

Fire aboard Fishing Vessel *Nobska*

On April 30, 2021, about 1810 local time, a fire erupted aboard the fishing vessel *Nobska* while the five-member crew was ground fishing in Georges Bank, about 80 miles east of Cape Cod, Massachusetts.¹ The fire started in the engine room and quickly engulfed the vessel. When attempts to extinguish the fire proved unsuccessful, the crew prepared to abandon ship and activated the vessel's emergency position indicating radio beacon (EPIRB). A US Coast Guard helicopter rescued the crew from the stern of the fishing vessel. Neither injury nor pollution was reported. The *Nobska*, valued at an estimated \$2.4 million, was declared a total constructive loss.



Figure 1. *Nobska* before the casualty. (Source: BHF Nobska)

¹ (a) In this report, all times are eastern daylight time, and all miles are nautical miles (1.15 statute miles).
(b) Visit [nts.gov](https://www.nts.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. DCA21FM027). Use the [CAROL Query](#) to search investigations.

Casualty type	Fire/Explosion
Location	Georges Bank, about 80 miles off Cape Cod, Massachusetts 41°45.0' N, 68°15.0' W
Date	April 30, 2021
Time	1810 eastern daylight time (coordinated universal time -4 hrs)
Persons on board	5
Injuries	None
Property damage	\$2.4 million est.
Environmental damage	None
Weather	Clear, visibility 10 nm, winds southwest 28 mph, air temperature 59°F, water temperature 48°F
Waterway information	Atlantic Ocean, Georges Bank, depth 12-300 ft

