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PURPOSE

This procedure will establish the general operational guidelines for open water marine fire suppression operations at Lake Pleasant.

POLICY

This procedure applies to open water vessels fires; which are defined as those not accessible from shore-based operations (including marina fires), thus requiring the use of a fireboat, specialized equipment, or other watercraft for access and operation by fire crews.

The unique circumstances surrounding a burning watercraft in open water conditions dictate that fire crews will usually need to access and operate from a watercraft. Shore based alternatives should be considered first, if available and safely capable. Offshore-based fire operations require special training, equipment, tactical considerations, and safety practices.

PROCEDURE

TACTICAL PRIORITIES:

These functions should be regarded as separate, yet interrelated activities that must be dealt with in order. Command cannot proceed to the next priority until the current function objective has been completed or sufficient resources have been assigned to accomplish it.

These priorities are defined as:

- **Protect Life Safety:** The activities required to protect occupants, remove those who are threatened, rescue incapacitated victims, and treat the injured.
- **Confine Fire Spread:** The activities required to stop the forward progress of the fire and ensure protection of exposures.
- **Fire Control and Extinguishment:** Those activities required to completely extinguish the fire and prevent re-ignition.
- **Environmental Mitigation:** Those activities required to ensure hazardous and flammable materials, including fuels, are contained and leakage is controlled.
- **Property Salvage and Conservation:** Those activities required to stop or reduce primary and secondary loss to property and the negative psychological and emotional impact of the event on the customer.

Command will report successful completion of each objective by transmitting the following benchmarks:

- **“All Clear”** (Life Safety Protection): All victims have been accounted for and have been removed from the involved vessel and/or from the water to a safe

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location.

- **“Fire Control”** (Fire Containment and Control): Forward progress of the fire has been stopped, all exposures are securely protected or removed from danger, and the fire can be completely extinguished / overhauled with the on-scene resources.
- **“Haz-Mat Control”** (Environmental Mitigation): All leaks have been stopped or controlled, spills have been contained, and Class B liquids have adequate ignition prevention measures in place.
- **“Loss Stopped”** (Property Conservation): The vessel has been secured from submerging, overhaul is addressed, salvage is addressed, and occupant services are addressed.

FIREGROUND STRATEGY:

While Command must satisfy the objective of each function in its priority order, often these activities will overlap to achieve the benchmark goal. Notable examples are the need to control a shipboard fire prior to boarding for a search, or need to control leaking fuel in order to extinguish it.

The isolated working environment of crew operating in open water further creates a limitation on their available resources. Command must decide early in the incident whether to remove victims from danger, or remove the danger from the victims. This decision should be based on these factors:

- Number and Accessibility of Victims
- Condition of Victims
- Size and Location of Fire
- Potential Spread of the Fire
- The Probability of Rapid Fire Control with the Available Resources

In situations where there are a large number of occupants, such as a commercial passenger vessel, it may be impractical and unsafe to attempt to evacuate the vessel prior to attacking the fire. In these situations, Command must maintain consideration of the tactical priorities, and understand that the overall objectives remain the same. As these incidents progress, Command must continually reevaluate the conditions to ensure the risk to the occupants is minimized.

The initial arriving fire command officer will evaluate the scene, and make a strategy selection based on the available information. The selected strategy will be transmitted in the on-scene report in the form of the *mode of operation*. As Command is transferred throughout an incident, each officer will reevaluate the mode of operation upon assuming command.

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Throughout the entire incident, Command will continually evaluate the situation and will effect a change in the mode of operation when indicated. This change may occur due to changing conditions or because certain benchmarks (i.e.; “All Clear”) have been met.

This decision will be based on this basic Risk Management Plan:

We May Risk a Lot to Protect Savable Lives
We May Risk a Little to Protect Savable Property
We Will NOT Risk at all to Save What is Already Lost

Once a mode of mode of operation has been identified, Command is responsible to ensure all personnel operating on the fire are working within that mode. By controlling the mode of operation, Command is addressing overall incident safety.

MODES OF OPERATION:

Command will determine the most appropriate mode of operation for fire personnel upon arrival. The modes of operation include:

- Investigative
- Rescue

This decision should be based on the known fire and rescue conditions, and must be continually reevaluated based on the changing conditions in which the fire personnel are operating. Operational practices for each mode are defined in further sections of these procedures.

INVESTIGATIVE MODE: When no fire or smoke conditions are visible, occupants of the vessel do not appear distressed, and fire personnel can safely board the vessel.

RESCUE MODE: When a life safety hazard exists, Command will declare a Rescue Mode of operation, and all actions will be directed to removing the effected people to a safe location. If multiple victims exist, a *life safety risk analysis* will be performed to determine the most endangered ones. Fire personnel will operate in the Rescue Mode until an “All Clear” is obtained.

