



National Transportation Safety Board

Marine Accident Brief

Flooding and Sinking of Fishing Vessel *Aaron & Melissa II*

Accident type	Flooding	No. DCA19FM006
Vessel name	<i>Aaron & Melissa II</i>	
Location	Gulf of Maine, 70 nautical miles southeast of Portland, Maine ¹ 43°11.2' N, 068°37.3' W	
Date	November 14, 2018	
Time	0800 eastern standard time (coordinated universal time – 6 hours)	
Injuries	1	
Property damage	\$650,000 est.	
Environmental damage	3,000 gallons of fuel and lube oil	
Weather	Overcast with precipitation, visibility 12 miles, winds east 41 knots gusting to 50 knots, wave heights 19–20 feet, air temperature 33°F, water temperature 50°F	
Waterway information	Gulf of Maine, Atlantic Ocean	

About 0800 local time on November 14, 2018, the fishing vessel *Aaron & Melissa II* sank approximately 70 miles southeast of Portland, Maine, after it flooded while transiting to fishing grounds during a storm with gale-force winds. All four crewmembers abandoned ship and entered an inflatable liferaft when attempts to dewater the vessel proved unsuccessful; they were later rescued by a US Coast Guard helicopter. One deckhand received minor injuries. Approximately 3,000 gallons of fuel and lube oil were discharged. The loss of the vessel was estimated at \$650,000.



Aaron & Melissa II prior to sinking.

¹ All miles in this report are nautical miles.

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Area of accident where *Aaron & Melissa II* sank southeast of Portland, Maine, as indicated by the red triangle. (Background source: Google Maps)

Background

The *Aaron & Melissa II*, a single-propeller fishing vessel with a steel hull, was built in 1982 for ground fishing and lobstering by Master Marine Inc, in Bayou la Batre, Alabama. Previously named the *Dianne Lynn*, the vessel was purchased in April 1986 by the current owner, Boat Aaron & Melissa Inc., who used it exclusively for ground fishing. The *Aaron & Melissa II*'s home port was in Westbrook, Maine. Above-deck structures included a wheelhouse and crew quarters. Deck gear included a boom, outriggers, a winch, and nets for trawling. Below-deck areas from forward to aft were divided into a forepeak, an engine room, a fish hold, two lobster tanks, and a lazarette.²

The vessel had a crew of four: a captain, a senior deckhand, a junior deckhand, and an engineer. The captain, who had 35 years of fishing experience, had worked on the *Aaron & Melissa II* for 3 years. The engineer and senior deckhand were also experienced fishermen, having sailed on other fishing vessels. The accident voyage was the first time the junior deckhand worked on a fishing vessel, but he had previously served on US Naval ships.

Accident Events

On November 8, the *Aaron & Melissa II* left the Port of Gloucester, Massachusetts, for fishing grounds approximately 60 miles offshore from Rockland Maine, with 20 to 30 tons of ice in its single fish hold. Over the next two days, the voyage proceeded as normal. On November 11, the crewmembers began fishing for haddock, hauling in every 4 to 5 hours approximately

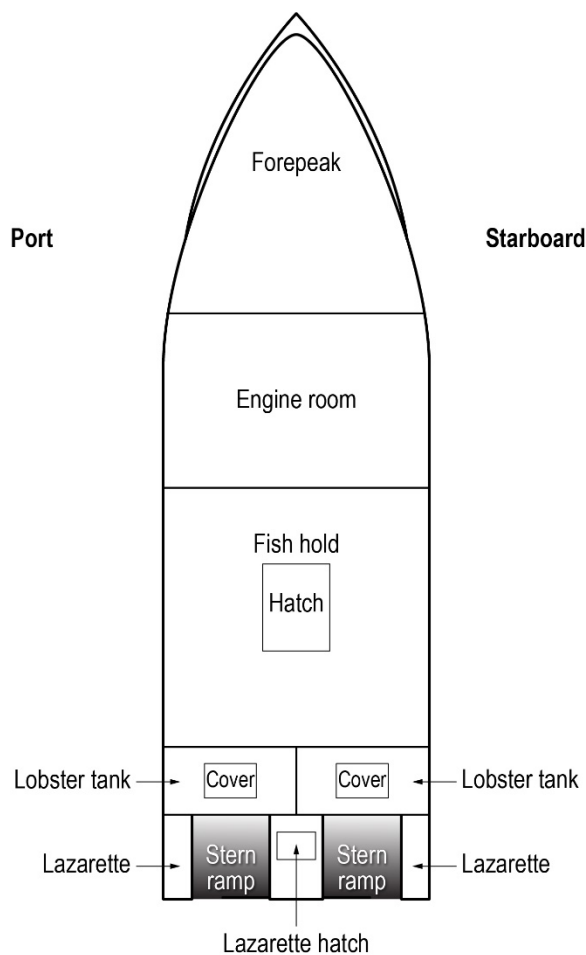
² The *lazarette* is a vessel's aftermost compartment below the main deck, accessed typically by a deck hatch.

