



# National Transportation Safety Board

## Marine Accident Brief

### Flooding and Sinking of Fishing Vessel *Pacific 1*

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<b>Accident type</b>	Flooding	<b>No.</b> DCA19FM019
<b>Vessel name</b>	<i>Pacific 1</i>	
<b>Location</b>	Kashega Bay, Unalaska Island, Alaska 53°31.30' N, 167°15.74' W	
<b>Date</b>	February 15, 2019	
<b>Time</b>	About 0330 Alaska standard time (coordinated universal time – 9 hours)	
<b>Injuries</b>	0	
<b>Damage</b>	\$720,000 est. (total constructive loss)	
<b>Environmental damage</b>	Oil sheen reported	
<b>Weather</b>	Overcast skies with scattered showers and southwest winds at 20 knots, gusting to 25 knots; seas 10-12 feet; air temperature 45°F; water temperature 39°F	
<b>Waterway information</b>	Kashega Bay is located on the northwest coast of Unalaska Island, Alaska.	

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About 0330 local time on February 15, 2019, the commercial fishing vessel *Pacific 1* was engaged in cod fishing in the Bering Sea near Kashega Bay, Unalaska Island, Alaska, when the vessel began to take on water at the stern. The five crewmembers abandoned the vessel and were rescued by the nearby Good Samaritan vessel *Kona Kai*. No crewmembers were injured in the accident, and an oil sheen was reported. The vessel sank and was considered a total constructive loss, valued at an estimated \$720,000.



The fishing vessel *Pacific 1* before the accident. (Source: *Pacific 1* owner)

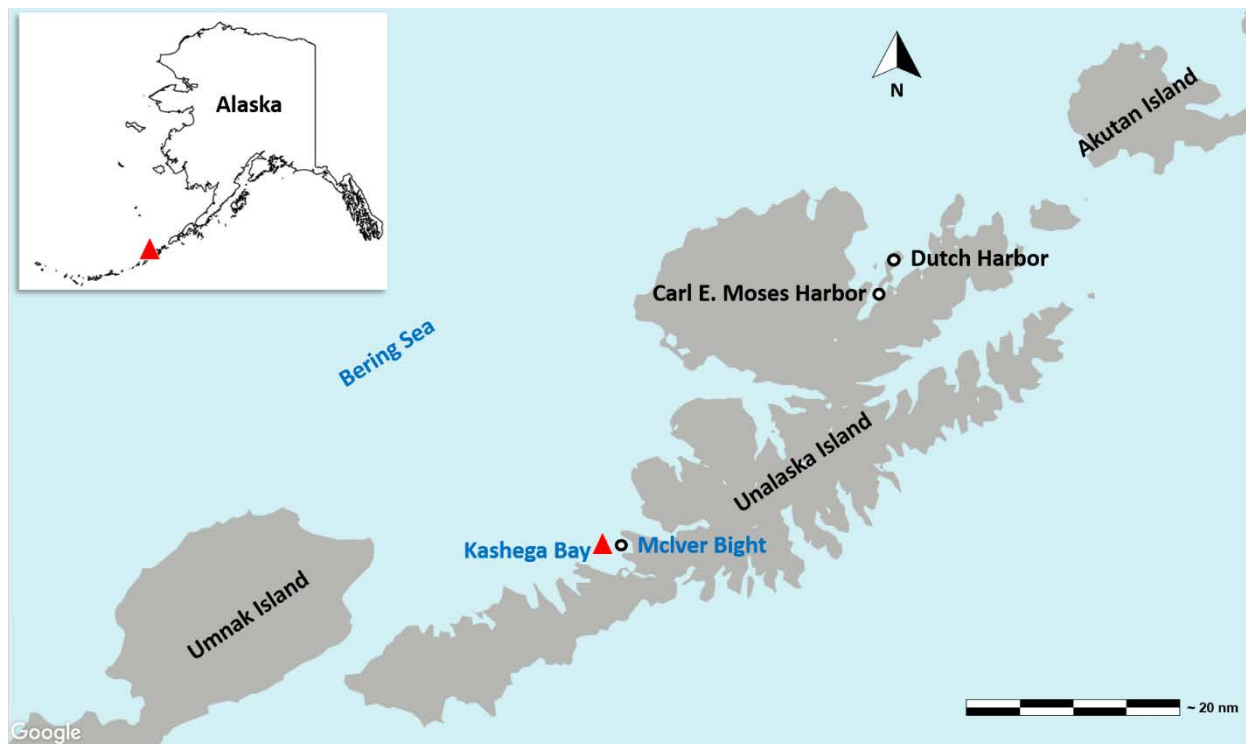
## Flooding and Sinking of Fishing Vessel *Pacific 1*

