



National Transportation Safety Board

Marine Accident Brief

Fire and Subsequent Sinking of Commercial Fishing Vessel *Hit List*

Accident type	Fire/Explosion	No. DCA18FM035
Vessel name	<i>Hit List</i>	
Location	Merrimack River at the Harbormaster's Dock: Newburyport, Massachusetts 42°48.75'N; 70°52.04'W	
Date	August 24, 2018	
Time	1730 eastern daylight time (coordinated universal time – 5 hours)	
Injuries	None	
Property damage	\$550,000 est.	
Environmental damage	Approx. 100 gallons of diesel fuel in water	
Weather	Light southerly winds, air temperature 79°F	
Waterway information	The Merrimack River flows south through parts of New Hampshire and then northeast through parts of Massachusetts before entering the Atlantic Ocean.	

About 1725 on August 24, a fire was detected in the engine compartment aboard the commercial fishing vessel *Hit List* shortly after the vessel arrived at the Newburyport harbormaster's dock to offload its catch. The two owners on board attempted to fight the fire, but after smoke filled the cabin all four people aboard evacuated to the pier. The local fire department fought the fire using foam and water. The fire was extinguished about an hour later when the vessel partially sank alongside the pier. Approximately 100 gallons of diesel fuel leaked into the Merrimack River. No injuries were reported. Damage to the vessel was estimated at \$550,000.



Fishing vessel *Hit List* prior to the accident. (Photo by owner, July 2018)

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Background

The *Hit List*, a fiberglass fishing vessel, was built in 2006 by Wesmac Custom Boats, Inc. in Surry, Maine. The vessel was delivered unfinished to the original owner, who installed all of the interior components, including a 1,000-hp diesel engine which provided power to a single propeller. The engine was cooled by a closed-type jacket-water system via cooling passages in the engine block. An engine-driven raw-water pump drew seawater by way of a through-hull inlet fitting. The gear-driven raw-water pump impeller was constructed of rubber that rotated at a speed proportional to the engine rpm. After cooling the engine, the seawater flowed into a spray ring in the exhaust tubing that sprayed water directly into the 8-inch-diameter exhaust tube (wet-exhaust system) and then was discharged overboard through an opening on the port side at the waterline. The vessel was equipped with an engine-driven, on-demand hydraulic system that powered a 25-horsepower bow thruster, steering system, and pot hauler that could also be used as an anchor windlass.¹

At the time of the fire, the vessel was owned by a limited liability company, operated by a father and son. They purchased the vessel from the original owner in May 2018 and estimated that they had operated the *Hit List* for six weekends since purchasing it. Although they had a commercial fishing permit, they had not conducted any commercial charters and had fished only with friends and family. The father held a merchant mariner credential as operator of uninspected passenger vessels; the son was not a credentialed mariner.

