

May 20, 2024

MIR-24-13

## Fire aboard Passenger Vessel *Lady Delray*

On April 12, 2023, about 0015 local time, the small passenger vessel *Lady Delray* was moored, unattended and locked up, alongside the dock at Veterans Park on the Intracoastal Waterway in Delray Beach, Florida, when a bystander on shore reported a fire on board the vessel.<sup>1</sup> The local fire department responded to the scene and extinguished the fire. The vessel was later towed to a boatyard for repairs. No pollution or injuries were reported. Damage to the vessel was estimated at \$500,000.



**Figure 1.** *Lady Delray* docked before the fire. (Source: Tripadvisor.com)

<sup>1</sup> (a) In this report, all times are eastern daylight time, and all miles are statute miles. (b) Visit [nts.gov](https://www.nts.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. DCA23FM028). Use the [CAROL Query](#) to search investigations.

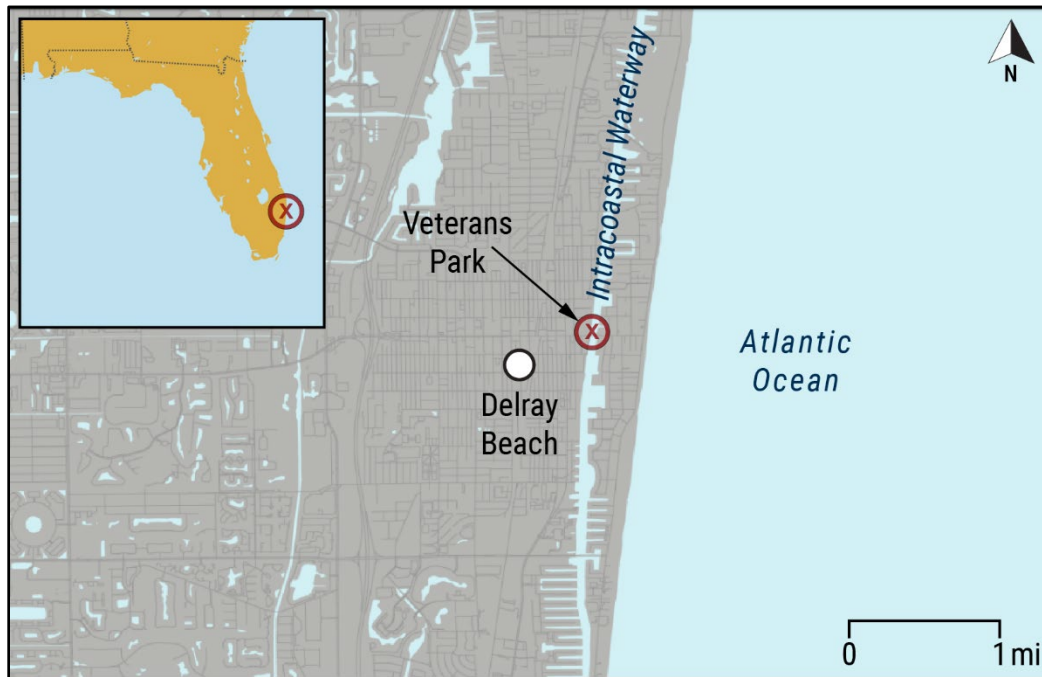
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**Casualty Summary**

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<b>Casualty type</b>	Fire/Explosion
<b>Location</b>	Veterans Park, Intracoastal Waterway, Delray Beach, Florida 26°27.72' N, 80°3.85' W
<b>Date</b>	April 12, 2023
<b>Time</b>	0015 eastern daylight time (coordinated universal time -4 hrs)
<b>Persons on board</b>	None
<b>Injuries</b>	None
<b>Property damage</b>	\$500,000 est.
<b>Environmental damage</b>	None
<b>Weather</b>	Visibility 10 mi, scattered clouds, winds east at 10 kts, air temperature 73°F, morning twilight 0631, sunrise 0655
<b>Waterway information</b>	Inland waterway, width 215 ft, depth 9–12 ft

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**Figure 2.** Area where the fire on board the *Lady Delray* occurred, as indicated by a red X. (Background source: Google Maps)

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# 1 Factual Information

## 1.1 Background

The 80-foot-long *Lady Delray* was a passenger vessel constructed of welded steel and built by SkipperLiner Industries, Inc. in La Crosse, Wisconsin, in 1998 (see figure 1). Delray Intracoastal Cruises owned and operated the vessel, as well as another passenger vessel; the company operated both vessels from a facility at Veterans Park in Delray Beach, Florida.

