



National Transportation Safety Board

Marine Accident Brief

Flooding and Sinking of Hopper Barge *PTC 598*

Accident type	Flooding	No. DCA19FM005
Vessel name	<i>PTC 598</i>	
Location	Gulf of Mexico, 6 miles southwest of Cape St. George, Florida 29°30.11' N, 085°06.86' W	
Date	November 4, 2018	
Time	0840 eastern standard time (coordinated universal time – 5 hours)	
Injuries	None	
Property damage	\$750,000 est. (\$350,000 barge and \$350,000 cargo)	
Environmental damage	None	
Weather	Visibility 10 miles, partly cloudy skies with scattered rain showers, east winds at 15–17 knots, seas at 4–5 feet, air temperature 69°F, water temperature 69°F	
Waterway information	The Gulf of Mexico coastline is low and sandy with shoal water extending offshore. Intracoastal Waterway is a 1,348-mile protected canal inside and behind the US Gulf Coast. ¹	

On November 4, 2018, at 0840, the hopper barge *PTC 598* sank about 6 miles off Cape St. George, Florida, with a cargo of scrap metal. The barge was being towed by the towing vessel *Kaitlin Olivia* along with another barge, *PTC 625*, en route from Tampa, Florida, to Mobile, Alabama. No pollution or injuries to the four crewmembers aboard the tugboat were reported. Damage was estimated to be \$750,000.



Left, towing vessel *Kaitlin Olivia*. Right, barge *PTC 625* (same class as the *PTC 598*) with its fiberglass cargo covers closed. (Photos courtesy of LA Carriers and Parker Towing Company)

Background

The *PTC 625* and the *PTC 598* were covered hopper barges, each with a single cargo hold and six voids (one bow, four side, and one stern void). Covered hopper barges are designed to carry dry cargo in bulk. The barges had eight removable, weathertight, fiberglass cargo covers mounted transversely that prevented rain from entering the cargo hold when fitted.

¹ Mile distances for the Intracoastal Waterway are given in statute miles. All other distances are given in nautical miles (1 statute mile = 0.869 nautical miles).

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Accident Events

Eight days before the accident on October 27, 2018, an on-charter marine surveyor inspected the two barges in Mobile. With respect to the *PTC 625*, he noted “2 dog assembly bolts are broken in way of the stern manhole hatch and 1 wing nut is missing on the bow manhole hatch.” The surveyor noted no discrepancies to either barge’s eight outboard manhole hatches (four on the port side and four on starboard), which allowed access to the barges’ four side voids. The surveyor reported the results to the owner/operator of towing vessel *Kaitlin Olivia*, LA Carriers, who accepted the two empty barges for bareboat charter.²

On October 29, the *Kaitlin Olivia*’s relief master completed LA Carriers’ *Picking Up Barge Inspection Report* for the two barges and signed that “all dogs are free, lubricated and will close hatches/manholes.” The *Kaitlin Olivia* then got under way with the two barges en route to Tampa, Florida, to pick up a load of scrap metal. The tugboat’s crew consisted of the relief master, a mate, and two deckhands. The crew stood 6-hours-on/6-hours-off watches with a licensed operator and a deckhand. The *Kaitlin Olivia* had a towing safety management system (TSMS) but did not yet have a certificate of inspection.