Accident Events

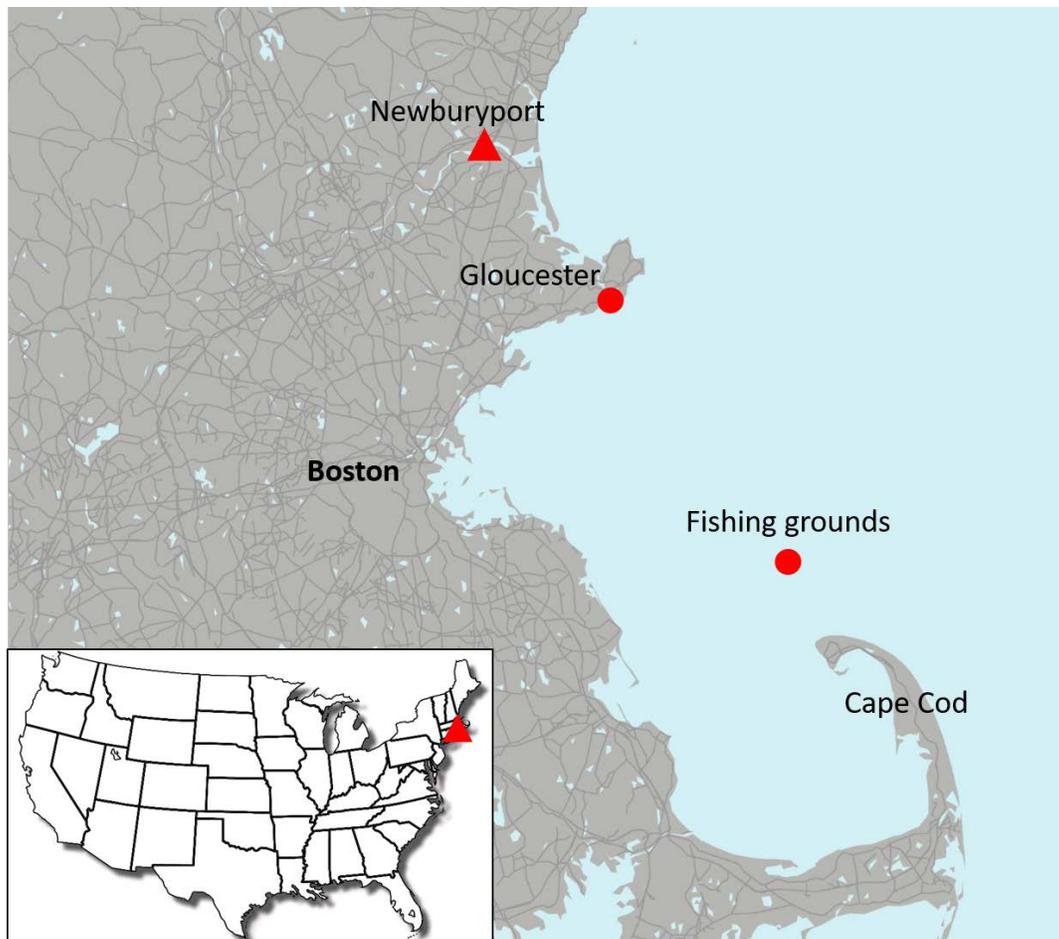
About 2200 on August 23, the two owners and two friends departed Gloucester, Massachusetts, and headed out to join the 6th annual Newburyport Shark and Tuna Fishing Tournament. They anchored at the southwest corner of Stellwagen Bank, approximately 6 miles off Cape Cod, Massachusetts. They shut down the main engine, and the vessel's generator provided electrical power overnight. The next morning, they began fishing and caught an estimated 200-pound bluefin tuna at about 1030. About 1330, they used the hydraulic pot hauler to pull up the anchor and got under way for the 40-mile trip to Newburyport, at a speed of 12 knots, to weigh the tuna for the tournament.

About 1725, as the *Hit List* was approaching the Newburyport harbormaster's dock, the father and son were in the cabin, and the two friends were on deck to handle the mooring lines, one on the bow, and one on the stern. Dozens of people, including the Newburyport harbormaster, were on the dock as the vessel approached the pier.

As the *Hit List* was approaching the pier, the son smelled smoke in the cabin and checked the monitor for the camera in the engine compartment; he saw no evidence of smoke or fire. As the vessel was being tied up alongside the pier, both owners in the cabin noticed a burning electrical smell and saw smoke on the monitor in the aft area of the engine compartment. The son placed his hand on the deck above the engine compartment and felt "a great deal of heat." He lifted the two smaller hatches in the cabin area located on each side of the engine compartment and saw smoke but no flames and could not tell exactly what was burning. The owners stated that they were unable to further investigate the nature of the fire due to the increasing smoke, which began to fill the cabin.

¹ A *pot hauler* is a hydraulic winch used to recover crab and lobster traps, fishing gear, or ropes and lines from the water onto the vessel.