### Background

The steel-hulled commercial fishing vessel *Pacific 1* was built in 1963 by Capell Marine, located in Freeport, Texas. The vessel was owned by several companies before being acquired by Pacific 1 LLC in December 2015. From December 2015 to February 2018, the vessel was hauled out of the water in Port Townsend, Washington, and received structural repairs and maintenance at Port Townsend Shipwrights. The vessel remained out of the water during the entire timeframe. The owner contracted for an inclining test that was performed by a naval architect on February 14, 2018, after the maintenance was completed, to determine the vessel's center of gravity. An updated stability booklet was provided to the owner on March 14, 2018.

### Accident Events

On the morning of February 10, 2019, at approximately 0800, the *Pacific 1*, with a crew of five, consisting of a captain, engineer, and three deckhands, departed Dutch Harbor, Alaska, with 14 cod pots on board, each weighing 650 pounds, to fish Alaska's inshore Pacific cod fishery. The vessel's bulbous bow ballast tank and potable water tank were pressed (filled to maximum) with fresh water from harbor facilities that morning. The engineer stated that each of the vessel's two "saddle" fuel tanks located outboard of the engine space were approximately half full, and the bait hold contained an estimated 1,800 pounds of bait.



**Accident site where the *Pacific 1* flooded and subsequently sank in Kashega Bay, Unalaska Island. (Background source: Google Maps)**

Over the next 4 days, the captain and crew worked approximately 16-hour days, baiting and setting pots, hauling in their catch, re-baiting pots, and moving gear around the fishing grounds. The crew worked 3 strings in the water, and each string consisted of 15 pots spaced approximately 300 yards apart. The captain and crew indicated that fishing was slow, and weather was typical for the time of year. The captain stated that the vessel "always felt seaworthy," and although an occasional small list developed from the consumption of fuel from one of the fuel tanks, each list was quickly corrected by the engineer. According to the captain and engineer, the

## Flooding and Sinking of Fishing Vessel *Pacific 1*

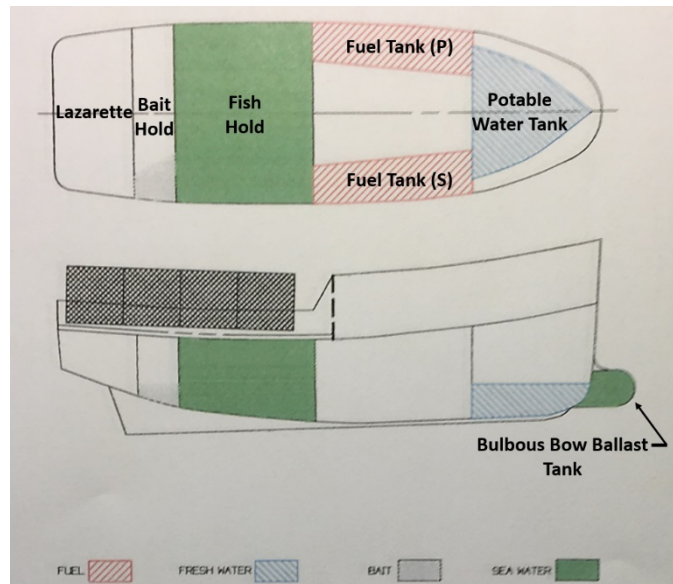
vessel had a tendency to list slightly to starboard due to the weight and location of the pot launcher and placement of bait within the bait hold on the starboard side (for accessibility), which they would even out with the consumption of fuel oil. There was no seawater ballast available on board to correct the list.

