



National Transportation Safety Board

Marine Accident Brief

Fire and Sinking of Fishing Vessel *Ole Betts Sea*

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|-----------------------------|---|-----------------------|
| Accident type | Fire/Explosion | No. DCA18FM018 |
| Vessel name | <i>Ole Betts Sea</i> | |
| Location | Gulf of Mexico, 18 miles ¹ northeast of Garden Key, Dry Tortugas, Florida Keys 24°52.80' N; 082°41.80' W | |
| Date | March 18, 2018 | |
| Time | 0615 eastern daylight time (coordinated universal time – 4 hours) | |
| Injuries | None | |
| Property damage | \$200,000 est. | |
| Environmental damage | None reported | |
| Weather | Visibility 10 miles, winds calm, seas 1–2 feet, air temperature 78°F, water temperature 75°F | |
| Waterway information | Open waters of the Gulf of Mexico north of the Dry Tortugas archipelago in the Florida Keys; water depth of about 100 feet. | |

About 0615 local time on March 18, 2018, a fire broke out in the engine room of the commercial fishing vessel *Ole Betts Sea* while it was trawling in the eastern Gulf of Mexico. Unable to contain the fire, the crew of three abandoned the vessel to a liferaft about an hour later and were rescued by a Good Samaritan vessel. After burning for about 16 hours, the vessel sank approximately 18 miles northeast of the island of Garden Key, Dry Tortugas, Florida. No pollution or injuries were reported. The vessel was a total loss valued at \$200,000.



Burning hull of *Ole Betts Sea*. (Photo provided by Trico Seafood, Inc.)

¹ All miles in this report are nautical miles (1.15 statute miles).

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Accident location. (Map data by Google Maps)

Background

The 68-foot *Ole Betts Sea* had a fiberglass hull and was of typical design and layout for a Gulf shrimper. A wheelhouse, crew quarters, and an access down to the engine room were located above the main deck. Deck gear included a boom, outriggers, a winch, and nets for trawling. Below deck areas from forward to aft were divided into four compartments consisting of a forepeak, engine room, fish hold, and lazarette. The vessel was operated by the Trico Shrimp Company, Inc., based in Fort Myers Beach, Florida.



Kayla Nicole, sister vessel of *Ole Betts Sea*. (Photo by Trico Shrimp Company)

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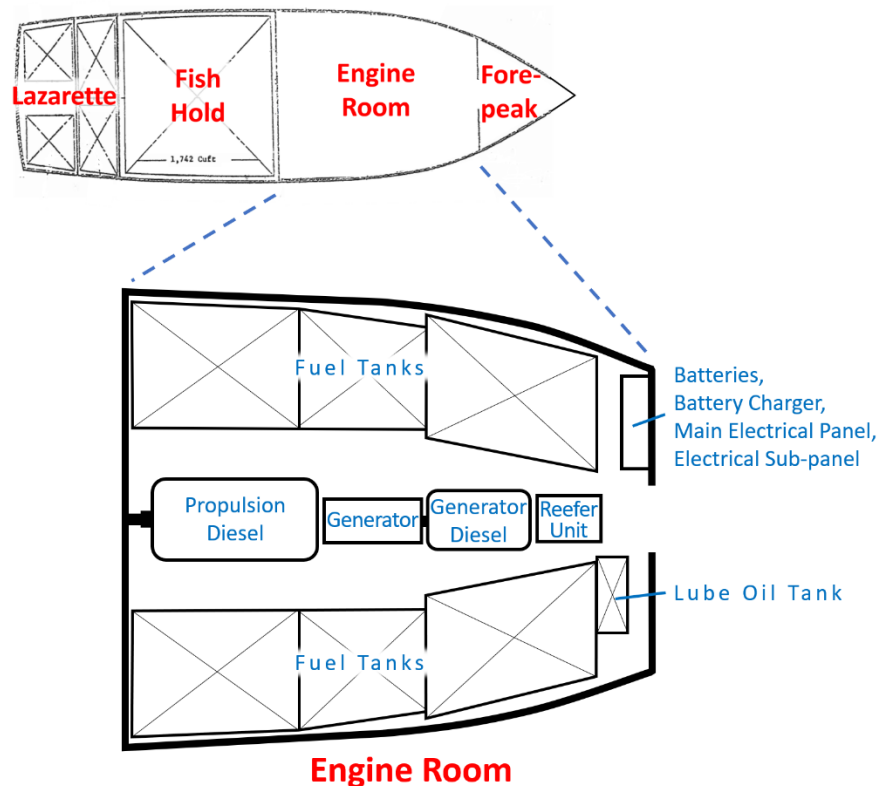