Four days before the accident, on October 31, the tow arrived early in the morning at Trademark Metals Recycling in the Port of Tampa. Loading was completed that same afternoon with a total of 1,596 tons on board the *PTC 598* and 1,613 tons on board the *PTC 625*. Also that afternoon, the *Kaitlin Olivia*’s permanent master reported on board and relieved the relief master. The mate supervised the securing of the weathertight, fiberglass cargo covers by order of the permanent master because seas of 4 feet were expected on the voyage back to Mobile. The mate completed LA Carriers’ *After Load Barge Inspection Report* that evening and noted “dogs are frozen” on the *PTC 625*. In his postaccident interview, the mate told investigators that, with respect to the dogs on the manhole cover to the *PTC 625*’s stern void, “the nuts were frozen to the rods, the deckhand tried to loosen them, but stopped after two of the four dogs broke, the bow and stern void manhole hatch were tied down with line, and that’s how the barge sailed with the bow and stern void hatches secured with rope/line.” LA Carriers’ barge inspection report stated that all dogs should be in working order; if not, the company should be informed. The mate also noted in the barge inspection report that the draft of each barge was 9 feet forward and 9 feet 6 inches aft. According to LA Carriers’ policy, barges were considered overdraft when the draft exceeded 9 feet, and the company should then be informed. The mate informed the master of the discrepancies with the dogs and the overdraft during the watch turnover, but neither of them informed LA Carriers as required in the company’s TSMS.³ That same evening, the *Kaitlin Olivia* and the barges shifted to a lay berth where the master planned to wait overnight for sea conditions to improve before getting under way for Mobile. The depth to the main deck of the barges was 12 feet; loading to a draft of about 9 feet 6 inches aft would correspond to 2 feet 6 inches of freeboard, where the outboard manhole covers (flush with the deck) were mounted.

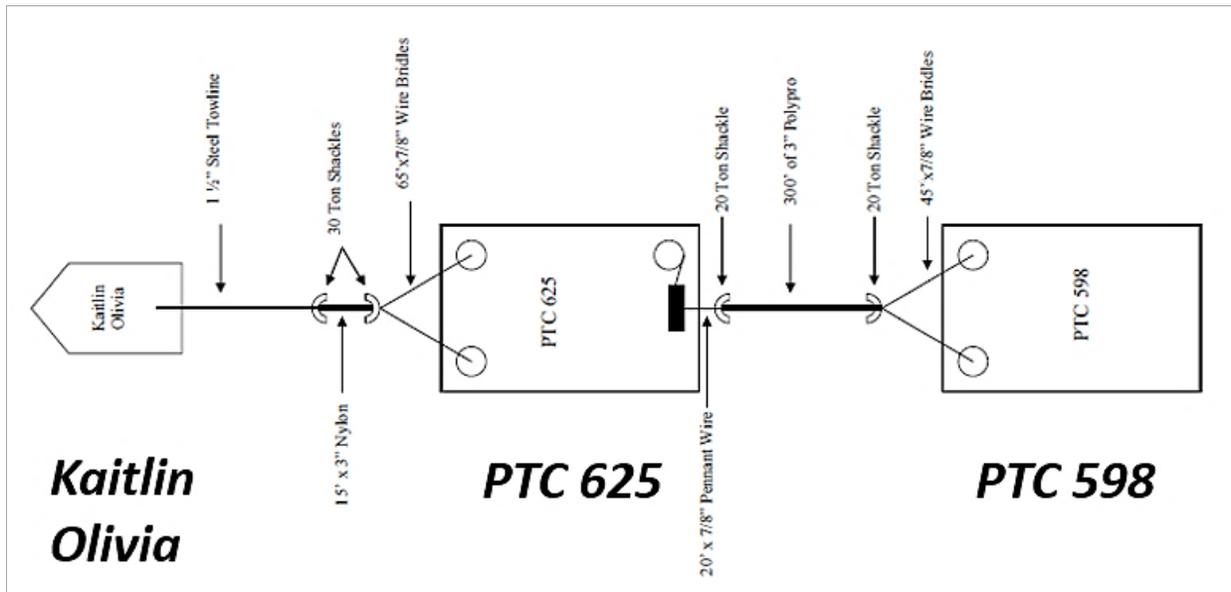
The next morning, November 1, three days before the accident, the *Kaitlin Olivia* got under way pushing the two barges. Later that afternoon, the tow was reconfigured for sea with the barges

² *Bareboat charter* is the lease of a bare ship to charter where the charterer is responsible for crewing, provisioning, maintenance, and all expenses incident to its use. Monroe, Jeffrey W. and Stewart, Robert J., *Dictionary of Maritime and Transportation Terms*, Cornell Maritime Press, Centreville, MD, 2005.