The deckhands stated that on the afternoon of February 12, when they were loading the last string of pots for the day (now with a total of 15 pots on board), they noticed about a foot of water on the aft main deck that was not clearing as they worked, as well as an increasing list to starboard. The engineer stated the vessel was “heeled over pretty good...it was at least a 20-degree list” to starboard due to water entering the lazarette, the aftermost space in the hull, which could only be accessed by a bolted-down, square hatch cover and contained the rudder post and steering gear.

The engineer could not access the lazarette via the hatch cover to determine the source of the flooding because of the cod pots on deck and the pooling of water on the stern, which would have flooded down into the space if he had opened the hatch cover. He believed the lazarette bilge suction valve was allowing water to enter the space, so he “rectified the situation by tightening down on the suction valve by removing the handwheel and applying a crescent wrench to the stem to seat the valve.” He then pumped out the lazarette using the bilge pump in the engine space, and the water that had pooled on the aft deck drained off. The bilge pump discharge water exited through a gooseneck pipe located on the main deck centerline stern area above the lazarette and therefore poured onto the deck when operating. The lazarette was also equipped with an automatic, submersible Rule pump with an integrated high-level alarm. After the incident, the engineer told investigators that he would open the hatch covers in the lazarette and bait hold to check for water regularly when not fishing. With the leak addressed from the bilge suction valve, the captain elected to keep fishing over the next few days, since he believed the bilge suction valve leak was managed by the engineer, who also periodically stripped “on the tank [lazarette] with the bilge pump in the engine space.”

The engineer also stated that the high-level bilge alarm was connected to the engineering space general alarm panel and was repeated to the wheelhouse. He told investigators that the last time he “lifted” the float switch to test the high-water alarm in the lazarette was on the evening of February 13 while alongside the fishing tender *Cape Caution*.

Two days later, on February 15, about 0330, as the deckhands and the engineer hauled in the second-to-last pot of a set (13 pots on board), approximately 6 miles west of McIver Bight, the captain and engineer noticed the vessel was “tender,” with a slight list to starboard and water on



**The *Pacific 1* top and starboard-side profile view of compartments and tank locations. Although the stability booklet shows the bulbous bow ballast tank filled with sea water, at the time of the accident, this tank was pressed with fresh water. (Background source: *Pacific 1* Stability Booklet)**

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the aft deck.<sup>1</sup> The captain attempted to clear the standing water on the main deck starboard quarter by turning hard to the opposite side and increasing the propulsion engine throttle. At approximately the same time, the captain noticed in the wheelhouse that his rudder indicator was not responding and was displaying only an error signal. The engineer was in the engine space trying to determine which tank/space was filling with water. He could sense the tenderness of the vessel from its response to the seas and proceeded to tell the captain that he believed seawater was entering the lazarette from an unknown location (he later told investigators that he believed the space was completely filled with seawater). At the time, the engineer was supplying fuel from the port tank to the engine but aligned the engine's excess unburnt fuel to return to the starboard tank. While the lazarette was flooding, there was no audio or visual bilge alarm reported by the captain or engineer.

After discussion with the engineer, the captain made the decision to proceed to the closest safe refuge, McIver Bight. The engineer stated that he aligned the bilge and emergency pumps to de-water the lazarette but could not keep up with the flooding. After about 20 minutes, he noticed water entering the engine room via a 2-inch electrical conduit pipe that ran through the top of the bulkhead between the engine space and the lazarette. He told investigators that it started to enter the engine space "like turning on a fire hose."

