



National Transportation Safety Board

Marine Accident Brief

Capsizing and Sinking of the Fishing Vessel *Christopher's Joy*

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| Accident no. | DCA14LM020 |
| Vessel name | <i>Christopher's Joy</i> |
| Accident type | Capsizing and sinking |
| Location | Gulf of Mexico, near Southwest Pass, Louisiana 28°49.52' N, 089°24.22' W |
| Date, time | September 23, 2014 Capsizing about 1430 central daylight time, sinking about 2057 (coordinated universal time – 5 hours) |
| Injuries | 2 injuries, 2 fatalities |
| Damage | Loss of vessel, valued at \$460,000 |
| Environmental damage | Unknown quantity of diesel fuel and oil on board |
| Weather | Winds northeast 16 knots with gusts 17–19 knots, air temperature 80° F, tide 1.15 ft above mean lower low water and falling, current northeast 2–3 knots, visibility 10 miles, wave heights 2.7 feet |
| Waterway information | North central Gulf of Mexico, populated by numerous offshore production platforms and drilling rigs |

About 1430 on September 23, 2014, the fishing vessel *Christopher's Joy* capsized while trawling in the Gulf of Mexico near Southwest Pass, Louisiana. The vessel sank later that day at 2057. The master and one crewmember suffered minor lacerations, and the remaining two crewmembers are presumed dead.



Fishing vessel *Christopher's Joy* moored in Mayport, Florida, in 2004.
(Photo by Vladimir Knyaz)

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Accident Voyage

The *Christopher's Joy* departed Bayou La Batre, Alabama, on September 13 for a 28-day shrimping trip with the master and three crewmembers on board. The senior crewmember (crewmember 1) was hired by the master, who had worked with him on other shrimp vessels in previous years. This was the first trip for crewmember 1 on board the *Christopher's Joy*. Crewmembers 2 and 3, nephews of the owner, had previous experience working on the *Christopher's Joy* but not often as part of the same crew. The master and crewmember 3 had worked together on the vessel for at least one trip, but it was the master's first trip with crewmember 2.



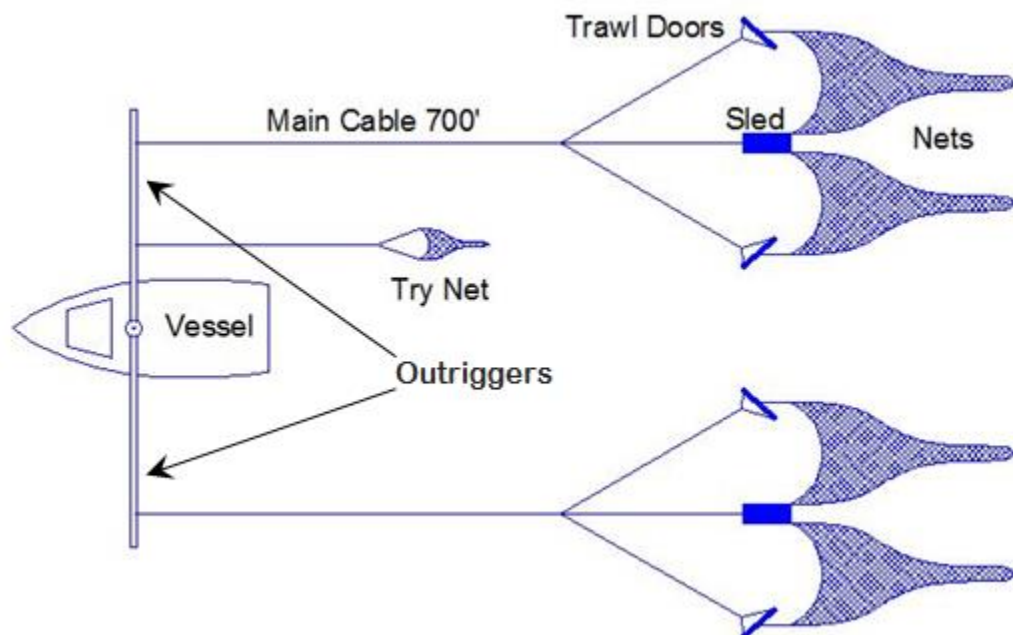
Site of the *Christopher's Joy* sinking near Southwest Pass, Louisiana.
(Background by National Geographic MapMaker Interactive)

