___ Another tank ship
___ Tank trucks
___ Shore-based fixed storage tanks

Need for containment & recovery equipment:
___ Booms
___ Skimmers
___ Recovery equipment

Sources of assistance:
___ Army Corps of Engineers
___ Clean up contractors
___ Gulf Strike Team
___ U.S. Navy
___ Wildlife protection groups
___ NOAA modeling
___ CAMEO, and other computer programs to predict effect of pollution

8430 – RESOURCES

Marine firefighting resources are listed in Volume VI Resources and Support.