The engineer went topside to alert the captain and instructed the deckhands to put on their survival suits. Since there was no suitable area to ground the *Pacific 1*, the captain proceeded to anchor the vessel. He noticed that the vessel was continuing to lose freeboard at the stern, and the list to starboard was increasing. The engineer proceeded to manually release the liferaft and secure the painter to the bow. The captain notified vessels in the area of their situation, as well as the US Coast Guard. The Coast Guard Station Kodiak watchstanders received a relay distress mayday from the fishing vessel *Kona Kai* that the *Pacific 1*, located about 40 miles southwest of Dutch Harbor, Alaska, had begun taking on water. The *Kona Kai* lost communication with the *Pacific 1*, but their last known location was transmitted to the Coast Guard. Two Coast Guard Air Station Kodiak MH-60 Jayhawk helicopter crews were deployed from Cold Bay, Alaska.

Shortly thereafter, about 0415, the crew gathered flares and the vessel's emergency position-indicating radio beacon (EPIRB) and headed to the bow to enter the liferaft as the *Pacific 1* listed further to starboard and its stern settled lower in the water. The crew kept the liferaft tethered to the sinking vessel as long as they could, and they cut the painter line before the *Pacific 1* went down by the stern about 0545. The EPIRB was not activated, since the captain expected the Coast Guard or the *Kona Kai* to arrive shortly.

The Coast Guard helicopters arrived in time to assist the *Kona Kai* in locating the inflatable liferaft that held all five crewmembers. Although the helicopter personnel were able to locate the raft, an inflight issue forced them to set a datum marker buoy and return to Cold Bay.

The *Kona Kai* was able to locate and rescue all five crewmembers around 0630. The *Kona Kai* transported the *Pacific 1*'s crew to Dutch Harbor, and no injuries were reported. Postaccident alcohol and drug testing was conducted on all crew, and all results were negative. The *Pacific 1* was located approximately 6 nautical miles from where they initially discovered the flooding, in 75 feet of water at McIver Bight. As of the date of this report, the vessel has not been salvaged.

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<sup>1</sup> A vessel that is *tender* experiences a longer/slower roll than usual and is considered less stable.

### Additional Information

The *Pacific 1* was designated an uninspected commercial fishing vessel engaged in the Aleutian trade, as defined in 46 *Code of Federal Regulations (CFR)* Subchapter C. As such, the vessel was not required to be inspected by the Coast Guard, registered with a classification society, or issued a load line certificate. The crew were based out of Kodiak, Alaska, and were fishing out of Dutch Harbor. They had been on board since early January 2019.

A Coast Guard commercial fishing vessel dockside safety examination was conducted on September 6, 2018, by Marine Safety Detachment Dutch Harbor. Dockside safety examinations—which are valid for two years—primarily assess the lifesaving equipment on board a vessel and do not include hull or other machinery assessments. Communications, documentation, and prevention systems for firefighting, lifesaving, and pollution were assessed, and three deficiencies were listed, including the discharge of oil mix in the bilge, constant flashing of the general alarm in the engine room, and the lack of National Oceanic and Atmospheric Administration (NOAA) registration on the EPIRB. The deficiencies were cleared on September 17, and a commercial fishing vessel safety decal was issued.

Investigators requested the assistance of the Coast Guard’s Marine Safety Center with a post-casualty stability review of the *Pacific 1*. The vessel had received several modifications over the year since its last inclining (stability analysis) in February 2018, including the addition of a hydraulic boom, a starboard pot launcher, and replacement of a fish hold refrigeration system. While the owner indicated that they were “like-in-kind” replacements, investigators were unable to conduct a technical analysis to determine their effect on stability and trim due to a lack of information.

The vessel was equipped with a bilge pump rated at 220 gallons per minute (gpm) and an emergency backup pump rated at 180 gpm; both were located in the engine space. An automatically operated Rule pump in the lazarette was rated at 35 gpm. The captain and engineer told investigators that they believed the bilge pumps and alarms were not certified by the Coast Guard, and that the “plastic flapper” float control for the Rule pump would get “stuck on or off.” The captain stated that the alarms and pumps were “just not made for the offshore fishing...I think this whole thing could have been avoided if we had the proper pump in there [lazarette] and a proper float alarm.”