On September 22, the vessel fished the waters near South Pass, Louisiana, and anchored near shore about 2200 that night to provide some lee from the wind and seas for more comfortable rest. The three crewmembers had been removing the heads of the shrimp caught the preceding day and storing the tails, which contained the meat, in large sacks below the main deck

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in the vessel's cold storage hold. The master told investigators he estimated 52 sacks of shrimp weighing 100 pounds each were stowed evenly on each side of the vessel in the ice hold.

The following morning, on September 23, the master rose about 1000 and woke the other crewmembers to prepare for the first trawl of the day. At 1155, the *Christopher's Joy* transited offshore to an area between Southwest Pass and South Pass, where the vessel had fished the previous 2 days. The vessel was rigged for double-beam shrimp trawling. The crew deployed two trawl nets from the port-side outrigger, two trawl nets on the starboard side outrigger, and a small trawl net known as a "try-net" at the midpoint off the starboard outrigger. The try-net is frequently recovered and examined by the crew as a predictor of the catch that can be expected to be found in the larger trawl nets. The vessel was in about 220 feet of water and dragging the trawls on a west-southwesterly course between 250 and 254 degrees (magnetic) with the current acting on the vessel from the stern.



Configuration of *Christopher's Joy* trawl nets.

According to the master, he had about 700 feet of steel cable tow wire paid out from each outrigger towing block to each trawl on the seafloor. The master indicated that he felt the angle of outriggers on the *Christopher's Joy* was higher than normal, at about 25 degrees above the horizon. Vessels on which he had previously worked had the outriggers set about 15 degrees off the horizon. Because the tension of the trawl lines is transferred to the vessel through the towing points on the outriggers, the higher angle raises the towing point and therefore the effective center of gravity of the attached trawl weight. This weight moved higher reduces the vessel's stability. Weighted, wing-shaped stabilizers with lifting surfaces, sometimes referred to as "birds," can be deployed into the water from the tip of each outrigger when in the down position to dampen the roll of the vessel while under way. These stabilizers do not improve the stability of the vessel; rather, they serve only to slow the rolling motion when the vessel is making speed through the water. The master told investigators that during this particular trawl he felt it was unnecessary to have the outrigger stabilizers in the water.

By about 1430, the vessel had transited roughly 6 miles and was making about 3.3 knots (speed over ground) when the master decided to turn the vessel to port. This speed was faster than the owner and the former master of the vessel said they preferred to travel, which was about

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2.4 to 2.5 knots, to minimize fuel consumption without negatively impacting the amount of fish caught. The master stated that as he began the turn, he brought the vessel's speed up a little to help offset the effect of the current.

The master told investigators that when the vessel swung around to a heading between 170 and 180 degrees, the port list became very heavy, in his opinion because the current was then acting on the port side of the hull. He reduced speed, but at this point a failure occurred in the chain link, shackle, or an attachment point on the chain stopper, which held the starboard outrigger to the gunwale. According to the owner/operator, this chain stopper was 0.5-inch link with 0.625-inch shackles. This failure allowed the starboard outrigger to move rapidly upward and into its upright cradled position, and the vessel's angle of heel to port increased significantly, submerging the aft port section of the main deck. In response to the situation, the master brought the throttle back to idle and put the transmission in neutral.