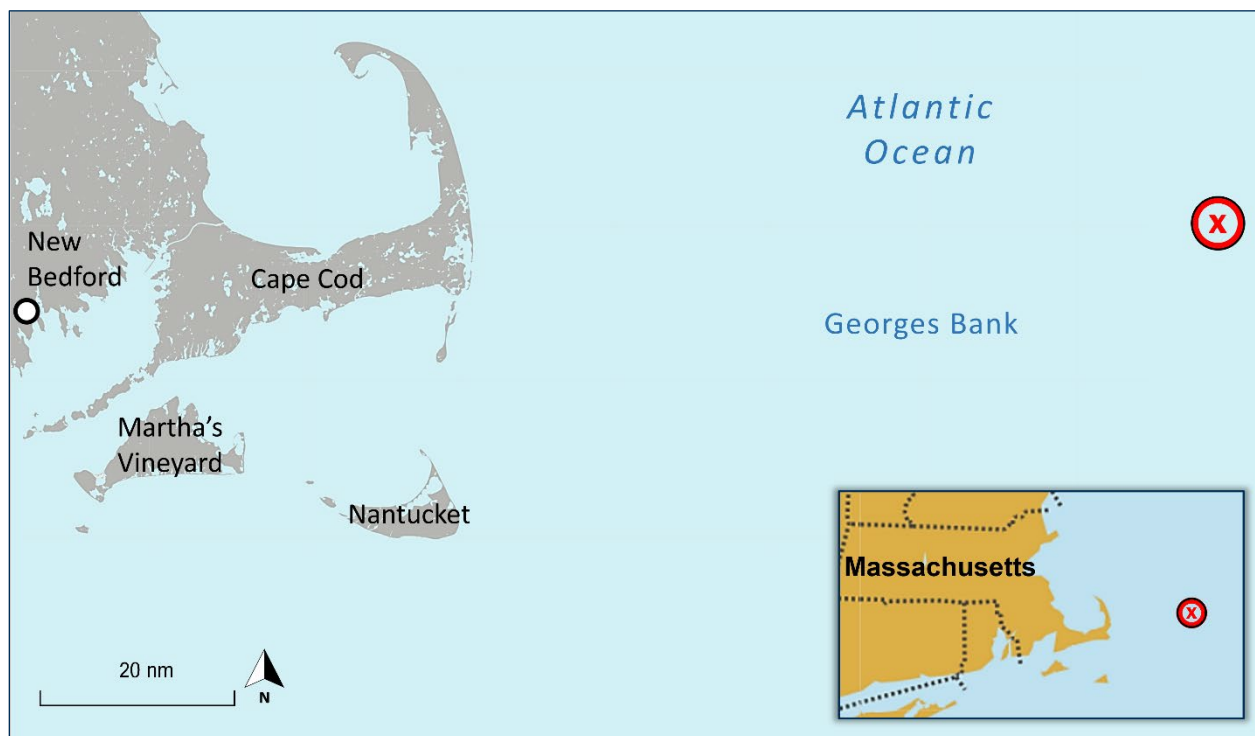


Figure 2. Area where the *Nobska* caught fire, as indicated by a red X. (Background source: Google Maps)

1. Factual Information

1.1 Background

The 99.8-foot-long, steel-constructed stern trawler *Nobska* was powered by a single 1,250-hp Caterpillar diesel engine.² Previously named the *Cape Cod*, the vessel was built in 1988 by St. Charles Steel Works in Thibodaux, Louisiana, and purchased by the current owner, BHF *Nobska*, in 2018. The *Nobska*, homeported in New Bedford, Massachusetts, was an uninspected commercial fishing vessel used exclusively for ground fishing. The wheelhouse was located above the crew quarters, which were on the main deck. Below-deck compartments from forward to aft included a forepeak, a workshop, an engine room, a fish hold, and a lazarette (which contained the rudder post and steering system). Deck gear included a boom, outriggers, two deck winches (port and starboard) just aft of the wheelhouse, a net drum, nets for trawling, and a hoisting cargo winch.

The crew of the *Nobska* consisted of a captain, a mate, and three deckhands. The captain, who had 35 years of fishing experience, had worked on the *Nobska* for the past year. The mate and the three deckhands were also experienced fishermen, having sailed on other fishing vessels in addition to the *Nobska*. Normally, the captain would navigate the boat while trawling, and the mate and deckhands would handle the nets, along with sorting, cleaning, and storing the fish.

1.2 Casualty Events

On April 26, 2021, about 1300, the *Nobska* departed New Bedford and proceeded to Georges Bank, a fishing area located 62 miles off the coast of Massachusetts, where the crew planned to fish for haddock for 7 days.

On April 30, about 1100, the vessel was trawling at 5 knots with the main engines ahead when the captain determined it was time to haul in the net. The entire crew went inside the workshop, which had a watertight door aft to the engine room, to don their fishing gear. Around that time, through the open door the crew saw a fire on the lagging of the main engine exhaust pipe. They immediately notified the captain, who was in the wheelhouse, and used two of the eight portable B-2 dry chemical extinguishers on board to extinguish the fire.

After extinguishing the fire, the captain and crew discovered a ruptured 0.25-inch-diameter hydraulic hose for one of two the deck winches located overhead.

² A *stern trawler* describes a type of vessel primarily engaged in the fishing practice of trawling, which involves herding and capturing the target species by towing a net through the water.

The hose was 2 feet away from the main engine in the pipe/hose tunnel connecting the engine room to the wheelhouse. The crew determined that the leak was the fuel source for the fire: the leaking hydraulic fluid had soaked the lagging on the exhaust pipe and ignited. When the captain informed the vessel's owner of the situation, he was given directions on how to repair the 25-foot-long hose by the owner's fleet manager. The captain was also given the option to either repair the winch hydraulic system or return to the vessel's home port in New Bedford for repairs.

Under the direction of the captain, the crew removed the damaged hydraulic hose and replaced it with a similar sized one (0.25 inches in diameter, 25 feet in length) that they removed from the vessel's hydraulic outrigger system and installed in the tunnel. The crew also began cleaning up the hydraulic oil in the engine room and removed the oil-soaked exhaust lagging to prevent it from igniting again. There was no replacement lagging material on board. By 1300, the hose replacement and the engine room cleaning were completed. After an operational test of the deck winches, the crew hauled in the net, which was still being towed. Although the captain initially planned to return to the vessel's home port, believing the situation with the hydraulic system was resolved, he changed his mind and decided to continue fishing. The net was then redeployed.