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Map of Massachusetts' east coast identifying departure port, fishing grounds, and location of *Hit List* on the afternoon of the fire. (Map data from Google Maps)

Once docked, the owners discharged two portable dry chemical fire extinguishers into the engine compartment in an attempt to extinguish the fire. The Newburyport harbormaster saw the smoke coming from the *Hit List* and provided a shoreside fire extinguisher to the vessel. As the smoke continued to increase inside the cabin, the harbormaster assisted the crew with disembarking the vessel. At 1729, he called the Newburyport Fire Department and then contacted the Coast Guard and a salvage company.

Firefighters from the Newburyport Fire Department arrived on scene at 1735. Two firefighters equipped with a firehose boarded the *Hit List* by climbing down a ladder from the pier. Once aboard, they entered the cabin, which was full of heavy smoke, resulting in poor visibility. In an effort to clear the smoke and improve visibility, the firefighters broke open the glass from the port and starboard windshields. After the owner informed them of a hatch to the engine compartment located behind the captain's chair, the firefighters accessed the engine compartment which they described as a difficult entry. They were unable to locate the source of the fire. The fire department's command determined that the conditions had become too hazardous aboard the *Hit List* and directed the firefighters to evacuate the vessel. Firefighters used water and foam to combat the fire from the pier. At 1742, the fire department's fireboat was reported to be under way from its dock about half a mile away and arrived on scene a few minutes later. It took up position behind the stern of the *Hit List* and its crew began applying water to the fire.

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Fire department fighting the *Hit List* fire from the pier and a fire boat. (Photo by witness)

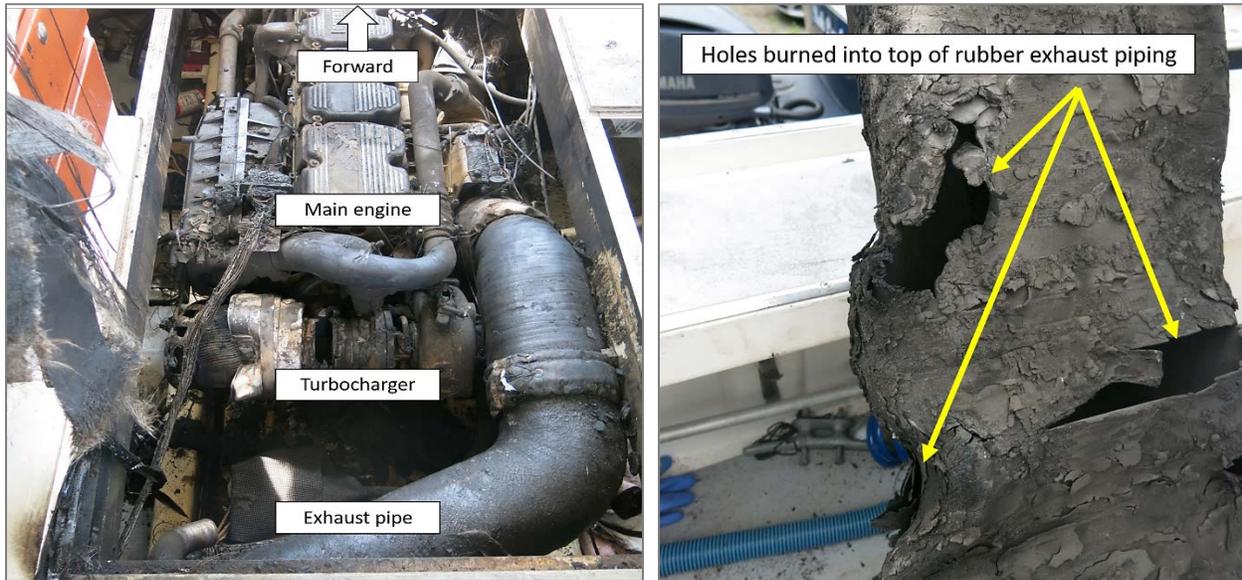
About 1830, firefighting water applied to the vessel as well as river water flooding through holes burned in the port exhaust pipe caused the *Hit List* to partially sink, which extinguished the fire, leaving only the top of the cabin exposed. As the vessel sank, about 100 gallons of diesel fuel spilled from the vessel's fuel tanks into the Merrimack River. A containment boom and sorbent pads were deployed around the vessel to contain the fuel spill. A salvage company arrived on scene later that evening to refloat the vessel and transport it to a local marina.