³ LA Carriers, LLC *Picking up or Dropping Barge Inspection Report* is required by 2.2 *Dropping Off or Picking Up Barges in Fleet*, LA Carriers, LLC, Towing Safety Management System Certificate LAC-2017-21, 12/4/2017, Larose, Louisiana.

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strung out in a line astern, the *PTC 625* at 1,000 feet and the *PTC 598* at 1,500 feet. The tow departed Tampa Bay about 1900 and commenced its transit in the Gulf of Mexico toward Mobile.

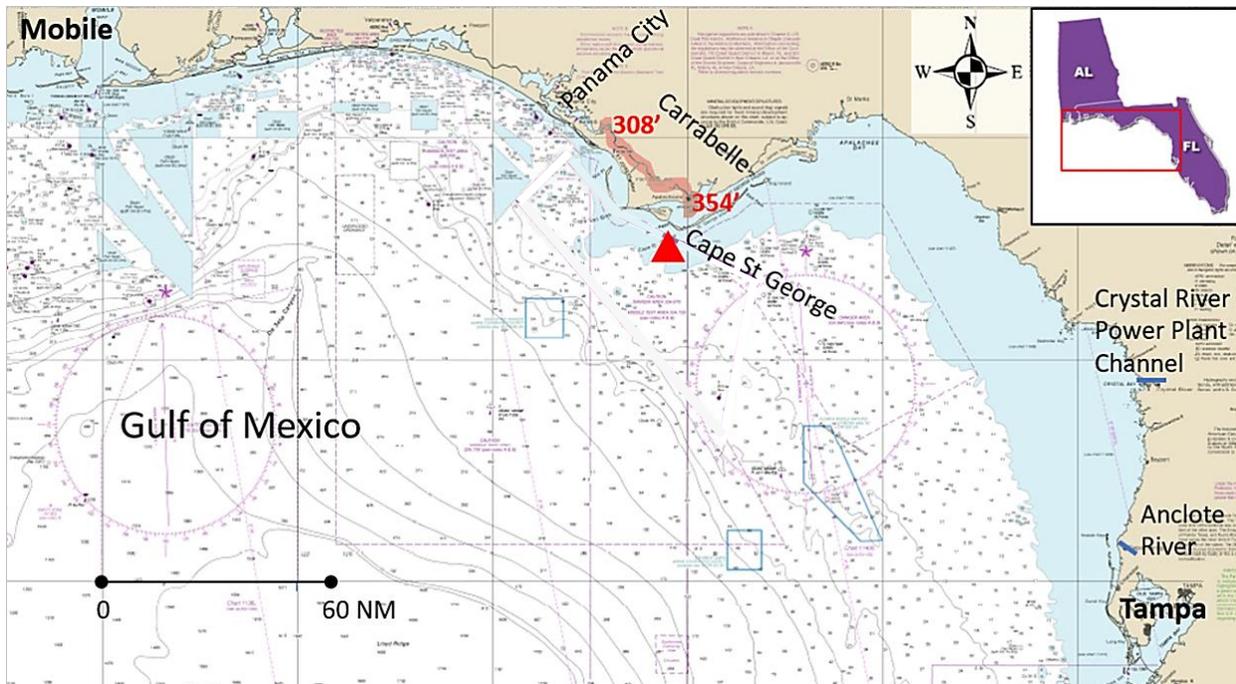


Tow diagram of the *Kaitlin Olivia* and the two barges on the accident voyage. (Source: LA Carriers)

The master's normal 510-mile voyage track to Mobile entailed staying within 12 miles of the coastline when transiting the 140-mile unprotected and open Gulf waters, then entering the Intracoastal Waterway (ICW) at Carrabelle, Florida, and following the ICW the rest of the voyage. Because of shoaling caused by Hurricane Michael in October 2018, the Coast Guard issued a Local Notice to Mariners, reporting that water depths had decreased to 8 feet between ICW miles 308 and 354. Because of these alerts, the master's voyage plan was to enter the ICW past the shoaling area, in the vicinity of Panama City, Florida, and then stay in the ICW to Mobile.