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4,000 pounds, which they placed in containers with ice in the fish hold. By the afternoon of November 13, the crew had 35,000 pounds of catch on board, which was about 85 percent of the vessel's capacity, according to the captain. At this point, the captain and crew had worked continuously without sleep for two days.

The National Oceanic and Atmospheric Administration (NOAA) had broadcasted a warning of gale-force winds effective at 1400 that day for an area that included the Gulf of Maine. The forecast warned of deteriorating weather with precipitation, wind speeds up to 36 knots, gusts up to 45 knots from the east, and wave heights of 10 feet. There were also small-craft advisories in effect along the coast from Massachusetts to Maine. The entire crew was aware of the forecasted weather. Before heading into the Port of Gloucester to unload the catch, the captain decided to head west to check one more fishing spot located northeast of Gloucester. He stated he was not concerned about the weather and therefore planned to deploy nets the next day to fish if the weather was acceptable.

At 1530, the captain assigned the junior deckhand to stand watch in the wheelhouse. The autopilot was set to a course of about 235 degrees with a vessel speed of about 5 to 7 knots. The captain went to sleep, and the remaining two crewmembers finished storing the catch.



Schematic of *Aaron & Melissa II*.

At 1600, as the senior deckhand and engineer were placing the catch in the fish hold, the weather started to deteriorate. The two then prepared the vessel for the impending weather by storing loose gear, securing the fish hold hatch, and locking the stern ramp gates in the closed position to help prevent seas from washing onto the aft deck. When closed, the stern ramp gates were flush with the exterior hull; when in the opened position, they sat at an angle, which allowed the nets to be retrieved through the transom.

About 1730, the senior deckhand and engineer completed securing the vessel for heavy seas and went to bed. The junior deckhand remained on watch in the wheelhouse until he was relieved at 2000 by the senior deckhand. He did not report any problems or concerns with the vessel to the senior deckhand at the time of his relief.