About 1700, as the crew was on deck preparing to retrieve the net, the captain was in the wheelhouse at the deck winch-control console. As the captain was assisting in retrieving the net, he saw black smoke emanating from under the console. The captain stepped out of the wheelhouse to alert the crew of the fire. Within moments, the entire wheelhouse area was engulfed in flames, which quickly spread to the entire forward section of the vessel. The crew, now on the aft main deck, used two more handheld B-2 extinguishers and deployed a grenade-type fire extinguisher through a portside hatch leading to the engine room, but their attempts to extinguish the fire were unsuccessful. The four remaining fire extinguishers on board could not be reached due to the fire.

Realizing the fire was out of control, the captain and crew prepared to abandon the vessel. Immersion suits were retrieved from a locker inside the vessel on the main deck, along with the EPIRB and the liferaft from their stowage locations outside the wheelhouse. However, due to the fire in the wheelhouse, the captain was unable to broadcast a mayday call on VHF radio. The crew then proceeded to the stern, where the EPIRB was activated at 1709. The captain and crew then donned their immersion suits, deployed the liferaft, and tied the liferaft's painter to the vessel.

The Coast Guard District One Command Center in Boston received the EPIRB notification from the *Nobska*, which was located about 80 miles east of Cape Cod. A Coast Guard HC-144 aircraft and a MH-60T helicopter were launched from Air Station Cape Cod, arriving on scene at 1825 and 1828, respectively. The aircrew of the HC-144

aircraft confirmed that the five crewmembers were on the stern of the vessel and that the *Nobska* was engulfed in flames with smoke billowing from the vessel's bow to about midships. Crewmembers, directed by the rescue swimmer from the helicopter, entered the water and were hoisted to safety. The helicopter then departed the scene at 1908.



Figure 3. Photo taken from the Coast Guard HC-144 aircraft at 1827 shows the bow of the *Nobska* on fire before the rescue. The deployed liferaft appears on the left. (Source: US Coast Guard)

1.3 Additional Information

1.3.1 Damage

After the fire extinguished itself about 2 days later, the *Nobska* was towed to New Bedford on May 4. The next morning, investigators examined the vessel and found an extensive amount of fire damage within the vessel and throughout the engine room. All combustible materials in the forward part of the vessel were incinerated, leaving only the steel decking and structure. In addition, there were several overhead frames in the engine room that had warped and separated from deck plating above.

During the examination, it was noted that the fire damage to the main diesel engine, diesel engine generator, and hydraulic system diesel engine was limited to the melting of plastic parts. Damaged hydraulic hoses were found on the bulkhead aft of the main diesel engine and within the tunnel located in the overhead of the engine room 2 feet away from the main diesel engine. Due to the extent of the fire, it could not be determined if the damage to the hydraulic hoses occurred before or during the fire that engulfed the vessel, nor could the location of where the second fire initiated be

established. However, there were no indications the fire was a result of a failure with the three diesel engines in the engine room.

A routine survey of the *Nobska* conducted a week before the fire on April 23 reported that the engine room was “very clean and well maintained” and the hydraulically operated equipment was “in excellent working order.”