Diagram of 68-foot shrimp trawler of similar design to *Ole Betts Sea*, with engine room detail. (Engine room equipment not drawn to scale; adapted from hull diagram provided by Trico Shrimp Co., Inc.)

The *Ole Betts Sea* had two diesel engines. A Caterpillar 3408 engine provided main propulsion power, while a Detroit 371 engine drove a 40-kW electrical generator that powered the vessel's lighting (save for a few battery-powered lights in the wheelhouse) and machinery.

The *Ole Betts Sea* had been laid up for 3 months toward the end of the 2017 shrimping season and left its berth in Fort Myers Beach on January 1, 2018, for its first post-layup trip. The vessel completed two voyages to catch shrimp prior to the accident voyage. Each trip was about 3 weeks long, and the *Ole Betts Sea* came to port for about 5 days to offload shrimp between each voyage. In the shrimping area, the vessel usually anchored between about 1000 and 1600 and trawled for shrimp at night. The vessel's daily routine started in the afternoon about 1600 when the gear was prepared, the anchor was weighed, and the boat got under way. The vessel began trawling for shrimp close to sunset when the nets were lowered into the water for the first set. According to a crewmember interviewed after the accident, the crew would generally complete three sets and retrievals of nets between sunset and sunrise. After sunrise, after the *Ole Betts Sea* completed its last trawl, the crew anchored the vessel and prepared for the afternoon's resumption of trawling. They rested between the hours of 1000 and 1600 while the vessel was at anchor.

The crew of the *Ole Betts Sea* consisted of a captain and two rigmen. None were credentialed by the Coast Guard nor were they required to be. All had worked together before the accident voyage and had made numerous voyages aboard the vessel. (A dog also accompanied the crew on the voyage.) The captain would normally steer the vessel while trawling, and the rigmen sorted, bagged, and stowed shrimp and rested, as time allowed. Occasionally, one of the rigmen would relieve the captain when trawling so that the captain could take a short nap.

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Accident Events

Before getting under way on March 13 for the accident voyage, the captain performed a pre-departure check of the vessel and its gear. He also checked the items listed on a post-voyage work-list form, which was submitted to Trico's shop foreman at the end of the previous 3-week voyage. He found all in good order, and the *Ole Betts Sea* departed its Fort Myers Beach berth.

While the vessel was at anchor on the afternoon of March 17 and before starting up the main propulsion diesel engine, the captain checked the main engine oil and water levels and checked the batteries for water. Later that evening and early into the next morning, the crew trawled as they normally did. The captain stated that he checked the engine room twice during this time period and found all in good order.

About 0545, as the sky was getting lighter, a rigman took the helm during the last trawl so that the captain could rest. About a half hour later, while the vessel was proceeding at "idle speed" (about 2.5 knots), the rigman heard something that sounded like a small "boom" or "heavy thud." The captain returned to the wheelhouse when he heard the sound and told the rigmen to pull in the nets and gear. Lighting remained on and the vessel's main engine continued to propel the boat. About a minute later, the vessel started shaking. While the rigmen retrieved the rig, small boom-like noises emanated from the engine room. The captain stated that he attempted to move the throttle to neutral and stop the main propulsion engine from the wheelhouse, but he could not do either. The vessel continued making a speed of about 2.5 knots.

While the rigmen worked at retrieving the fishing gear, the captain went to the engine room door, located on the port side of the main deck, and slid the door open. Thick grayish smoke prevented him from entering, so he closed the door. The captain went to the wheelhouse and called another nearby fishing vessel on VHF radio to inform the other vessel's captain that *Ole Betts Sea* was on fire.