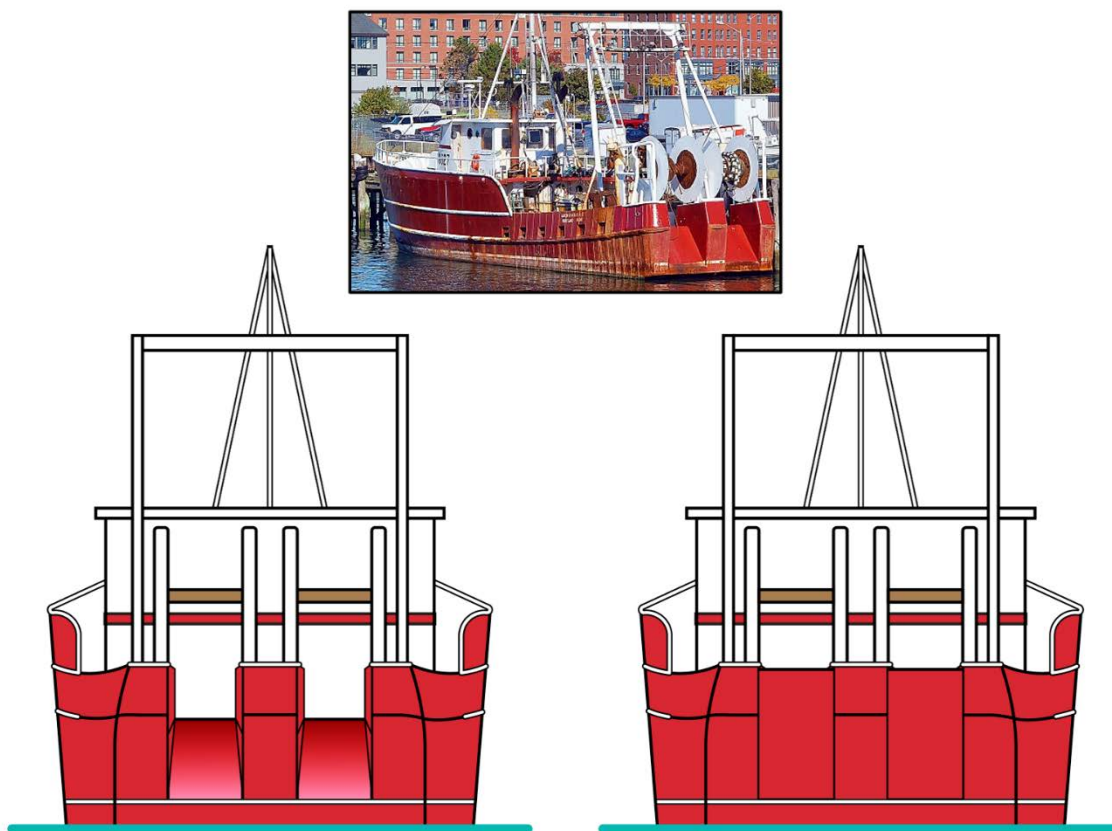
After the senior deckhand took over the watch, the captain entered the bridge at 2045 to check on the status of the vessel. While there, he noted the deteriorating weather and reminded the senior deckhand to look for water pooling behind the wheelhouse, which he said was an indicator that the port and starboard lobster tanks were filling with seawater (from

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water on deck) through their large rectangular covers. The captain also previously told the crew that he wanted to keep the lobster tanks pumped out. The captain then returned to bed.

At about 1700, as the forecast predicted, the winds changed from the west to the east, placing the wind and waves on the vessel's stern. About 2300, the senior deckhand noticed that the vessel was becoming "heavy in the stern." He left the wheelhouse and woke up the engineer to ask him to pump out the lobster tanks. When the senior deckhand returned to the wheelhouse, he noticed that the covers to both lobster tanks were no longer in place but were lying nearby. The engineer went into the engine room and turned on the bilge pump to empty the lobster tanks; he said the pump seemed to be operating properly. The junior deckhand was also awakened to help secure the tank covers. Working with water on deck, he and the engineer placed the covers back on the lobster tanks. They then used an acetylene torch to heat the four studs (bolts welded to the deck) that secured the corners of each cover, so that the wingnuts screwed onto them would be tighter and less apt to loosen after the studs cooled.

Shortly after midnight on November 14, suspecting that the lazarette might have been flooding based on the vessel still being down by the stern, the crew opened the hatch to the compartment and found it was half full of water. The engineer stopped pumping the lobster tanks and arranged the bilge system to pump out the lazarette. The deckhands finished securing the covers to the lobster tanks about 0100 and then went to bed, leaving the engineer on watch.



A diagram of the stern ramp gates in the open (at left) and closed (at right) positions.

At 0200, waves hitting the stern of the vessel sheared the two securing pins on the port stern ramp gate, causing it to open and resulting in an increase of water on the deck. The engineer woke

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the deckhands, and then leaving the bridge unmanned, all three crewmembers went aft to secure the gate. About the same time, the port lobster tank cover loosened again and moved off the tank opening. The starboard stern ramp gate was also forced open by the waves as the three crewmembers were trying to secure the port gate. Since the pins holding each gate closed were sheared off, they used rebar in their place to keep the ramps closed. While they were trying to secure the gates, the junior deckhand hit his head on a stern ramp gate and fell back into the open port lobster tank, which was filled with seawater. Not seriously injured, he was able to pull himself out and resume assisting the crew with trying to secure the gates.