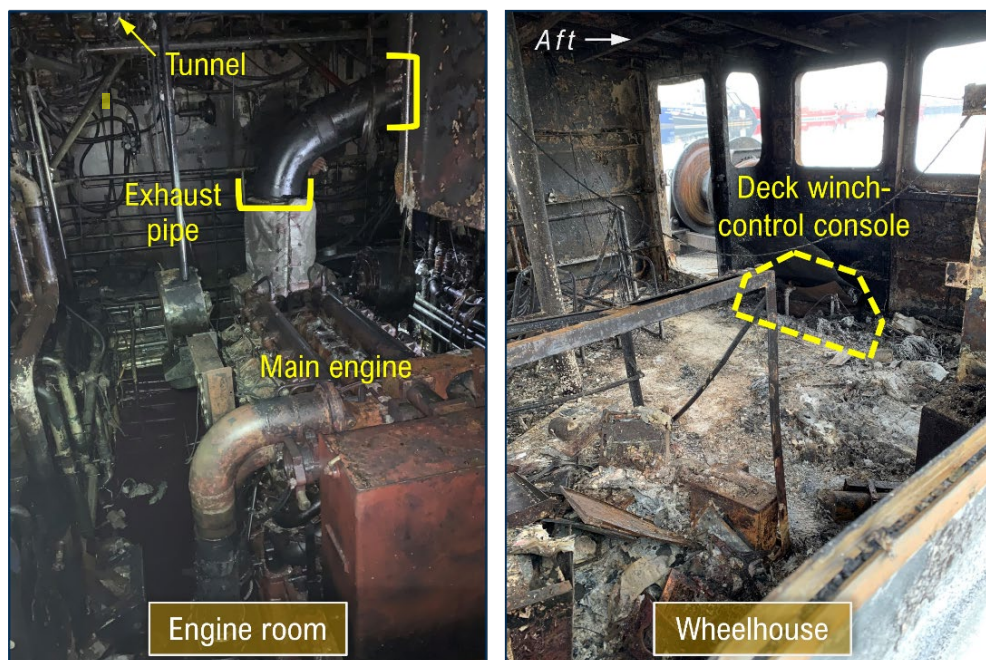


Figure 4. Post-fire damage of the engine room, where the crew removed the lagging from the exhaust pipe, as indicated by the yellow brackets (*left*), and of the wheelhouse, where the captain observed black smoke emanating from under the deck winch-control console (*right*).

1.3.2 Hydraulic System

Three pumps attached to the hydraulic diesel engine supplied hydraulic pressure up to 2,500 pounds per square inch (psi) to operate the port and starboard deck winches and net drum used to deploy and haul in the nets. The engine, pumps, and hoses were in the aft part of the engine room. Two of the three hydraulic pumps drove the two deck winches; the third hydraulic pump drove the net drum, boom, and hoisting cargo winch.

A 1,000-psi hydraulic control system remotely operated the port and starboard deck winches and the drum from a control console located in the aft part of the wheelhouse, where the operator faced aft to oversee the fishing operations occurring on the stern of the vessel. The controls were an air-over hydraulic system: the air pressure engaged the brakes on the winches, preventing the winches from moving until the brakes were released by hydraulic pressure from the control system. The hose diameters were 1.5 inches for the operating portion of the system and 0.25 inches for the control system.

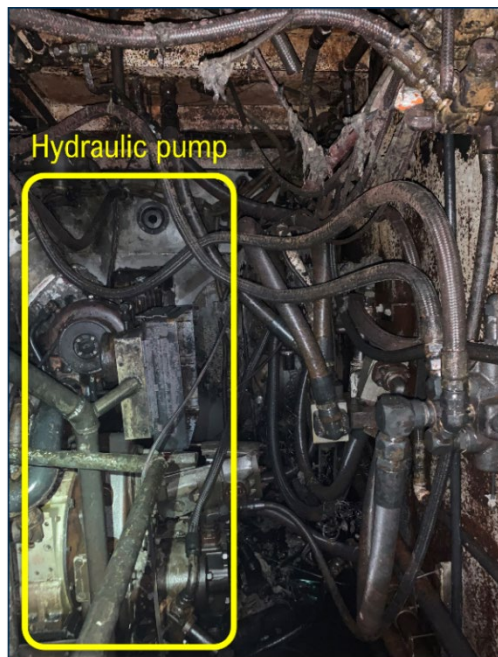


Figure 5. Post-fire hydraulic pump and hoses inside the engine room.