The master and crewmember 1 were in the wheelhouse, and crewmembers 2 and 3 were in the galley area of the accommodation space. The master ordered crewmember 1 to go aft and release the towline and fishing gear from the vessel's winches, and then he reduced the angle of the rudder in an attempt to stabilize the vessel. Crewmember 1 went into the galley area and told crewmembers 2 and 3 to follow and assist with releasing the fishing gear. Crewmember 1 told investigators that when he opened the aft door, the vessel was heeling to a point where water was above the coaming (raised frame) of the watertight door. He said crewmember 3 remained in the galley area while he and crewmember 2 tried to release the fishing gear.

Crewmembers 1 and 2 were unable to release the towline and fishing gear from either the port or starboard winch due to the vessel's angle of heel, and they reported this situation to the master, who then went aft to assist. The vessel was still being pushed by the current from the port side and was now heeling significantly to port, which prevented the master or the other two crewmembers from climbing up the deck to the winches to release the fishing gear. The master also observed that water had begun to enter the interior of the vessel through the rear watertight door, which had been opened to access the deck winches. The master then ordered the crew to leave the accommodation space, and he returned to the wheelhouse. Crewmember 2 followed crewmember 1 to the aft deck area, but crewmember 3 refused to leave the accommodation space, according to crewmember 1. Crewmember 1 then secured the watertight door to prevent further downflooding to the interior of the vessel and made his way with crewmember 2 to the high side of the vessel. The master did not order the crew to don lifejackets or survival suits and did not sound the vessel's general alarm.

The master used the VHF radio to contact the master of the *Debra Lee*, an uninspected fishing vessel that was 18 to 20 nautical miles away. During a brief radio transmission, he said he was making a turn with one outrigger in the water and he thought the *Christopher's Joy* would not make it, and he asked the master of the *Debra Lee* to stand by to assist. At this point, the towline on the starboard outrigger began to retake tension from fishing gear being dragged along the bottom, which rapidly rolled the vessel further to port, and the *Christopher's Joy* capsized.

The master managed to escape from the wheelhouse of the capsized vessel. He reported to investigators that when he surfaced, he saw crewmembers 1 and 2 in the water and heard what he thought was the vessel's engine still running. He did not see crewmember 3 at that time. The master swam along the capsized vessel towards the stern and managed to pull himself onto the overturned hull. Crewmember 1 climbed onto the inverted hull near the bow area. The master stated that after he got onto the hull, he observed crewmember 2 attempting to swim toward the vessel, but he appeared unable to swim fast enough to keep up with current and the movement of the vessel. The master and crewmember 1 said they last saw crewmember 2 struggling to stay

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afloat about 40 to 50 yards from the hull of the vessel. Shortly afterwards, the master stated, he and crewmember 1 heard crewmember 3 knocking on the hull from the engine room. They both communicated with crewmember 3 for about 45 minutes to attempt to explain to him how to escape from the engine room, but communications with crewmember 3 then ceased.

The vessel's liferaft was attached to the starboard side overhead of the accommodation space with a hydrostatic release, but the master told investigators he saw no signs indicating the liferaft deployed, such as the sound of carbon dioxide gas being released or bubbles rising around the hull of the *Christopher's Joy*. Crewmember 1 also told investigators he saw no indication that the liferaft deployed. NTSB investigators could not determine whether the liferaft deployed or whether the hydrostatic release unit worked as designed when submerged in 4 meters of depth. The liferaft could have deployed and then failed to separate from the sinking vessel, or the liferaft's painter line may have been secured directly to the canister cradle, which would have bypassed the automatic release.

About 1543, personnel on an oil rig in Southwest Pass block 77A spotted the drifting overturned hull of the *Christopher's Joy* and the two survivors, and notified the United States Coast Guard. The oil rig crew also dispatched the *Miss Anna*, a nearby offshore supply vessel, to assist. The crew of the *Miss Anna* rescued the *Christopher's Joy* master and crewmember 1 about 1600. The fishing vessel *Debra Lee*, contacted earlier by the *Christopher's Joy* master, also arrived on scene to assist.