At 0200 on November 4, eastern daylight savings time ended, and clocks were set back to 0100. At that time, seas were about 3–4 feet. About 0600, the mate turned the vessel due west. The tugboat and barges then began taking seas from astern, which "seemed to get choppy" and increased in wave height to about 5 feet. At the end of the mate's watch about 0700, shortly after sunrise, the tugboat was riding well in following seas, and the running lights of both barges were visible. At 0700, the master began his 6-hour watch, and about 0815, he noticed the *PTC 598* riding low by the stern. He did not observe any list. Approximately 15 minutes later, with the barge continuing to ride low in the water, the master changed course toward the coast to get to shallow/protected water and called the company office to report the situation with the barge. The master stated that about 0840, the *PTC 598* sank quickly and the line between the barges parted in the sinking. The master gathered all hands-on deck and brought the tow around to search for the barge's yellow polypropylene tow line. It took about 2 hours for the crew to find, recover, and attach an orange buoy to the line to mark the *PTC 598*'s location. The *Kaitlin Olivia* pulled into nearby Panama City to conduct drug and alcohol testing on the crew (all results were negative) before continuing the voyage to Mobile to deliver the remaining barge.

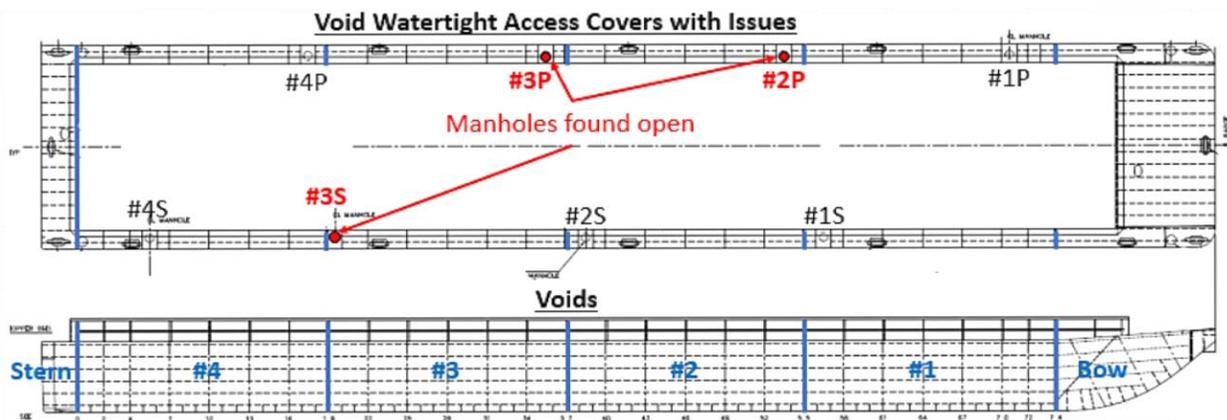
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The coastline from Tampa to Mobile. The red triangle marks the position where barge *PTC 598* sank. The 140-mile stretch of the Intracoastal Waterway (ICW) between Anclote River and Carrabelle, Florida, is not protected. Shaded in red near the top center of the image is the ICW between miles 308 and 354, where shoaling was reported. (NOAA Chart 11006)

Additional Information

On November 17, a diver examined the wreckage of the *PTC 598*, which was found “down hard by the stern” on a sandy bottom at a depth of 52 feet. The dive survey stated that the steel hull and fiberglass cargo covers were damaged when the barge impacted the seafloor. Most of the scrap metal cargo had shifted to the hopper’s stern; a small amount of cargo was on the starboard bow.