The *Lady Delray* was inspected by the US Coast Guard as a small passenger vessel under Title 46 *Code of Federal Regulations* Subchapter T. The *Lady Delray* was certificated to carry 134 persons consisting of crew and passengers. The vessel would typically take passengers on sightseeing trips, dinner cruises, and private charters along the Intracoastal Waterway between West Palm Beach, Florida, and Fort Lauderdale, Florida.

The *Lady Delray* had two passenger decks and a raised pilothouse. The main deck housed a dining room/function room with a full bar. Aft on the main deck was a galley, restrooms, and utility spaces. Above the main deck, the second deck contained a lounge and seating area with a covered aft fantail with seating. The pilot house was accessed from the second deck by a half-deck stairwell. All interior passenger spaces were finished with wood paneling on the bulkheads and carpeting on the decks. The engine room and machinery spaces were located below the main deck.

## 1.2 Event Sequence

In March 2023, the *Lady Delray* was moored with its starboard side to the dock at Veterans Park in Delray Beach (see figure 2). Over the next few weeks, the owner and crewmembers prepared the vessel for charters, which were set to begin the week of April 16.

On the evening of April 11, the *Lady Delray* was unattended, as was typical for the owner when the vessel was not operating. Vessel electrical power was supplied via a shore power connection. The company's other passenger vessel, also unattended, was moored port side to, and outboard of, the *Lady Delray*.

About 0015 on April 12, a passerby noticed fire on board the *Lady Delray* and called 911.<sup>2</sup> About 9 minutes later, the local fire department arrived on scene and identified fire within the vessel, toward the forward port side of the main deck. The fire department broke several of the vessel's windows to access and attack the fire. Using a shoreside water supply, the fire department was able to "knock down" (suppress) the fire. Firefighters then forced entry into the vessel's interior via a broken window and the aft main deck door, and they searched the vessel to ensure no one was on board and verify that the fire was extinguished.

The vessel's owner, who had been notified of the fire by county dispatch about 0030, arrived at the dock about 0115. Over the next several hours, state and local fire investigators arrived to investigate the cause and origin of the fire (see section 1.3.2 for more details on the fire investigation). Following the investigators' examination of the *Lady Delray*, the owner was allowed on board, and they began assessing the damage and dewatering the vessel. The vessel was later towed to a nearby boatyard for further examination and repair.

## 1.3 Additional Information

### 1.3.1 Damage

Most of the fire damage to the *Lady Delray* was concentrated on the main deck near the bar area on the port side of the vessel (see figure 3). Smoke, soot, and radiant heat damage from the fire extended out from this area to nearby galley cabinetry, plastic and wood paneling on the overhead and bulkheads, and the deck above. Several of the main deck windows were broken during the firefighting, and firefighting water saturated most of the interior spaces on the main deck and drained into the engine room bilges. Additionally, a surveyor for the vessel's owner stated that the electrical circuitry in the main deck galley area, as well much of the galley equipment itself, was damaged from the fire and would need replacement. The vessel's air conditioning units and ducting were also damaged and needed replacement.

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<sup>2</sup> The vessel was equipped with a fire suppression system in the engine room and in the bow thruster space. It did not have a suppression system or smoke or fire detectors or alarms in other portions of the vessel, nor was it required to by regulation.



**Figure 3.** (Left to right) *Lady Delray* after the fire, with fire-damaged portside window and portside main deck bar area.

