

# THE SIX STEPS FOR CONDUCTING A

# SUCCESSFUL YACHT FIRE INVESTIGATION



**Author: T. David Harlow, IAAI-CFI, Fire & Explosion, Principal Consultant, Envista Forensics**

Yacht and superyacht fires, as well as fires in the marinas where yachts are moored, present significant challenges to insurers, legal professionals and owners. Fire investigations on yachts and superyachts can be very complex. In this paper, we explain the necessary steps fire investigators must take while conducting a marine vessel fire investigation on yachts and superyachts in both waterborne and land-based fires, including leading fire scene examinations, recording documentation and removing and storing evidence.

## Step 1: Stabilization of the Yacht

After a yacht fire, the initial scene typically presents an array of problems. There are often several vessels, docks, piers, marina buildings and dock equipment involved. As well as many immediate safety concerns, such as vessels sinking, capsizing or becoming partially submerged.

Before any investigative actions can take place, vessels need to be stabilized, and immediate risks, such as spilled fuel, oil, hydraulic and other fluids, must be contained so that the fluids don't contaminate evidence or cause harm to people and the environment.

## Step 2: Documentation of the Scene

Scene documentation must take place before the vessels are refloated and removed from the dock area, as evidence may be lost during the operations to raise the vessels and transportation.

### Highlights

- How to Stabilize a Yacht or Superyacht After a Fire
- The Importance of Documentation
- Conducting Research and Review
- Planning Recovery Efforts
- Finding Origin and Cause





As with any significant fire event, the evidence documentation process will be extensive and ongoing, and there are many factors to be considered and documented. Therefore, it is vital to develop a method of documentation before entering a yacht fire investigation.

Everything within and around a vessel exposed to fire, heat, smoke and water needs to be documented in place. A properly investigated yacht fire scene requires documentation and preservation of:

- Large vessels with fire and heat damage,
- Vessels with collapsed upper decks,
- Vessel electrical systems, conductors, equipment, fuel systems and piping, and
- Dock infrastructure, including shore power cabling, pedestals, transformers, equipment, fuel systems and piping.

There will be instances when the investigator does not have the opportunity to view the vessel in the location of the fire because it may have been refloated and moved to dry land or towed miles away to a boatyard where it is placed on stands. This can happen during fire suppression if the fireboat needs to cut the lines so the yacht can be pulled away to be extinguished. Vessels can be found fully or partially submerged. In this case, they must have the water pumped out as they are raised, refloated and moved from their present location, whether it be a dock or other water location.

### Step 3: Research and Survey Review

The following activities should be conducted during all phases of recovery before the origin and cause investigation can begin by the fire investigator, engineer, marina surveyor or other assigned personnel.

- Search the location, address and name of the marina or boatyard using Google Earth, or something similar, to get an idea of the layout, docks and waterways into and out of the loss location.

- Document the names, hull serial numbers (HIN) and registration numbers of all vessels involved.
- Check security cameras at the site that may show alternative views of the location.
- Interview owners and witnesses.
- Review available cellphone photos or videos.

Marine surveys are a good source of pre-investigation information because they provide a list of deficiencies, the general condition of the vessel and systems and potential clues for possible ignition sources. The survey also includes specific component information, including the make, model and condition of various components.

Additionally, yacht system documentation can provide detailed information into the various fuel loads and systems, fire protection systems, mechanical systems, engines, generators, electrical systems and the conditions of each system.

## Step 4: The Planning Process

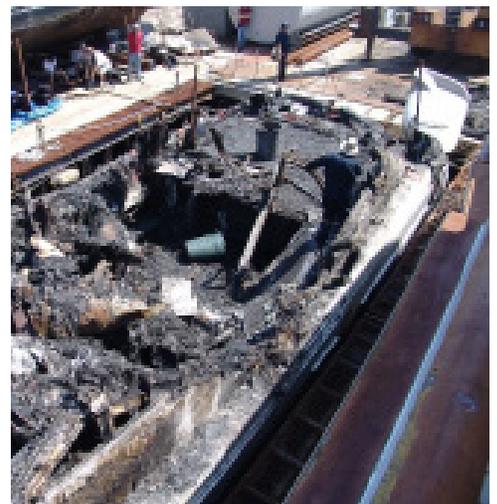
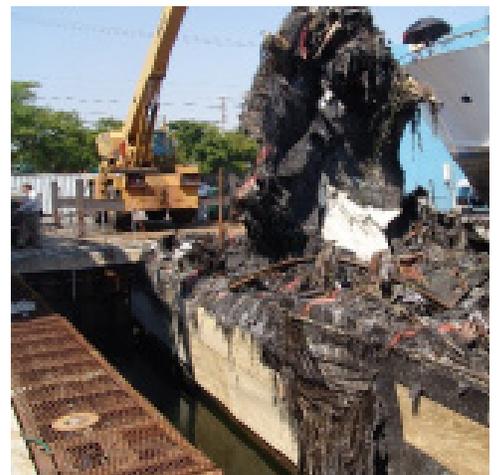
During the planning process, the method of vessel recovery is decided. This can take weeks, as the plans must include where and how the vessel will be transported for the onboard fire scene examination. It is essential to ensure every part of the plan has been written, reviewed and approved before action is taken.

There are several key issues to address before the vessels can be removed and the investigation can be started, including:

- Have the vessels and fire scene been released by the various agencies, such as the fire and police department, the state fire marshal and the United States Coast Guard (USCG), or other national authorities?
- Are all parties on notice, and have they responded?
- Do all parties agree with the plan?

## Step 5: Determining Origin and Cause

Once all parties have been placed on notice, the investigation begins. The initial phase may consist of removing collapsed decks and debris using heavy cranes and placing the damaged materials in an area where it is examined and documented. Fuel, sewage and hydraulic fluids may also need to be removed from the vessel. In this case, large pump trucks will be required to pump the fluids out of the tanks before the fire scene examination can continue.



Divers or underwater Remotely Operated Vehicles (ROVs) are necessary to document the vessels before, during and after being refloated. It is important to search for and recover displaced parts, assess hull damage and determine if there are any items of potential evidentiary value around the vessel. During the onboard fire scene examination, cranes, high-lifts and other equipment are necessary for moving decks that have collapsed into the vessel, large objects and drums of fire debris.

## Step 6: Evidence Examination and Testing

Once the fire scene investigation, documentation and evidence collection are completed, the next step is to inspect and test items of potential evidentiary value. In most yacht fire cases, there are various articles collected, documented, tagged and secured as items of potential evidentiary value, which are transported to the lab to be tested. During the fire scene examination, you need the right team of experts, engineers and laboratory specialist, as well as an appropriate laboratory that can x-ray, conduct electrical or mechanical tests and other activities as warranted will be required to thoroughly examine the items collected.

## In Summary

A fire investigation involving yachts and superyachts can be extremely complex and demanding. Yachts should not be considered just a bigger boat, as they contain many intricate mechanical and electrical systems. These elaborate systems take much time, energy and resources to work through when conducting a fire origin and cause investigation. As outlined in this paper, stakeholders in yacht and superyacht fires experience many unique challenges. Given this, it is integral that experienced investigators are retained as soon as possible. Doing so will ensure protocols for evidence collection and litigation management are adhered to, which in turn, aids all parties in being 'afloat' again as soon as possible.