Upon notification of the incident, the Coast Guard launched multiple assets from various commands in the area, including a cutter, a helicopter, a fixed-wing airplane, and a small boat, to search for the missing crewmembers. A nearby commercial helicopter also assisted in the search. At 1738, a Coast Guard rescue swimmer deployed to the overturned hull tried to communicate with crewmember 3, who was believed to be trapped in the engine room. The rescue swimmer heard no response, however, and did not attempt to enter the overturned hull.



**Stern of *Christopher's Joy* after the two surviving crewmembers were rescued.
(Photo by crewmembers on board the supply boat *Miss Anna*)**

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On-scene assets reported that the vessel sank entirely below the surface at 2057. The search effort continued for 2 more days, covering an area of more than 5,745 square miles, but the Coast Guard found only a debris field from the vessel. Neither of the missing crewmembers was located.

The exact position where the vessel's hull came to rest on the seafloor remains unknown. With the vessel lost, the status of the hull and navigational, mechanical, propulsion, steering, and other vital systems on board the *Christopher's Joy* at the time of the accident could not be determined. The master stated, however, that all systems were functional or operational before the sinking.

Alcohol testing was not performed on either the master or crewmember 1. Urine specimens were collected for drug testing from both individuals days after the incident. The master's test results were negative, and crewmember 1's urine specimen was rejected by the collection site as possibly adulterated.

Vessel History

The *Christopher's Joy* was originally built in 1996 by Johnson Shipbuilding and Repair Company in Bayou La Batre as the uninspected fishing vessel *Sea Quest II* (Hull #137), a beam trawler outfitted for shrimp fishing. In July 2003, the *Sea Quest II* was purchased by Jacksonville, Florida-based Christopher's Joy, Inc., and renamed the *Christopher's Joy*. The company is family owned and many of the family members have worked on board the *Christopher's Joy* in various capacities. However, the master of the *Christopher's Joy* at the time of the accident was not a family member; he was hired in March 2014 as the vessel's master following interviews by both the owner and the owner's son, who oversaw the vessel's crewing, operations, and logistical needs.

After the purchase, the current owner added a gallows frame and a shucking house aft so the vessel could be employed in the sea scallop fishery. Investigators asked the owner for drawings, plans, stability calculations, or other evidence that these modifications were assessed by a naval architect, but none were produced. The vessel fished for scallops out of Cape May, New Jersey, from December through April and then worked during the off-season in the shrimp fishery along the eastern seaboard in the lower Atlantic Ocean. In the summer of 2013, the vessel began working the waters of the Gulf of Mexico, operating out of Key West, Florida, and Bayou La Batre.

On July 29, 2014, about 2 months before the accident, a condition and valuation survey performed for a new insurance provider found the *Christopher's Joy* to be in overall suitable condition for its intended service and estimated the vessel's market value was \$460,000. The vessel was dry-docked in Mobile, Alabama for 2 days before the accident voyage while its keel coolers were repaired. The foreman who oversaw that work told investigators he did not observe any abnormalities of the hull, rudder, shaft, or other through-hull penetrations during the haul-out. The vessel was put back in the water the day before the accident voyage began.

Fishing Vessel Safety

Vessel instability while under way can be due to a single factor or a combination of causal factors, such as winds, wave action, down-flooding, free surface effect, shifting of cargo, or a multitude of other events. Fishing vessels face added risks when fishing gear is deployed in the water and attached to the vessel by a rope or wire towline. The National Transportation Safety Board (NTSB) has promoted the position that senior crewmembers on a fishing vessel

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should have a general awareness of the principles of stability and each crewmember on board should be properly prepared and trained to take measures to reduce the adverse effects of all potential emergency situations. (See box on NTSB recommendations.)