The engineer soon realized that the bilge system was not removing any water from the flooded lazarette. He decided to wake the captain around 0300 to inform him of the situation.

The captain directed the crew to continue trying to secure the stern ramp gates and the port lobster tank cover. He also had a deckhand confirm that the lazarette was still flooded. Upon hearing that there was water in the space, the captain changed the *Aaron & Melissa II*'s course by 10 degrees, from 235 to 225, to head directly back to Gloucester, rather than to the second fishing grounds.

The captain went down into the engine room to see what was wrong with the bilge system. He noted that the pumps would start initially, but then the discharge pressure would significantly decrease, which prevented him from pumping out the spaces. He found a suction valve to the engine room's dry bilge in the open position. He closed the valve but was unable to gain pump suction to remove the water from the lobster tanks and the lazarette. Although the captain tried to utilize the other two bilge pumps (the vessel had three bilge pumps), he was unable to get suction.

The crew was able to secure the two stern ramp gates despite water on deck and waves crashing on them. However, the makeshift rebar pins kept breaking, so the gates would open again. Shortly thereafter, the hinges connecting the bottom of both gates to the vessel's hull also broke, which meant the gates could no longer be secured, so the crew returned to the wheelhouse.

The captain ordered the three crewmembers to continue attempts to secure the stern ramp gates. The crew refused to do so, informing him that it was "too dangerous" for them to go out on the aft main deck. With the stern gates open, boarding seas caused the loose cover on the port lobster tank to wash off the vessel.

At 0500, the *Aaron & Melissa II* started to list to starboard. At the helm, the captain attempted to maneuver the vessel to reduce the effect the approximately 40-knot winds and 16-foot waves were having on the vessel. About 2 hours later, the *Aaron & Melissa II* listed further to starboard, submerging the handrail on the forward bulwark. The captain stated he suspected that the containers of catch had broken free and moved toward the starboard side of the fish hold. Around that time, the hatch cover for the fish hold dislodged, allowing water to enter and increase the starboard list.

At 0745, the Coast Guard responded to a mayday call from the *Aaron & Melissa II* on VHF channel 16. The captain continued to maneuver the vessel in an effort to save it. At 0758, when the port engineer called the captain on his cell phone to discuss normal vessel business, the captain informed him of the situation. The port engineer then contacted the Coast Guard to ensure the seriousness of the crew's plight was fully understood.

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With the vessel listing to starboard and no ability to dewater the flooded lazarette, fish hold, and lobster tanks, the three crewmembers donned their survival suits and went to the port bow where they awaited the order to abandon ship. Prior to departing the wheelhouse, the engineer retrieved the emergency position-indicating radio beacon (EPIRB) and placed it inside his survival suit.

While the crew was gathered on the bow, the vessel's liferaft broke free from its rack due to boarding seas and the severe list and fell into the water. After determining the vessel could not be saved, the captain joined the crew on the bow. The engineer then inflated the liferaft. At 0800, all four crewmembers jumped into the water and boarded the raft, abandoning the vessel just as it began to sink beneath the waves, stern first. The liferaft painter became entangled on the sinking vessel's mast. Fearing they would be trapped inside the raft and pulled down with the vessel, the crew left the raft and entered the sea.

The *Aaron & Melissa II* sank in about 480 feet of water, pulling the raft under water. When the raft surfaced, all crewmembers were able to re-enter it. A Coast Guard helicopter from Air Station Cape Cod rescued them at about 1000, approximately 36 miles south-southeast of Monhegan Island, Maine. The weather conditions at the time and location of the rescue reportedly involved wind speeds of 30 knots with wave heights of 20 feet.