About 3 minutes after the shaking began, it stopped, and the lights went out; yet the main engine continued to propel the boat. The crew donned lifejackets, and the captain decided it would be prudent to launch the rigid liferaft in order to be ready to evacuate the vessel should the fire grow. To stop the boat's movement so that the crew could safely deploy the liferaft, the captain ordered the rigmen to drop the trawl rig and anchor. He then went to the forward hatch on the main deck, lowered discharging dry-chemical fire extinguishers into the forepeak compartment (which was connected by an open accessway to the engine room) and closed the hatch in an attempt to extinguish the fire. He could not access the engine room further aft due to heavy smoke and heat. The vessel did not have, nor was it required to have, a fixed firefighting system for the engine room.

The fire did not abate and, a short time later, a large explosion occurred. After this explosion, thick black smoke emerged from the engine room and the vessel stopped. One rigman abandoned the boat into the liferaft with the dog. The captain and the other rigman jumped into the water and held onto the liferaft. At 0731, the crew of a nearby Good Samaritan vessel, the fishing vessel *Sea King*, notified the Coast Guard of the fire and, at 0740, took *Ole Betts Sea's* crew aboard their vessel. While the *Ole Betts Sea* continued to burn, the fishing boats *Big Papa* and *Miss Maddie* attempted to fight the fire by spraying water onto the burning trawler. About 1140, the fishing boats ceased their firefighting efforts due to the fire's intensification. The fire continued to burn until about 2110, when the crew of an on-scene Coast Guard cutter, the *Charles David Jr.*, witnessed a large explosion, and the *Ole Betts Sea* sank.

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Additional Information

At the end of each trawling voyage, including the one prior to the accident, the captain submitted a work list form to Trico's shop foreman. Investigators asked the vessel owners for a copy of the voyage repair form for the voyage immediately prior to the accident voyage, but none was provided. A representative form from another vessel was provided to investigators.

Maintenance of the *Ole Betts Sea*, outside of the underway lubrication of rigging, topping of oil and water levels for the operating machinery, and painting, was mostly performed by Trico shoreside employees. This maintenance included full overhauls to the diesel engines. Outside technicians worked on items that the Trico crewmembers and shore workers could not do, but according to the shop foreman, this did not happen often.

During the 3-month layup period in the fall of 2017 (October–December), a new refrigeration unit for the fish hold, which included a 10-hp compressor, was added and the hold (where the bagged shrimp were stacked and frozen) was refurbished. Other repairs to the boat's gear were made and machinery was serviced during the layup period, according to a detailed invoice provided to investigators. The last time the *Ole Betts Sea* had been hauled out of the water for repairs and maintenance was September of 2013, according to a hand-written note provided by the company.

The Trico shop foreman told investigators that a full overhaul of the propulsion Caterpillar diesel engine took place about 2 years prior to the accident and the generator's Detroit diesel engine received a new head and piston liners less than a year before the accident. The shop foreman stated that the timing of full overhauls was not determined by a set amount of time or usage; rather, it was determined by engine "blow-by."²

The vessel's generator (but not the Detroit diesel engine used as the generator's prime mover) was replaced less than a year before the accident voyage and was larger (greater kW) than the one it replaced. Per the shop foreman, no maintenance had been performed since the installation. However, investigators noted that there was a charge for servicing both the generator and its diesel engine during the vessel's last layup in the fall of 2017.

During the installation of the new generator, a subpanel was added to the main electrical panel to provide additional circuits for electrical service. The refrigeration-hold compressor motors and the battery charger were wired to the subpanel. The main panel, the subpanel, the batteries, and the battery charger were all located in the forward port side of the engine room. When asked if the battery charger had over-current protection, the shop foreman stated that it had both internal and external circuit breakers.