The hydraulic winch system used AW-32 hydraulic oil, which had a flash point of about 420°F and an auto-ignition temperature of over 650°F. A representative from the vessel's owner informed investigators that they replaced the hoses as needed, based on their external appearance or the discovery of leaks.

1.3.3 Pipe/Hose Tunnel

A 1-by-2-foot rectangle-shaped pipe/hose tunnel extended vertically from the overhead of the engine room up two decks to the deck winch-control console in the wheelhouse. Within this tunnel, there were fifteen 0.25-inch-diameter hydraulic hoses connecting to the console that were bundled tightly together. There were no pipe/cable fire stops or other methods to prevent the passage of smoke, heat, and fire from the

engine room into the tunnel.³ As an uninspected fishing vessel, the construction of the pipe/hose tunnel on the *Nobska* was not subject to any fire-protection regulations, as required for the construction of many Coast Guard-inspected vessels. For example, on inspected passenger vessels, regulations stipulate the length of time structural fire protection attached to bulkheads, decks, and



Figure 6. Damaged pipe/hose tunnel, as identified by yellow rectangles, looking up from the engine room (*left*) and down onto the deck winch-control console location (*right*).

³ *Pipe/cable fire stops* are a structural fire protection measure that uses fire-resistant materials or sealant installed within the gaps between the pipes/cables passing through the openings of horizontal and vertical surfaces of a compartment, which slow the transfer of heat and smoke.

overheads must prevent the passage of flames and smoke.⁴ A vertical trunk penetration through an overhead must be designed or insulated to withstand the same temperature rise limits as the boundary (bulkheads and decks) penetrated.

2. Analysis

2.1 First Fire: Hydraulic Hose Failure

As reported by the crew, the fire that initially occurred aboard the *Nobska* was the result of the failure of a 0.25-inch-diameter hydraulic hose located near the bottom of the pipe/hose tunnel that ran from the overhead in the engine room up to the wheelhouse. The leak of hydraulic fluid from the hose had sprayed onto the exhaust pipe lagging of the main diesel engine, which was 2 feet away, until it was soaked with enough fluid to cause it to ignite from the heat developed by the engine's exhaust gases. The crew discovered the fire and quickly extinguished the flames with handheld extinguishers. Following the fire, they removed the oil-soaked lagging from the exhaust pipe, cleaned the oil from area around the engine, and replaced the failed hydraulic hose with a hose from the outrigger hydraulic system.

2.2 Second Fire: Exhaust Pipe Lagging Removal

The second fire resulted in extensive damage throughout the vessel. The fire pattern and damage to the vessel, as noted by investigators, indicated this fire also started within the engine room. Although there were no indications the fire was the result of a failure with any of the three diesel engines, the fire location of where it initiated within the engine room could not be determined due to the extent of the fire damage.

The rapid expansion of the fire from black smoke entering the wheelhouse through the pipe/hose tunnel under the deck winch control

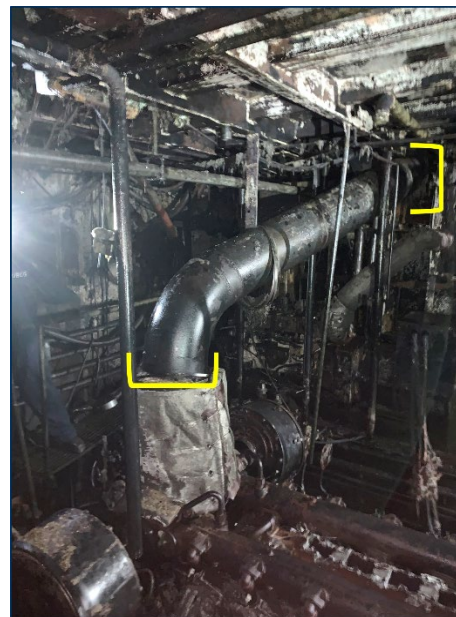


Figure 7. Missing main engine exhaust pipe lagging, as identified by yellow brackets.