Additional Information

The greatest amount of fire damage occurred in the aft section of the engine compartment. Additional water damage occurred from the flooding and subsequent sinking of the vessel. About 2 weeks after the fire, a fire and explosion investigator inspected the vessel on behalf of the owners' insurance company. He determined that due to the extensive time taken to extinguish the fire, it spread to areas inconsistent with the origin of the fire. He reported that extensive heat damage occurred along the port side of the engine compartment, damaging the upper half of the wet-exhaust rubber pipe. Based on this finding, a failure of the raw-water cooling pump was considered, and its rubber impeller was inspected.² The fire investigator determined that the pump was in good condition and eliminated it as a cause. The electrical system was also inspected with no evidence of arcing or shorting.

² In a *wet-exhaust* system, water-cooled inboard engines inject cooling water into an exhaust tube; this process cools the exhaust and also muffles engine noise. The exhaust then pushes the water out of the tube and into the waterway. Because of the reduced exhaust temperatures, exhaust tubing does not have to be constructed of noncombustible material.

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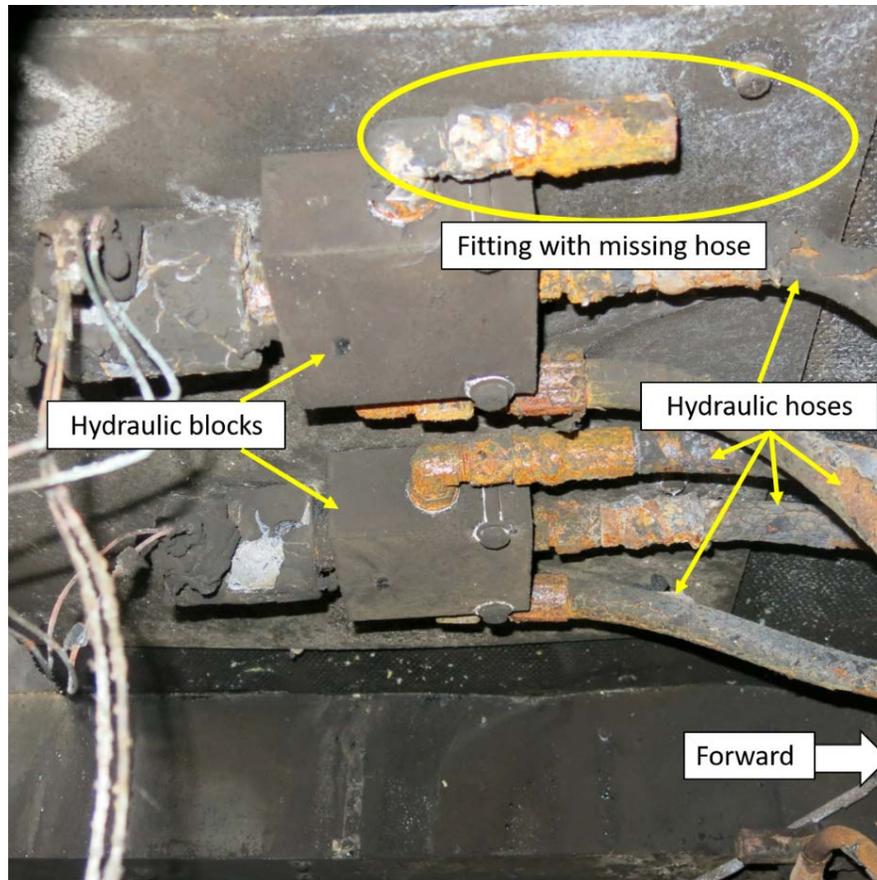
Left: Damage to the engine as seen from above. Right: Damaged exhaust tubing after removal from engine room.