Additional Information

The *Aaron & Melissa II* had been drydocked twice in the 2 years before the accident. During a drydock period in October 2016, a doubler plate was placed over a hole on the hull, but the exact location of the repair was not documented. In addition, the rudder post's bushing was replaced in the lazarette, and keepers were welded on the bushing flange to help secure the bushing. During a January 2018 drydock, another doubler plate was installed to cover a hole in the hull approximately 1 inch in diameter in the lazarette, which was forward of the rudder post. The size of the plate to cover this hole was approximately 12 inches long and 6 inches wide. The rudder post packing gland was also repacked, because the crew had reported excessive water leakage through it into the lazarette.

Each of the two lobster tanks located just forward of the lazarette had the capacity to hold approximately 3,500 gallons of water (7,000 gallons combined) within the hull of the vessel. The captain told investigators that the lobster tanks were routinely used by the crew to ballast the vessel when it had no catch on board and to trim the vessel when loaded. Fishing gear (including nets, ropes, and twine) also was routinely stored in these holding tanks. During the transit, the captain wanted both tanks empty because the vessel was loaded (85 percent full of catch). Both the owner and captain stated that they understood the vessel was designed to operate with the lobster tanks full.

The hatch covers for the two lobster tanks were located on the main deck where the nets were hauled in. When the vessel was constructed, these hatches were originally round and made of aluminum. Sometime in the late 1990s, the tanks were modified by the current owner, and rectangular-shaped, steel hatches were installed. The switch from aluminum to steel hatch covers was due to the damage sustained by the aluminum covers during normal fishing operations. The weight of each steel hatch cover required two people to lift and move them. The rectangular hatch covers, as described by the crew, were flush with the deck and did not have gaskets.

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There were no high-water alarms located in the lobster tanks. The captain and crew told investigators that the covers were not watertight; even when the tanks were secured, water on deck would often leak into them. Thus, the captain had a standing verbal order for crewmembers at the helm to pump the tanks when they saw water collecting on deck aft of the deckhouse: water pooling in this area was an indication that the tanks were flooding, consequently increasing the vessel's trim by the stern (i.e., the stern sat lower in the water). Additionally, he said that with full lobster tanks and water on deck, the vessel's freeboard decreased.³ According to the captain, with the stern deeper in the water, the rudder post gland would leak at a higher rate—fast enough to flood the lazarette.

The saltwater/bilge pumping system consisted of three electric-driven, self-priming pumps in the engine room. The pumps were connected to a single manifold, which could be arranged to remove water from each compartment, including the lobster tanks, and provide saltwater on deck to clean the fish. Although there were no strainers installed at the inlet of each pump that could be removed and cleaned, the bilge suction pipe in each compartment was perforated with small holes to prevent debris from entering and clogging, or damaging, the pump. Pump no. 1 was utilized to dewater the internal spaces of the vessel, including the lobster tanks. A new pump casing and impeller for it was installed prior to the accident voyage. Pump nos. 2 and 3 were used to supply water on deck but could also dewater internal compartments. Pump no. 3 was the crew's preferred pump for washing fish. During the accident voyage, two of the crewmembers noticed the water pressure for this pump was decreasing to a point where they had to use buckets of water to wash the fish. There was no indication that the crew informed the captain of this matter.

In each of the compartments—except the lobster tanks and fish hold—the *Aaron & Melissa II* had high-water bilge float switches that were connected to an alarm panel in the wheelhouse that would provide both a visual and audible alert of potential flooding. Before the vessel departed Gloucester on November 8, the captain recalled that the float switch in the lazarette was tested and proved to be operating. However, the crewmembers confirmed that there was excess water found in the lazarette prior to the storm but did not recall seeing or hearing an alarm.

Prior to the arrival of the storm, from the evening of November 11 to November 13, the crew had been working for approximately 48 hours without sleep, hauling and cleaning 35,000 pounds of haddock. On November 13, as the remaining catch was being stowed, the captain was the first to go to sleep at 1500. He woke around 2045, checked in briefly with the deckhand on watch, and returned to sleep, until he was awakened at 0300 the next day. The senior deckhand went to bed around 1730 and woke up at about 2000 to stand watch, after having 2.5 hours of sleep. The engineer also went to sleep at 1730 and, after 5.5 hours, was awakened by the senior deckhand at 2300. The junior deckhand went to bed around 2000 and was awakened 3 hours later, at 2300, to help secure the lobster tank hatch.