### 1.3.2 Fire Investigation

A fire investigator from the Florida Bureau of Fire, Arson, and Explosives examined the vessel immediately after the fire to determine the origin and cause of the fire (the National Transportation Safety Board [NTSB] did not participate in the examination). He concluded that the area of origin was behind a refrigeration unit, located against the portside bulkhead within the bar area of the main deck. The refrigeration unit was a commercial grade, Beverage-Air model DD58, two-door, keg-type unit, certified by Underwriters Laboratory. The 110-volt, 0.25-hp unit drew 2.5 amps and used an R-290 hydrocarbon refrigerant.

Further, the investigator found that there was heavy charring to the exterior on the back side of the unit as well as charring to the bulkhead immediately behind the unit (see figure 4). The fire had severely damaged the 110-volt receptacle the unit was plugged into, and most of the unit's service cord had been consumed by the fire. The security system's 110-volt power supply was also plugged into the same receptacle as the refrigeration unit, and its service cord was also heavily damaged by the fire.

The fire investigator found that the corrugated grill—which was on the right-hand side of the back of the refrigeration unit and housed the refrigeration unit's hermetically sealed compressor—was also heavily charred. The grill's charred fire pattern was "mirror[ed]" onto the adjacent bulkhead directly outboard (see figure 4).

The investigator determined that all other fire patterns originated from the grill fire pattern and propagated up toward the windowsill and overhead. The fire investigator concluded that the fire was accidental in nature and the cause may have been the refrigeration unit's motor (the hermetically sealed compressor) overheating due to improper ventilation, which led to the combustion of flammable materials in the area.



**Figure 4.** (Left to right) Origin area of the fire on corrugated grill (outlined) on main deck bar refrigeration unit, with fire pattern mirrored (outlined) on portside bulkhead. The area of a cabinet end panel in place prior to the fire is indicated by a dashed line. (Source: Florida Bureau of Fire, Arson, and Explosives)

Following the fire, the vessel owner and representatives from the refrigeration unit manufacturer coordinated to forensically examine the refrigeration unit to determine whether a failed component may have contributed to the fire. They conducted preliminary examinations, but, as of this report's publication, no report has been presented to the NTSB or the Coast Guard.

### 1.3.3 Electrical Power

At the time of the fire, the vessel's electrical system was supplied by 110-volt shore power. A panel on the dock fed 70-amp service to the vessel via a power cord, which was plugged into an outlet on the vessel. The vessel connection fed a transfer switch, which supplied electricity from shore or the vessel's onboard electrical generator to either of the vessel's distribution panels. The vessel owner said that 220-volt equipment, such as pumps, air conditioning units, and hot water heaters, would draw larger electrical loads and could only operate when the vessel was using

the onboard electrical generator. If this equipment was used when the vessel was being powered via the shore power connection, the 70-amp shoreside power breaker would trip. Therefore, larger electrical consumers remained off while the vessel was at the dock, and only select 110-volt circuits were energized (circuits to be energized were selected individually at the vessel's distribution panels). The wiring and breaker panels were original to the vessel.

The owner of the *Lady Delray* said that, on the night of the fire, the only circuits energized were some vessel lighting for security purposes, a security and CCTV system (data from this system was unavailable following the fire due to a configuration error during the installation of the system), and the galley refrigerators and freezers (including the two-door, keg-type refrigeration unit). According to the owner, this was a typical electrical configuration while the vessel was at the dock. However, the actual positions of the breakers following the fire were unknown because at some time during either firefighting or salvage efforts, all the electrical breakers were opened and there was no documentation as to their pre-fire position.

### **1.3.4 Maintenance**

#### **1.3.4.1 Vessel**

Before arriving at the dock at Veterans Park, the vessel had been in a shipyard for about 6 months for maintenance and was not in service. Maintenance completed consisted of cleaning the fuel tanks; replacing some hull plating, the onboard electrical generator, and carpet on the second deck fan tail; and painting the hull.