The hydraulic system in the aft section of the engine compartment was examined, and a hydraulic hose was found broken off at a fitting on a control block mounted in the overhead about 4 feet aft and 1 foot above the main engine turbocharger. According to the fire investigator, this finding corresponded to burn patterns around the turbocharger, indicating that hydraulic fluid likely sprayed on the turbocharger and ignited. A typical petroleum-based hydraulic fluid has a flash point ranging from 300°F to 600°F and an auto-ignition temperature of 500°F to 750°F. Parts of a diesel engine's exhaust system around the turbocharger can reach over 800°F when operating.

According to the owners, the hydraulic hose was original to the vessel and did not have any inspection or maintenance records associated with it. The hydraulic hose that was found disconnected after the fire was associated with the pot hauler winch system. Although the pot hauler was not in use at the time of docking, it had been used to raise the anchor at the conclusion of fishing activities about 4 hours earlier.

Since purchasing the *Hit List*, the owners had not experienced any failures or maintenance issues with any of the machinery aboard the vessel. The main engine had about 2,400 hours on it, and the owners had not completed any maintenance on it, nor was any required to their knowledge. The previous owner had completed all preventive maintenance before selling the vessel. The new owners had completed some general work aboard the vessel since purchasing it; service representatives from various companies installed two LED lights on the mast of the vessel, replaced a broken stator in the generator, and linked an interface between the autopilot system and the bow thruster. The service representative working on the autopilot system was on board the *Hit List* about a week before the fire. He was also on board the day before the *Hit List* departed for the fishing tournament to replace a soldered fuse that had been wired incorrectly and failed the previous week.

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Hydraulic block with parted hose fitting, circled in yellow.

Analysis

Investigators determined that the initiating event for the fire aboard the *Hit List* was a failure of a hydraulic hose fitting connected to a distribution block in the overhead of the aft part of the engine compartment for the pot hauler system. After the fire, the fitting was found to be broken off from the hydraulic block, and it most likely sprayed hydraulic fluid when pressurized onto the surface of the main engine turbocharger and ignited when the exterior surface heated up while the vessel was underway. The fire eventually spread to other areas of the engine compartment and filled the cabin with smoke.

It is unknown when the fire started. The pot hauler system was last used to haul in the anchor about 4 hours before the transit to Newburyport. If the hydraulic fitting had broken during this operation, then pressurized oil could have been sprayed onto the engine and remained there as the engine generated heat throughout the transit. Firefighters were on scene within 6 minutes of notification but had difficulty accessing the engine compartment due to heavy smoke and small spaces inside the cabin and engine compartment.

Flooding occurred on the *Hit List* because of water used in suppression efforts and because of holes burned through the wet-exhaust hose from the heat of the fire, which allowed seawater to flood the engine compartment from the exhaust outlet on the port side of the vessel. Eventually, the *Hit List* sank alongside the pier.

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Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire aboard fishing vessel *Hit List* was the failure of a hydraulic hose fitting that sprayed pressurized hydraulic oil onto the engine, eventually causing the oil to ignite. Contributing to the sinking was water applied during firefighting efforts and flooding through the rubber engine exhaust tubing, which the fire burned through.

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Vessel Particulars

Vessel	Hit List
Owner/operator	Hitlist Sport Fishing, LLC.
Port of registry	Gloucester, Massachusetts
Flag	United States
Type	Fishing vessel
Year built	2006
Official number (US)	1190554
IMO number	N/A
Classification society	N/A
Construction	Fiberglass
Length	42 ft (12.8 m)
Draft	4.5' ft (1.4 m)
Beam/width	14.9' ft (4.5 m)
Gross and/or ITC tonnage	24 gross tons
Engine power; manufacturer	1,000 hp (747 kW); Caterpillar C18 diesel
Persons on board	4

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

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA18FM035.

Issued: June 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* 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).