Accident Analysis

Stability may be defined as the tendency of a vessel to return to its original position after being displaced. When a vessel is engaged in fishing, the gear towed astern can negatively impact a vessel's overall stability because the tow load raises the vessel's effective center of gravity and reduces the freeboard at the stern due to the downward weight of the trawl load and tension on the lines. Depending on sea conditions, winds and other factors can temporarily shift the center of gravity in an outboard direction. When a vessel with fishing gear deployed astern turns, those forces continue to act upon the vessel. In addition, the rudder creates heeling force as it is turned, which, when combined with the other forces, can reduce the stability of a vessel and even capsize it. The master of a fishing vessel should always tow directly astern from the lowest point possible and make slow, wide turns to prevent the fishing gear from pulling sideways on the vessel.

Based upon the two survivors' accounts of events on the day of the accident, the *Christopher's Joy* did not experience any mechanical, propulsion, or overloading problems; entanglement of nets with an obstruction on the sea floor; or any other occurrence such as uncontrolled movement of the catch within the ice hold that could have caused the vessel's initial severe list to port. Therefore, the heeling event likely was due to the master's operational inputs during the turn, such as excessive speed, excessive rudder angle, or both, given the wind, sea, and current conditions and trawl arrangement. The tension on the towline that was fed through the block on the starboard outrigger became large enough during the turn to cause a failure of the chain stopper. This led to the rapid, uncontrolled movement of the *Christopher's Joy* starboard outrigger to its upright position and momentary slackening of the trawl's starboard towline. When one outrigger is in the upright position, the vessel heels to the side with the outrigger in the lowered position. With the starboard outrigger movement, the center of gravity of the starboard trawl weight effectively shifted upward and inboard, compounding the existing port forces from the port outrigger and significantly reducing the vessel's ability to right itself from the severe list, leading to the main deck becoming submerged.

This dangerous situation on the *Christopher's Joy* was further compounded when the crew failed to release the fishing gear from the vessel's winches. As the tension caused by the frictional drag of the fishing gear along the bottom returned to the starboard towline, which was now overhead and trailing from the port side of the vessel, the transverse and downward force of the load acted upon the tip of the upright starboard outrigger where it was attached. This provided enough leverage, along with the pushing effect of the current acting upon the port side of the hull, to roll the vessel past its limit of positive stability.

The master stated that he did not perform any training drills for fire, man overboard, or uncontrolled flooding emergencies during his tenure on the *Christopher's Joy* or before or during this accident voyage. He also stated he did not perform any safety orientations or briefings as he understood all the crewmembers were familiar with their onboard responsibilities and knew where the lifejackets were stowed, even though these instructions, drills, and safety orientations are required by 46 *Code of Federal Regulations* (CFR) 28.270 for all documented fishing vessels that operate beyond the boundary line.

On board the *Christopher's Joy*, the master and crew were not prepared to take timely and effective action to address the emergency situations that arose the day of the accident.

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Although the master indicated he took corrective action to prevent the capsizing, including reducing the vessel's speed, placing the propulsion in neutral, and ordering the crew to release the fishing gear from the winches, his decisions were untimely in nature and thus ineffective in recovering the vessel from its port list. Furthermore, the master's failure to prepare the crew to immediately don lifejackets and abandon the ship may have contributed to the loss of two crewmembers' lives and risked his own life and that of the only surviving crewmember.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the loss of the fishing vessel *Christopher's Joy* was the master's disregard for the impact of the deployed fishing gear upon the vessel's reserve stability while performing turning maneuvers. Contributing to the loss of life were inadequate safety training and practices.