When performing a *life safety risk analysis*, fire personnel should consider victims at risk (from greatest to least):

- Incapacitated victims still aboard the burning vessel
- Incapacitated or Unconscious victims in the water
- All other victims still aboard the burning vessel
- Unsupported (no floatation device) conscious victims in the water
- Supported (wearing a floatation device) victims in the water

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- Non-savable victims

When approaching a burning vessel (except incipient or controlled fires) with passengers still on board, fire personnel should hail the vessel via radio or public address system. Passengers should be instructed to don a PFD (if quickly available) and abandon their vessel. If urgent due to fire conditions, they should be instructed to jump directly into the water on the same side of their vessel (upwind) as the fireboat and forgo the PFD. Fire personnel should be ready to immediately enter the water to perform a rescue if necessary. If they are unable or unwilling to abandon their vessel, fire personnel should be ready to board their vessel to affect a rescue.

Command will determine the most appropriate strategy of operation for fire personnel upon arrival. These strategies of operation include:

- Offensive
- Defensive

OFFENSIVE STRATEGY: In the offensive mode, fire personnel will board the vessel to perform rescue and/or fire attack tasks. THIS IS THE MOST DANGEROUS MODE OF OPERATION FOR FIRE PERSONNEL, and should be limited to:

- Known Rescue Situations
- Incipient stage fires, which are contained and have not affected the structural integrity of the vessel.
- Large passenger vessels in which it is not practical or safe for the occupants to abandon the vessel. This may include commercial passenger vessels, large houseboats, and overcrowded cruising vessels.

To evacuate a vessel that carries a substantial passenger load (into the water) would greatly increase the life safety hazard, especially in the winter months when hypothermia may incapacitate a victim within a few minutes. This is especially true with commercial passenger vessels, as the passengers are usually not experienced in such operations.

This is the basic rescue decision: Remove the victims from the fire *or* remove the fire from the victims?

Offensive Strategy Tactical Operations:

Firefighters boarding any burning vessel will wear full personal protective equipment (including SCBA), and will have a charged hose line. They must also be trained in Accidental Water Immersion for Firefighters or hold an Emergency Reponse Diving International (ERDI) certification. The fireboat operator will approach the burning vessel slowly, from the upwind side (if possible). The fireboat will be brought along side, and

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held in place by the boat operator. It will NOT be tied to the burning vessel, thus impeding emergency escape. An operator must remain at the helm of the fireboat at all times.

Priority should be given to accounting for the occupants. If necessary, a search can be conducted on the vessel. All occupants should be moved to the safety of another boat, wearing a PFD (if readily available). Once all occupants are accounted for and safely removed, command will transmit an *“All Clear” on the assigned tactical channel.*

The attack will generally be made from the unburned portion. Foam is the preferred extinguishing agent, and care should be taken to minimize water use to avoid flooding the boat. Command should assign the minimum amount of personnel necessary to accomplish the objectives. Personnel accountability is paramount should crews find it necessary to abandon the vessel rapidly.

Interior operating crews will board the vessel, sounding the deck beneath them as they advance (same technique as sounding a roof). If they suspect an unsafe or questionable deck integrity, they will immediately retreat to the fireboat and change to a defensive strategy operation. It is a priority for interior crews to protect their egress route.

Entry into below waterline or limited egress spaces should only be made for rescue purposes.

The fireboat operator and all other crew members will monitor conditions outside and report to command any unsafe observations.

Once the fire is extinguished, the interior crew will withdraw back to their fireboat. A PAR will be reported when all interior firefighters have left the burning vessel.

The vessel should then be towed to the rendezvous point to meet land based apparatus and crews. This will usually be the closest boat ramp. From that position, the vessel can be safely overhauled.

Towing is preferably done by a separate towboat. This will leave the fireboat free to operate around the vessel for spot fire and rekindles, which are common. Firefighters will NOT reenter a boat under tow, nor will they ride on it. If it becomes necessary to re-board the vessel, it will be stopped and treated the same as any offensive operation.

The vessels occupants should be kept together as much as possible (unless medical treatment is indicated), and brought to shore on a separate boat. Occupants are NOT to re-board their vessel until the situation is totally stabilized and overhauled.

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During overhaul operations, the vessel will be inspected for leaking hazardous liquids. If necessary, Haz-Mat booms may be deploys around the vessel to obtain environmental control. Haz-Mat booms will be provided by Lake Pleasant Marina Staff.