⁴ *Structural fire protection (SFP)* is a component of an overall vessel fire-protection strategy that uses passive design features in a vessel's structure to slow the expansion of a fire from one compartment to another. SFP uses fire-resistant materials and insulation installed on the horizontal and vertical surfaces of a compartment, on doors/hatches, and in pipe and cable openings to slow the transfer of heat and smoke, thus providing additional time for evacuation and firefighting to contain and extinguish a fire.

console to engulfing the wheelhouse moments later indicates that the source of the fuel for the fire was abundant and volatile. Once the lagging was removed from the main engine exhaust, there was no insulation providing protection in the event flammable liquids, such as hydraulic fluid or diesel fuel oil, contacted the hot exhaust pipe's surface. Since the hydraulic fluid used in the system was located within the engine room and had a flash point of about 420°F, the second fire likely was the result of another hydraulic hose leak. When the fluid left the hydraulic hose under pressure, the fluid atomized before it contacted a hot surface, most likely the exposed main engine exhaust pipe, and flashed into a fire.

The heat from the first fire, which would have entered the vertical pipe/hose tunnel, may have caused heat damage to the other hoses inside the tunnel. Also, the removal of the damaged hydraulic line and the installation of the replacement hydraulic hose could have inadvertently caused damage to the hose being installed or to the other hydraulic hoses bundled together within the tunnel. The damage to the hoses from either the first fire or the replacement of the hydraulic hose may not have been apparent to the crew, but it would have weakened their structural integrity, thereby increasing the likelihood of their failure, which could have caused hydraulic fluid to spray within the engine room.

2.3 Structural Fire Protection

The fire started within the engine room and spread quickly up two decks to the wheelhouse, where it ignited combustible materials and spread further. The deck between the engine room and the accommodation space on the *Nobska* was made of steel but had no fire insulation to slow or prevent the passage of heat. Consequently, the pipe/hose tunnel running between these two spaces acted like a chimney, funneling the heat, smoke, and flames up to the wheelhouse.

As an uninspected commercial fishing vessel, the construction of the tunnel on the *Nobska* was not subject to any structural fire-protection regulations, as required for the construction of Coast Guard-inspected vessels. Had the tunnel opening on the *Nobska* been sealed, including pipe/cable-type fire stops, and its surrounding structure insulated with fire-retardant materials, the fire would not have been able to rapidly spread, and damage may have been limited/contained to the engine room.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire aboard the fishing vessel *Nobska* was a failure of a hydraulic hose within the

engine room that allowed hydraulic fluid to spray onto a hot surface, likely the exposed main engine exhaust pipe. Contributing to the failure of the hydraulic hose was possible heat damage from a fire that occurred earlier in the day.

3.2 Lessons Learned: Structural Fire Protection

The pipe/hose tunnel on board the *Nobska*, which extended from the engine room up two decks to the wheelhouse, did not have any insulation, pipe/cable fire stops, or other barriers to prevent the passage of smoke, heat, and fire—known as structural fire protection. This type of unprotected vertical tunnel has the potential to provide a pathway for a fire to spread quickly outside of the space of origination. Vessel owners and operators should identify such openings between decks and ensure they are structurally fire protected to prevent the spread of a fire.

Vessel	<i>Nobska</i>
Type	Fishing (Fishing vessel)
Flag	United States
Port of registry	New Bedford, Massachusetts
Year built	1988
Official number (US)	932694
IMO number	N/A
Classification society	None
Length (overall)	99.8 ft (30.4 m)
Beam	25.3 ft (7.7 m)
Draft (maximum)	13.6 ft (4.14 m)
Tonnage	198 GRT
Engine power; manufacturer	1 x 1,250 hp (932 kW); 3512 Caterpillar diesel

NTSB investigators worked closely with our counterparts from **Coast Guard Marine Safety Detachment New Bedford** throughout this investigation.

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For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID DCA21FM027. 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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