NTSB Recommendations: Fishing Vessel Safety

The NTSB convened a 2-day forum on fishing vessel safety in October 2010 to identify safety issues across the industry and examine strategies for preventing accidents and lowering the death rate. The forum revealed that fisherman often are unaware of the inherent risks in commercial fishing and may not know how to apply principles of vessel stability or how to use their safety equipment. NTSB recommendations issued to the Coast Guard after the forum included the following:

- Establish standards for new and existing commercial fishing industry vessels of 79 feet or less in length that (1) address intact stability, subdivision, and watertight integrity and (2) include periodic reassessment of the vessels' stability and watertight integrity. (Safety Recommendation M-11-23)
- Require all owners, masters, and chief engineers of commercial fishing industry vessels to receive training and demonstrate competency in vessel stability, watertight integrity, subdivision, and use of vessel stability information regardless of plans for implementing the other training provisions of the 2010 Coast Guard Authorization Act. (Safety Recommendation M-11-24)
- Require all crewmembers to provide certification of completion of safety training before getting under way on commercial fishing industry vessels, such training to include both prevention of and proper response to emergency situations as well as actual use of emergency equipment. (Safety Recommendation M-11-27)

Vessel stability and watertight integrity. The Coast Guard concurred with Safety Recommendation M-11-23 calling for stability and watertight integrity standards and deemed proposals for vessels operating more than 3 nautical miles offshore to be in accordance with the Coast Guard Authorization Act of 2010 and the 2012 Coast Guard and Maritime Transportation Act. Safety standards included in the 2010 authorization act apply to survival craft, vessel safety examination and certification, safety training for operators, and construction of new vessels less than 50 feet long. Coast Guard rulemaking currently under way would require new commercial fishing vessels 50 feet in length or longer to meet classification rules. Vessels built in 2010 or later would need to meet construction standards, including flotation requirements, established for recreational vessels.

For vessels 50 feet and longer and at least 25 years old, the Coast Guard drafted alternate safety compliance programs to address stability, subdivision, watertight integrity and the general condition of the vessel and equipment, including safety equipment. The Coast Guard is field testing those proposed criteria and expects rulemaking and final development to be completed by 2017, with implementation by 2020. The NTSB welcomed the development of safety standards for new fishing vessels and alternate programs for older vessels but noted the lack of such standards for fishing vessels less than 25 years old. For this reason, the NTSB classified Safety Recommendation M-11-23 "Open—Unacceptable Response."

Training and competency in vessel stability. While the Coast Guard stated it concurred with the intent of recommended stability training requirements, it does not intend to require such training until the statutory requirements of the 2010 authorization act are implemented as regulations.

Similarly, the Coast Guard agreed that crewmembers should complete training in emergency response and use of lifesaving equipment but has no current plans to require certification of such training. The Coast Guard noted, however, such a requirement could be considered in future rulemaking efforts and indicated the agency is developing training criteria for vessel operators in areas including stability, collision prevention, firefighting and prevention, damage control, survival, and emergency response and communications.

The NTSB continues to support mandatory stability training for vessel owners and chief engineers as well as demonstrated competence for masters, citing needs identified in the 2010 fishing vessel safety forum. The NTSB classified its recommendations for such training and competency "Open—Unacceptable Response."

Vessel Particulars

| Vessel | <i>Christopher's Joy</i> |
|----------------------------|--|
| Owner/operator | Christopher's Joy, Inc. |
| Port of registry | Jacksonville, Florida |
| Flag | United States |
| Type | Uninspected fishing vessel |
| Builder, date | Johnson Shipbuilding and Repair Bayou La Batre, Alabama 1996 |
| Official number (US) | 1045566 |
| IMO number | 8939922 |
| Construction | Steel |
| Length | 74.8 ft (22.8 m) |
| Breadth | 23 ft (7 m) |
| Draft | 12.2 ft (3.7m) |
| Tonnage | 120 gross tons, 36 ITC tons* |
| Engine power, manufacturer | 671 hp (500 kW), Caterpillar 3412TA |
| Persons on board | 4 |

* Tonnage according to the International Tonnage Convention

For more details about this accident, visit www.nts.gov and search for NTSB accident ID number DCA14LM020.

Adopted: May 6, 2015

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 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.” 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. 49 *United States Code*, Section 1154(b).