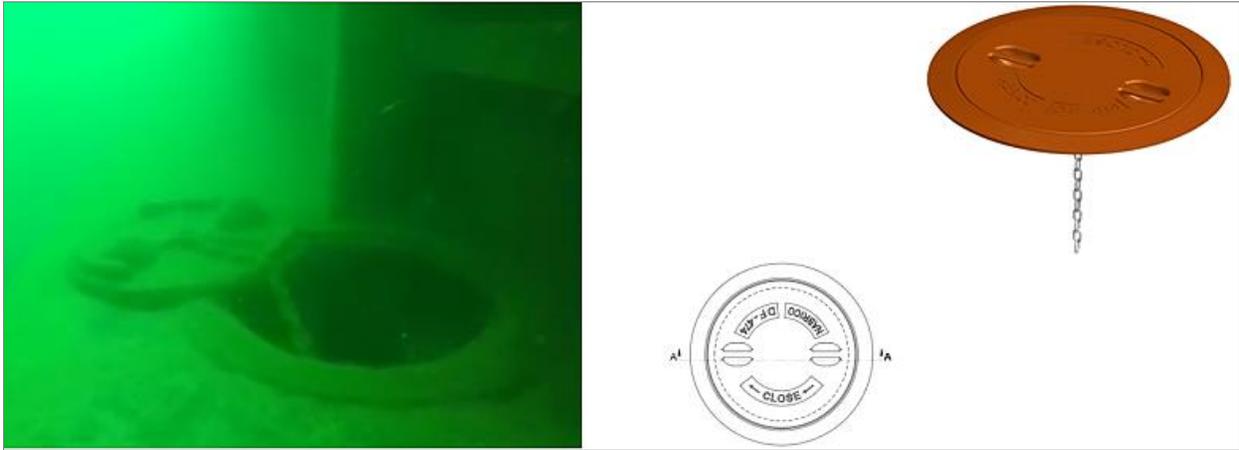


Drawings of *PTC 598* as viewed from above and from the starboard side: The top image shows the three manhole covers found open during the underwater survey. The bottom image shows the six void spaces.

In the underwater video of the barge’s deck, three of the eight manhole covers to the side voids were found open: both port and starboard covers to void no. 3 and the port cover to void no. 2. It is not known if these covers were insufficiently secured, left open, or possibly popped

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open when the barge struck the seafloor. The covers to the bow and stern voids were found in the closed position.



Left, the open starboard manhole to void no. 3. Right, two views of a manufacturer's twist-lock manhole cover. (Photo by MAB Inc; courtesy of NABRICO)

In postaccident interviews, the marine surveyor who had examined the barges before the accident told investigators that the *PTC 598*'s twist-lock manhole covers (flush to the barge's deck) that accessed the side voids appeared serviceable and that the gaskets were intact. He said that all the manhole covers were open during the survey and he did not physically operate any of the securing mechanisms at that time. The surveyor also stated that because of the damaged and inoperative dog assemblies, the hatches on the *PTC 625*'s bow and stern voids would not be watertight.



Postaccident views of two manhole hatch covers to stern voids. Left, a cover on the sunken *PTC 598* is dogged down and secure. Right, a manhole cover on the *PTC 625* is in poor condition, with missing dogs, and strapped down with line. (Photos by MAB Inc and The Shear Group)

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Investigators received vessel drawing plans from the barge's builder and designer, whose representative stated that the barge was designed to operate on rivers and inland waters, not in open seas. Investigators provided the representative the finding in the dive survey that three of the manhole covers to two of the four side voids were open and asked the likely effect on the barge from flooding these two voids. The representative replied that with the barge in a loaded condition (maximum cargo weight carried) and the voids flooded, the barge would likely sink. Further, he stated that if the cargo hopper began flooding, the barge would sink rapidly. The representative also stated that flooding of a side void would likely not result in a list, as the barge had no centerline watertight bulkhead separating the side voids from each other.

During interviews and a search of the Coast Guard's accident database, investigators discovered that LA Carriers had two other recent bareboat charter barges sink in the Gulf of Mexico: barge *Bunge 13003* on October 3, 2017, and barge *MTC 0123* on August 29, 2016. These barges were also used in coastwise service. In its report on the *Bunge 13003* sinking, the Coast Guard determined that "the initiating event was the progressive downflooding into the voids of the barge and the following causal factors included: maintenance not completed and inspection forms not completed accurately; the facility loaded more cargo than the master requested; the dogging mechanisms were difficult to operate; the void access covers were not watertight; insufficient freeboard related to conditions; and weather conditions were unfavorable."