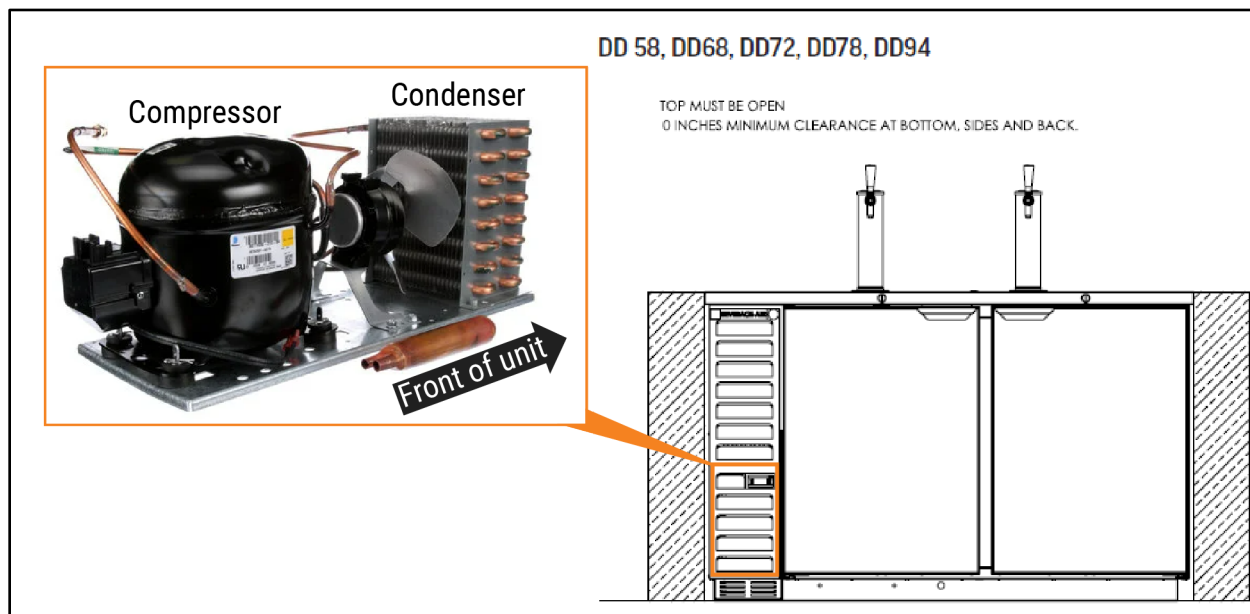
#### **1.3.4.2 Refrigeration Unit**

The vessel owner purchased the two-door, keg-type refrigeration unit new about 4 years before the fire and had never had any issues with it. It had been on and operating for several weeks before the fire, with a case of bottled water inside (no kegs installed).

The owner said the back of the unit was positioned "about 6 inches" away from the port bulkhead, and the unit was plugged into a segregated receptacle directly behind the unit. The circuit was protected by a 15-amp circuit breaker. The unit was cleaned after every chartered trip, and the unit's external surfaces were routinely vacuumed. The owner said that no grills or coverings were ever removed to clean the unit's internal components.

The unit manufacturer's user manual recommended that the refrigeration unit be positioned with "0 [zero] inches minimum clearance at the bottom, sides, and

back” (see figure 5). The user manual also included a “cleaning and maintenance” schedule, which included daily exterior cleaning, weekly interior cleaning (refrigerated space), and a monthly condenser coil inspection and quarterly cleaning (or more frequently as needed). The manual stated that failure to keep the condenser clean would lead to poor refrigeration unit performance and could cause the compressor to fail.



**Figure 5.** Exemplar hermetically sealed compressor and condenser coil unit similar to the two-door, keg-type refrigeration unit installed aboard the *Lady Delray*. The condenser end of the unit (outlined and shown in inset) would have been directly behind the grill on the front of the refrigeration unit. (Background source: Beverage-Air)

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## 2 Analysis

While the passenger vessel *Lady Delray* was moored unattended alongside the dock at Veterans Park in Delray Beach, a fire broke out within the bar area on the main deck. The fire spread to the surrounding area and caused significant damage.

According to the state fire investigator's examination report, the fire originated near a corrugated grill located on the lower right-hand side of the rear of the two-door, keg-type refrigeration unit in the vessel's bar area.