Analysis

While catching and storing 35,000 pounds of fish over two days, none of the crewmembers, except for the captain, had a significant amount of sleep before they discovered the vessel was taking on water during the height of the storm. Fatigue can degrade performance in various ways, including reducing alertness, decreasing response times, and compromising decision-making. The senior and junior deckhands and the engineer had only 2.5 to 5.5 hours of sleep in the previous

³ *Freeboard* is the distance between the deck edge and waterline.

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48 hours before the accident. In addition to their limited sleep, the nature of their work and the challenging weather conditions likely caused them to be physically exhausted, although the crew continued with their attempts to save the vessel.

The captain stated that he had tried to use the saltwater/bilge pump to remove water from the lobster tanks and lazarette. Although the pumps would initially work, the crew found that they could not maintain suction, which the captain attributed to the valve to the engine room bilge being left open. Based on the captain and crew's descriptions, the saltwater/bilge system started to show the effects of a clog prior to the vessel encountering the storm. Most likely, the piping system was clogged before the manifold, which prevented all three pumps from being able to dewater the lazarette and the lobster tanks.

The captain and crew told investigators that in addition to the lobster tanks being used to trim and ballast the vessel, they were used to store equipment, including twine. Over time, the twine could have become loose in the tanks and sucked into the bilge piping, consequently clogging the suction line of the bilge system. In addition, the movement of the vessel in sea conditions also could have caused sediment and/or debris to be sucked into the bilge line, preventing the pumps from operating.

During the January 2018 drydock, the rudder post packing gland in the lazarette had been repacked due to excessive leakage, and a doubler plate was welded to the hull below the waterline and forward of the rudder post to cover an area of through-hull wastage. Since water was discovered in this space both prior to and during the storm, the repairs possibly failed, or a new cause of the water ingress occurred. According to the captain, water most likely entered through the rudder post packing gland in the lazarette, which accelerated when the lobster tanks were full, thus increasing the gland's leakage rate as the stern trimmed further down in the water. Although the lazarette's high-water bilge alarm float switch tested satisfactorily prior to departure, the crew did not report hearing the alarm at any time during the return transit. Its apparent failure prevented the crew from being warned earlier of the water ingress.

The gale the *Aaron and Melissa II* encountered was accurately forecasted. The captain was aware of the approaching storm and its potential gale-force strength but decided nevertheless to head to another location to fish, instead of returning directly to Gloucester, which put the vessel at risk. The gale-force storm and sea conditions damaged the stern gates and flooded the lobster tanks, fish holds, and lazarette, leading ultimately to the *Aaron and Melissa II* sinking and endangering its crew. In addition, critical systems such as the high-water bilge alarm (float switch) within the lazarette and the saltwater/bilge system were not fully operational likely due to fouling, which also decreased the survivability of the vessel.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the flooding and sinking of the fishing vessel *Aaron & Melissa II* was the captain's decision not to return directly to port with forecasted gale-force conditions, combined with the clogged bilge system, which prevented the crew from dewatering the flooded lazarette.

Vessel Particulars

Vessel	<i>Aaron & Melissa II</i>
Owner / operator	Boat Aaron & Melissa Inc
Port of registry	Westbrook, Maine
Flag	United States
Type	Fishing vessel
Year built	1982
Official number	648627
Classification Society	N/A
Construction	Steel
Length	76.2 ft (23.22 m)
Draft	6 ft (1.8 m)
Beam / width	22.2 ft (6.76 m)
Gross tonnage	139
Engine power; manufacturer	1 x 650 hp (484.7 kW); Caterpillar D379 diesel engine
Persons on board	4

NTSB investigators worked closely with our counterparts from Coast Guard Sector Northern New England throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA19FM006.

Issued: November 14, 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 of the *United States Code*, Section 1131(b)(1). 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 of the *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 of the *United States Code*, Section 1154(b).