DEFENSIVE STRATEGY: Fire personnel will NOT board the vessel and will operate from their own boat only. The objective is to limit fire spread, control vessel movement, and obtain fire control. The vessel can then be towed to a shore location for overhaul. This may be done simultaneously with fire suppression operations. This is the most common and safest mode of operation, which should be used when no immediate life safety hazard exists.

In a defensive strategy, a primary search will not be attempted and no “ALL CLEAR” will be given. A secondary search should be accomplished if and when the fire is extinguished and the vessel is stabilized.

In most situations, the decision to operate in the Offensive or Defensive mode is clear-cut. In other cases, the situation is marginal and it may be necessary to fire personnel to board a vessel of questionable integrity to perform a rescue. In such situations, Command will declare an “Offensive” strategy. Fire personnel should act quickly, decisively, and use full protective equipment (including SCBA and hose line protection) to perform the rescue and abandon the burning vessel as quickly as possible. After an All Clear and a PAR are obtained, Command will declare the strategy as “Defensive”.

Defensive Strategy Tactical Operations:

Once a decision is made by command to operate in a defensive strategy, the only reason to change to an offensive strategy operation is to perform a known rescue. If that situation presents, fire crews must act quickly, decisively, and then abandon the vessel immediately.

Defensive operations are rarely effective in saving the vessel itself. Resources should focus on preventing fire spread, controlling “on lookers”, and limiting environmental impact. Crews should expect that the burning vessel *will* eventually sink. Vessels, especially V-type hulls, can be expected to heave to one side or the other during the sinking process. Command should take the steps necessary to protect fire personnel and civilians should this occur.

As the burning vessel is approached, the crew will station at the bow of the fireboat, ready to apply water and/or foam. They will direct the boat operator with hand/verbal signaling. The Firefighters will wear the appropriate personal protective equipment, including SCBA if available. If no SCBA is available, crews will approach from the upwind side, as to limit their exposure to the products of combustion.

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The initial focus is to account for all occupants, and provide for their safety. Once that objective has been met, command will transmit an “All Clear” on the tactical radio channel. If the vessel is too involved to safely board, and all occupants cannot be accounted for, command will notify the tactical radio operator (TRO) that an “All Clear” will be delayed. Focus at that point should remain on accounting for and treating all occupants.

Once an all clear has been obtained, Command should focus on maintaining control of the burning vessel, the scene, and any hazardous leaks.

Vessel Capture:

If it becomes necessary to move a burning vessel in a controlled manner, a “Capture” procedure should be used. To capture a burning vessel, the fireboat should

- Approach from upwind, under the protection of a wide fog pattern, until close enough to toss a chain led grappling hook (Capture Hook) into the burning boat.
 - A *Capture Hook* is a steel grappling hook attached to 15-20’ of steel chain, then attached to a tow rope. When tossed into the burning vessel, this provides a fire resistive system to tow the burning vessel to a safe location.
- The capture hook is secured by the rope end to the fireboat. Usually the combination of chain and rope is about 20-30 feet long. Using this procedure will allow the fireboat crew to control the movement of the burning vessel from a safe distance, while simultaneously applying fire suppression agents. The fire streams in this situation should be trained to protect the fireboat and crew, not extinguish the burning vessel. This is usually best accomplished with a wide fog pattern.
- Once captured, the boat operator will slowly back the fireboat and begin towing the burning boat to a safer operating location. When the burning vessel is secured in a safer location, the towline should be cut free of the fireboat.
- A crew member equipped with a sharp knife and a fire axe must be assigned to tend the tow rope connection at all times. Since it is common for a burning vessel to quickly sink, the crew member must be ready to cut it free IMMEDIATELY if it begins to submerge. This action will occur under the direction of the company officer. The entire fireboat crew must be cautious that the towline does not whip back toward them. To avoid this situation, the line should be cut as close to the fireboat as possible as the fireboat moves slowly toward the burning vessel to reduce tow line tension. Not cutting a sinking boat loose may result in severe damage or sinking of the fireboat.

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Arrangement for environmental control should be made as soon as possible. If leaking hazardous and/or Class B liquids in large quantities, booms should be deployed around the vessel as early as possible, even before submersion or fire extinguishment.

The location of any known sunken boat should be marked and recorded from the GPS system (if available) for later salvage efforts. It may be necessary to apply Haz-Mat booms even after submersion, as most fuels will float to the surface – sometimes in large quantities. Command should coordinate boom deployment with the Marina personnel.

Marina Fires:

Marina fires provide an unusually high risk due to the high combustibility of fiberglass hulled boats, high Class-B fire load, multiple boats in close proximity, limited egress, and limited fire suppression ability. Marina fires can quickly spread to multiple watercraft and cause a hidden deterioration in the structural members of the dock itself. Dock design can limit victim egress, and fires may be several thousand feet from a suitable water source.