The fire investigator's examination report attributed the cause of the fire to the refrigeration unit's motor (the hermetically sealed compressor) overheating due to improper ventilation. Improper ventilation could be caused by insufficient clearance in front of the unit. However, the owner stated there were 6 inches of clearance between the rear of the refrigeration unit and the bulkhead. The user manual for the unit did not require any clearance for the unit to operate correctly, stating the required minimum was zero inches. Therefore, the 6 inches of clearance exceeded the manufacturer's installation requirement and would have provided ample space for ventilation. Aside from insufficient clearance, improper ventilation can also be caused by the accumulation of dirt, which fouls the unit's condenser coils. The owner did not regularly inspect or clean the refrigeration unit's condenser coils, as recommended in the user manual to prevent compressor failure. If dirt accumulated on condenser coils, the heat transfer through the coils would have decreased, and the fan blowing air across the coils would have removed less heat from the unit, causing the unit to run longer/more often, maintain temperature insufficiently, and potentially fail due to the compressor overheating. However, according to the owner, the refrigeration unit had not experienced any of these issues; it had been operated periodically during the 6-month layup and had operated without issue for over 4 years. Therefore, insufficient ventilation due to lack of clearance behind the refrigeration unit or fouling of the unit's condensing coils is unlikely to have caused the fire.

A failure of the refrigeration unit's hermetically sealed compressor or an electrical fault could have caused the fire. If the compressor had overheated and failed, the oil and hydrocarbon refrigerant internal to the unit would have been released and, given sufficient heat, would have ignited and caused a fire. The compressor was located internally to the unit directly on the other side of the corrugated grill area that was identified to be the origin area for the fire. However, as of the publication of this report, the forensic examination of the compressor and refrigeration unit's internal components has not been completed, and no conclusion regarding the components could be made about whether the compressor failing led to the fire.

Within the *Lady Delray* fire-origin area was a 110-volt electrical receptacle that the refrigeration unit and the vessel's security system were both plugged into. The receptacle was on a segregated circuit and protected by a 15-amp breaker. If there was an electrical fault—such as a loose, broken, or frayed wire, or broken receptacle hardware—within the receptacle or nearby circuitry, it could have created excessive resistance heating, which may have led to the ignition of nearby combustibles.<sup>3</sup> However, because responders opened all the vessel's breakers after the fire, it is unknown whether this breaker tripped. Without conclusive evidence, the cause of the fire aboard the *Lady Delray* remains undetermined.

Once an ignition source was produced, combustible materials—wood paneling, insulating material, and the carpet—near the fire's origin (the refrigeration unit) caught fire. After these combustible materials caught fire, they provided a path for the fire to expand from the bulkhead behind the refrigeration unit into the overhead.

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<sup>3</sup> The NTSB previously investigated a similar fire wherein overheating of electrical wiring associated with a chest freezer or in the bulkhead at the receptacle powering it resulted in a fire. See [Fire aboard Offshore Supply Vessel \*Grand Sun\*, MAB-19/36](#).

## 3 Conclusions

### 3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire on board the passenger vessel *Lady Delray* was either the failure of a two-door, keg-type refrigeration unit's hermetically sealed compressor or an unknown electrical source in the bulkhead directly behind the unit, which ignited wood paneling and other nearby combustible materials.

**Vessel Particulars**

Vessel	<i>Lady Delray</i>
Type	Passenger (Small passenger vessel)
Owner/Operator	Delray Intracoastal Cruises (Commercial)
Flag	United States
Port of registry	Delray Beach, Florida
Year built	1998
Official number (US)	1068753
IMO number	N/A
Classification society	N/A
Length (overall)	80.8 ft (24.6 m)
Breadth (max.)	20.0 ft (6.1 m)
Draft (casualty)	5.0 ft (1.5 m)
Tonnage	76 GRT
Engine power; manufacturer	2 × 290 hp (216 kW); Caterpillar 3208 diesel engines

NTSB investigators worked closely with our counterparts from **Coast Guard Sector Miami** throughout this investigation.

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable cause of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for any accident or event investigated by the agency. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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For more detailed background information on this report, visit the [NTSB Case Analysis and Reporting Online \(CAROL\) website](#) and search for NTSB accident ID DCA23FM028. Recent publications are available in their entirety on the [NTSB website](#). Other information about available publications also may be obtained from the website or by contacting—

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