Analysis

The *Ole Betts Sea* was not salvaged, and thus it was not possible to determine the exact cause of the fire that sank the vessel. However, based on the sequence of events, sounds, and

² Engine blow-by occurs when wear to the piston rings or cylinder liners allows partially consumed fuel, air, and moisture to escape the cylinder and enter the crankcase. When expelled from the engine, the blow-by is evidenced by darker emissions from the vessel's stack.

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vibrations reported by the crew, investigators developed a likely cause for the initiating “boom,” heavy gray smoke, and subsequent explosion and fire that burned out of control.

There was insufficient evidence to pinpoint the cause of the initial noise and source of gray smoke. Although it is feasible that they were caused by the batteries, switchboards, or battery charger exploding, it is more likely that the cause was a mechanical failure in either the Caterpillar propulsion diesel engine or the generator’s Detroit diesel engine.

Considering the shaking of the vessel that occurred about 1 minute after the initial “boom” noise, investigators believed that the only pieces of engine room equipment large enough to generate the type of vibration described by the crew were the diesel engines or propulsion shafting. Therefore, the newly installed refrigeration unit for the fish hold was eliminated as the source of the initial explosion.

Further, because the shaking stopped before the propulsion diesel engine ceased operating and the vessel ceased forward movement, it is believed that the shaking was caused by a failure in the diesel engine driving the generator. Because lights continued to operate until the vibration (diesel generator) stopped, it is unlikely that the generator itself failed.

When the large explosion occurred, thick black smoke spewed from the engine room, indicating a fuel fire. The fire was likely fed by diesel oil from a failed fuel line to the propulsion or generator diesel engines. Investigators noted that there was no way for the crew to shut off the fuel flow to the diesel engines, such as a remote quick-closing (cutoff) valve, outside of the engine compartment. Depriving the fire of fuel, especially during the early stages of the incident, could have prevented further ignition of flammable materials—such as the fiberglass hull and bulkheads—and increased the likelihood of saving the vessel.

The crewmembers were prepared to abandon the vessel, and their timely donning of lifejackets ensured that everyone was safely recovered after entering the water.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire and sinking of fishing vessel *Ole Betts Sea* was a mechanical failure of the generator’s diesel engine, which led to a fuel-fed fire that burned out of control.

Remote Fuel Oil and Lube Oil Cut-Offs

Following the initiation of an engine room fire, it is imperative to remove the source of available fuel to the fire found in the fuel oil and lube oil systems. In this accident, the vessel had no remote emergency cut-off valves for fuel and lube oil systems outside the engine room, and thus fuel to the fire could not be stopped and the vessel was eventually consumed by the flames. Vessel designers, builders, owners, and operators are encouraged to install, regularly test, and have emergency drills that incorporate remote cut-off valves for fuel and lube oil lines.

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Vessel Particulars

| Vessel | <i>Ole Betts Sea</i> |
|----------------------------|--|
| Owner/operator | Cap'n Bozo Inc./Trico Shrimp Company, Inc. |
| Home port | Fort Myers Beach, Florida |
| Flag | United States |
| Type | Shrimp Trawler |
| Year built | 1983 |
| Official number (US) | 605038 |
| IMO number | 7943495 |
| Classification society | N/A |
| Construction | Fiberglass |
| Length | 67.6 ft (20.6 m) |
| Depth | 11 ft (3.35 m) |
| Beam/width | 20.3 ft (6.2 m) |
| Gross/net tonnage | 114 gross tons |
| Engine power; manufacturer | 360 hp Caterpillar 3408 diesel |
| Persons on board | 3 |

NTSB investigators worked closely with our counterparts from Coast Guard Sector Key West throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA18FM018.

Issued: March 26, 2019

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under Title 49 *United States Code*, Section 1131. This report is based on factual information either gathered by NTSB investigators or provided by the Coast Guard from its informal investigation of the accident.

The NTSB does not assign fault or blame for a marine casualty; rather, as specified by NTSB regulation, “[NTSB] investigations are fact-finding proceedings with no formal issues and no adverse parties . . . and are not conducted for the purpose of determining the rights or liabilities of any person.” Title 49 *Code of Federal Regulations*, Section 831.4.

Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by conducting investigations and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. Title 49 *United States Code*, Section 1154(b).