Due to the limited access, marina fires are considered off-shore operations. The tactical priorities and modes of operation outlined in this procedure should be utilized. Land based water supplies are usually ineffectively inaccessible, and a multi-tiered approach to fire suppression is necessary.

The different marinas at Lake Pleasant offer vastly different fixed fire protection systems. Peoria Fire-Medical Department personnel are expected to be familiar with fire alarm and suppression systems available at each marina.

Initial arriving unit to a marina fire should first identify the location and extent of the fire. A large number of resources are required for working marina fires and should be called early. Units should then be deployed based on the tactical priorities of the incident:

These priorities are defined as:

- **Protect Life Safety:** Civilian and firefighter safety is the priority of any off-shore fire suppression operation.
 - Rapid rescue from burning or imminently endangered watercraft is a priority if it can be completed safely.
 - All docks should be evacuated, starting with the most endangered.
 - Special attention must be paid to victims located *past* the fire on the same dock(s), as egress may be blocked and boats may be needed to perform a rescue.
 - “All Clear” should be reported to Command for all involved watercraft,

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immediate exposures, and each evacuated dock or geographical area.

- RIC Teams should be deployed early as needed to protect operating firefighters.
- **Confine Fire Spread:** Operations should center on protecting and removing the exposures.
 - Burning watercraft should NOT be cut free from their docks. They can move about uncontrolled and cause additional fires on other docks and watercraft. In fact, crews should expect the mooring ropes to burn naturally, so burning watercraft should be secured in a way they can be released if they sink.
 - Crews should determine where to make a fire-break. This is usually 1-2 boats on all sides of the burning vessel(s), but that can be dictated by natural breaks, wind direction and speed, or empty slips.
 - Once fire-break locations are determined, watercraft should be moved from the fire-break areas in an orderly & controlled manner (do NOT just cut them loose), with care to protect inter-dock channels to allow fireboat access. Depending of the fire volume, at least 2-3 slips should be emptied on each side.
- **Fire Control and Extinguishment:** Crews should use all available resources to apply agents to control the fire.
 - CAF/Foam is the agent of choice. Care should be taken to minimize the amount of water applied into boat hulls, as they will sink. Best practice is to fill the boat with enough water/foam to raise the water level inside the boat but avoid a full submersion. Fiberglass hulled boats hold heat very well. They are very difficult to extinguish and will continue to reignite. They must be monitored extensively after the fire is initially controlled.
 - Burning vessels should be captured and moved *only as a last resort*. The risk of losing control and causing fire spread during towing operations is high. Any such operation should be coordinated with fireboat and portable pump protection.
 - Crews should deploy multiple water supplies, including portable pumps, fixed standpipes, fireboat pumps, float pumps, extended handlines from pumpers (if practical), or other water sources.
 - Crews should operate from defensive positions unless performing rescue functions. All well-involved watercraft should be considered lost with suppression efforts concentrated on stopping spread to exposures. Care must be taken to monitor dock integrity.
- **Environmental Mitigation:** Once fire control is obtained, the scene should be evaluated for environmental protection – remembering that Lake Pleasant is a drinking water reservoir.
 - All fire areas should be isolated with oil booms until evaluated by experts. Marina personnel will assist with that process.

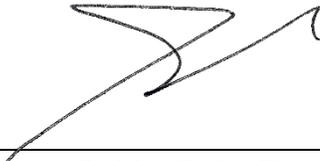
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- Sunken boats should be marked if possible with GPS coordinates. They will continue to release Class-B fluids that will float to the surface and should be boomed and/or removed.
- **Property Salvage and Conservation:** Those activities required to stop or reduce primary and secondary loss to property and the negative psychological and emotional impact of the event on the customer.
 - Once the fire and environmental issues are controlled, the scene should be evaluated for hazard. Marina, fire prevention, city engineering, and expert personnel may be needed for this function.
 - The scene should be protected for Fire Investigation personnel to perform their functions.

Resource Management:

Due to the limited access and long ramp walkways, fire crews should approach marina fires like high rise fires; bringing with them all necessary equipment (such as high-rise packs, spare SCBA bottles, hand tools, radio headsets, EMS equipment, etc.).

On extended operations, Command should designate resource staging positions early and communicate the location with all arriving companies. These positions may be supported with shuttle boat/barge transportation of equipment and manpower. In such operations, responding units should be directed to a rendezvous boat ramp to meet and load shuttle craft.

Approved:  _____ 06/07/2018
Bobby Ruiz, Fire Chief Date