The *PTC 598* and its cargo of scrap steel were not salvaged. After this accident, LA Carriers officials informed investigators that the following changes would be made to the company's TSMS:

1. Stricter barge acceptance terms will require that all dogs be in working order (voids watertight);
2. Barges must not be older than 10 years;
3. Barge depths must be 13–14 feet high to give the loaded barges 1–2 feet more freeboard (the *PTC 598* depth was 12 feet, giving it a freeboard of only 2 feet 6 inches in 4–5-foot seas);
4. LA Carriers will provide weather and seas information to crews for determining whether to get under way or remain in port until conditions improve;
5. On-charter surveys must be fully completed; and
6. On-charter surveyors will recommend whether or not to charter the barges.

Analysis

Barge *PTC 625* lacked watertight integrity when it was surveyed in Mobile and accepted for bareboat charter and when the tow got under way on the accident voyage. The barge owner offered *PTC 625* for charter with inoperative dogs on the watertight manhole covers accessing the bow and stern voids, and LA Carriers accepted the barges despite being made aware of the issue by the on-charter marine surveyor. During the same survey, the *PTC 598* appeared to have all weather- and watertight closures in proper working condition.

LA Carriers' criterion for rough seas was 4 feet, and the sea state was of sufficient concern that the master delayed getting under way until the next morning to allow conditions to improve. While in the Gulf of Mexico with seas at 3–5 feet and loaded to a draft of 9 feet 6 inches—which exceeded the company's draft limit of 9 feet—the *PTC 598*'s deck was awash, as the barge had

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only about 2 feet 6 inches of freeboard. The postaccident dive survey found that the port and starboard manhole covers to void no. 3 and the port cover to void no. 2 were open, indicating that they were likely not properly secured or left open before sailing, and would therefore have allowed water ingress to both voids. As the voids filled with water, the barge's draft would have increased and its freeboard concurrently decreased, allowing boarding seas to more easily reach the lower edge of the weathertight fiberglass cargo covers and flood the barge's single cargo hold, causing the barge to sink rapidly.

The flooding and sinking of the *PTC 598* was the third time a barge chartered by LA Carriers flooded and sank in 3 years, and the three accidents all took place under similar circumstances in the Gulf of Mexico; in fact, the Coast Guard's stated cause for the 2017 sinking of *Bunge 13003* is very similar to the *PTC 598*'s sinking.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the sinking of barge *PTC 598* was flooding of the barge's voids through improperly secured manhole covers due to the charterer's failure to ensure adherence to its procedures for barge watertight integrity and draft limits.

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Vessel Particulars

Vessels	<i>Kaitlin Olivia</i>	<i>PTC 598</i>	<i>PTC 625</i>
Owner / operator	LA Carriers, LLC	Parker Towing Company	Parker Towing Company
Port of registry	Houma, Louisiana	Tuscaloosa, Alabama	Tuscaloosa, Alabama
Flag	United States	United States	United States
Type	Towing vessel	Covered hopper barge	Covered hopper barge
Year built	1998	2007	2008
Official number (US)	1063378	1196977	1214884
IMO number	Not applicable	Not applicable	Not applicable
Construction	Steel	Steel	Steel
Classification society	Not applicable	Not applicable	Not applicable
Length	75 ft (22.9 m)	200 ft (61 m)	200 ft (61 m)
Draft	9 ft (2.7 m)	9.5 ft (2.9 m)	9.5 ft (2.9 m)
Beam/width	26 ft (7.9 m)	35 ft (10.7 m)	35 ft (10.7 m)
Gross tonnage	98	705	705
Engine power; manufacturer	2 x Cummins KTA19 diesels, 1,000 hp (746 kW), Kort nozzles, twin screw	Not applicable	Not applicable
Persons on board	4 persons	0 persons	0 persons

NTSB investigators worked closely with our counterparts from Coast Guard Marine Safety Detachment Panama City throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA19FM005.

Issued: September 19, 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*, 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*, 1154(b).