### Analysis

The *Pacific 1* had several modifications in the year since its last stability analysis, which may have altered its stability characteristics. Although the owner stated that changes were “like-in-kind,” technical analysis would be required to confirm that the modified vessel met published stability guidance for the vessel. Owners and operators should maintain an active awareness of vessel stability issues at all times, including the need for qualified individuals and naval architects to update stability instructions and booklets when structural changes are made to a vessel, other equipment or operational gear is changed, or their placement is altered. In doing so, owners and operators should take into consideration that operating personnel in the commercial fishing industry do not typically have specialized stability training.

As of the publication of this report, the vessel has not been salvaged; therefore, the extent of the damage to the hull or the condition and closure of the hatchways, ventilators, doors, scuttles, manholes, and other openings, as well as the bilge piping and alarm system on board the *Pacific 1*, could not be verified. Investigators also could not determine whether the bilge pumps were

## **Flooding and Sinking of Fishing Vessel *Pacific 1***

functioning at their rated capacities. Based on crew statements, including those describing the vessel as being low and eventually sinking by the stern, the source of the flooding that led to the sinking of the *Pacific 1* was within the lazarette area. Additionally, the engineer stated that he observed seawater entering the engine space through a bulkhead penetration (electrical conduit pipe) between the lazarette and the engine room, indicating that the initial flooding was in the lazarette and progressive flooding occurred.

The crew stated that the high-water bilge alarm system functioned a few days before the sinking. However, on the night of the sinking, there was no audible or visual high-level bilge alarm indication. Had the alarm sounded, the crew would have been alerted to the flooding in the lazarette area and engine space and may have been able to act sooner to pump out the spaces.

The *Pacific 1* had been taking on water since the evening of February 12, 3 days before the accident. The crew knew that there was a leak somewhere in the lazarette, which required them to regularly pump out the space. There were five possible sources of flooding in the lazarette: a hull breach, the rudder post, the bilge suction valve, the hatch cover, and the goose neck discharge pipe transiting the space. However, instead of immediately returning to port to locate the leak (or leaks) and conduct necessary repairs, the captain elected to continue to fish. The increased seas and weather may have accelerated the flooding that eventually sank the vessel, but it is probable that the leak would have progressed over time, even in more benign conditions. By remaining at sea, the captain put his vessel and crew at risk.

### **Probable Cause**

The NTSB determines that the probable cause of the sinking of the fishing vessel *Pacific 1* was the captain's decision to remain at sea with continuous flooding in the lazarette from an undetermined source, which accelerated and eventually led to progressive flooding.

#### **Maintenance and Operation of Bilge Alarms**

Automatic high-water bilge alarms are intended to provide crews with an early warning of vessel flooding. Manual detection often occurs only after rapid flooding is underway, leaving little time for mitigating action. In inaccessible spaces, or small spaces with limited means or ability to inspect underway (such as a fishing vessel's stern compartment, or lazarette), bilge level-monitoring alarms are often the sole means to alert operators of space flooding. Operators should periodically test bilge high-water alarms and follow best marine practices and manufacturer recommendations for inspection and maintenance.

## Flooding and Sinking of Fishing Vessel *Pacific 1*

### Vessel Particulars

Vessel	<i>Pacific 1</i>
Owner/operator	Pacific 1 LLC
Port of registry	Dutch Harbor, Alaska
Flag	United States
Type	Fishing vessel
Year built	1963
Official number (US)	293369
IMO number	N/A
Classification society	N/A
Construction	Steel
Length	57.8 ft (17.6 m)
Draft	9.2 ft (2.8 m)
Beam/width	19.6 ft (6.0 m)
Tonnage	69 GRT
Engine power; manufacturer	480 hp (358 kW); Caterpillar C-18
Persons on board	5

**NTSB investigators worked closely with our counterparts from Coast Guard Marine Safety Detachment Dutch Harbor and Sector Anchorage throughout this investigation.**

For more details about this accident, visit [www.nts.gov](http://www.nts.gov) and search for NTSB accident ID DCA19FM019.

**Issued: February 19, 2020**

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).