



National Transportation Safety Board

Marine Accident Brief

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

Accident type	Collision	No.	DCA19FM029
Vessel names	<i>Hawk</i> , <i>Delbert D Black</i> , and unnamed barge		
Location	Pascagoula River near the Ingalls Shipbuilding yard in Pascagoula, Mississippi 30°20.67' N, 88°34.24' W		
Date	March 29, 2019		
Time	1012 central daylight time (coordinated universal time – 5 hours)		
Injuries	Several minor injuries to shoreside workers		
Property damage	\$15–\$20 million est.		
Environmental damage	15 gallons of non-PCB mineral oil discharged into the Pascagoula River		
Weather	Clear skies, light east winds shifting to southeast and strengthening to 6–8 knots, calm seas, air temperature 67°F, water temperature 66°F		
Waterway information	The navigable portion of the Pascagoula River is accessed from the Mississippi Sound via a deep-water channel. The Ingalls Shipbuilding complex is near the river's southern terminus. The area south of the shipyard, to the west of the main river channel, has been dredged to over 30 feet, with a smaller section, known as the "Deep Hole," dredged to 56 feet.		

At 1012 local time on March 29, 2019, while under way and attempting to turn, the heavy lift vessel *Hawk* and its oversized cargo—a floating drydock—collided with an electrical testing barge and the destroyer *Delbert D Black*, which were moored at the Ingalls Shipbuilding complex on the Pascagoula River in Pascagoula, Mississippi.¹ Shipyard workers on the destroyer at the time of the accident reported minor injuries. Fifteen gallons of non-PCB mineral oil from electrical transistors on the barge were discharged into the river. Damage to the floating drydock, barge, destroyer, and the Ingalls pier was estimated at \$15–\$20 million.



Hawk with floating drydock cargo postaccident.

¹ At the time of the accident, the destroyer *Delbert D Black* was under construction for the US Navy and had not yet been delivered to the service.

Background

The 732-foot-long, Norway-flagged *Hawk* was originally built in 1989 as an oil tanker by Brodosplit shipyard in Split, Croatia. In 2008, the tanker was converted to a heavy lift vessel at the Huarun Dadong Dockyard in Shanghai, China. The *Hawk* had a single fixed-pitch propeller driven by a 15,955-hp Split-MAN B&W 6S70MC diesel engine, a single rudder, and bow and stern thrusters rated at 2,584 and 1,360 hp, respectively. The engine, rudder, and bow thrusters could be controlled from the “sea bridge,” which was forward of the cargo deck, or from the “main bridge,” which was aft of the cargo deck. Although only one bridge was in control at any time, company policy required both bridges to be manned by credentialed officers when the vessel was carrying cargo.

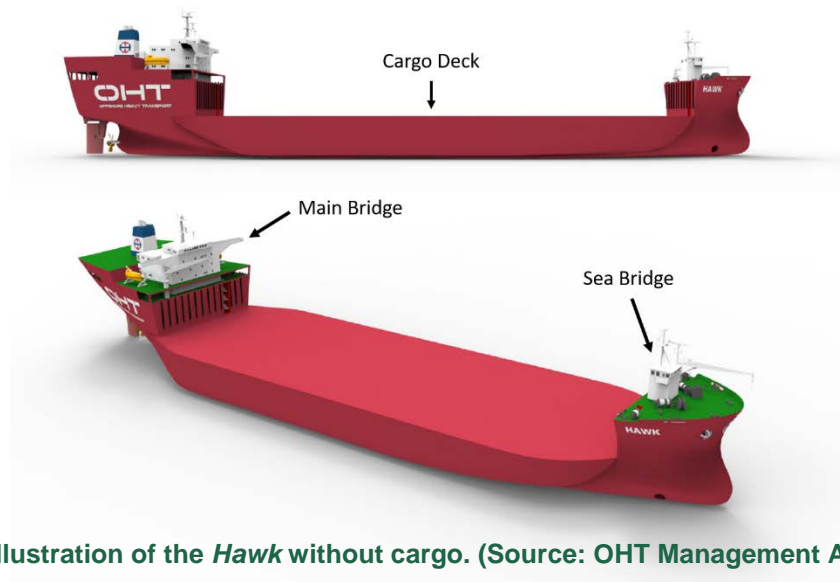


Illustration of the *Hawk* without cargo. (Source: OHT Management AS)

The *Hawk* was semi-submersible, allowing loads to be floated over the cargo deck while the vessel was ballasted down and then lifted out of the water when the ship was deballasted. The drydock that was loaded on the *Hawk* at the time of the accident had been constructed in Qingdao, China, and was being delivered to the Ingalls shipyard in Pascagoula. It was constructed in three sections, with the largest center section sized to fit nearly the entire length of the *Hawk*'s cargo deck. The remaining forward and aft sections were loaded on top of the drydock center section before the entire load was floated aboard the *Hawk*. When in position on the vessel, the walls of the drydock sections completely blocked the view aft from the sea bridge and forward from the main bridge, and the sides of the center section overhung the side of the cargo deck by 25 feet on both sides. The combined sail area of the ship and cargo (that is, the area of the above-water silhouette of a vessel and cargo, as viewed from abeam) was calculated to be over 92,000 square feet.²

Accident Events

After an approximately 60-day transit from Qingdao, the *Hawk* anchored off the Mississippi coast on March 27, awaiting entry into port 2 days later. While at anchor, a US Coast Guard port state control inspection was conducted, which, the vessel's chief engineer said,

² Sail area calculation from National Transportation Safety Board (NTSB), *M/V Hawk Wind Effect Study*, Washington, DC: NTSB, 2019.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

included a test of the *Hawk*'s steering system. According to Coast Guard records, no discrepancies were noted during the inspection.

At 0450 on March 29, the crew of the *Hawk* commenced heaving in the anchor, and 20 minutes later, the vessel was under way. The vessel's intended destination was an anchorage known as the "Deep Hole" just off the southwest corner of the Ingalls facility. The Deep Hole was dredged significantly deeper than surrounding waters and provided an area where the *Hawk* could ballast down and offload the drydock.



Accident location indicated by the red triangle. (Background source: Google Maps)

At 0700, the *Hawk* arrived at the pilot station where it was met by a pilot boat with three pilots aboard. The pilot boat made circles around the heavy lift ship while the pilots took photographs and noted the dimensions of the drydock. At 0755, the pilots boarded the ship. Upon boarding, the first two pilots (hereinafter referred to as pilot 1 and pilot 2) proceeded to the sea bridge forward, while the third pilot (hereinafter referred to as pilot 3) proceeded to the main bridge aft. Pilots 1 and 2 met the vessel's master on the sea bridge, where the ship was being controlled. After conducting a master/pilot exchange and setting up a portable pilot unit (PPU), pilot 1 took the conn of the *Hawk*.³

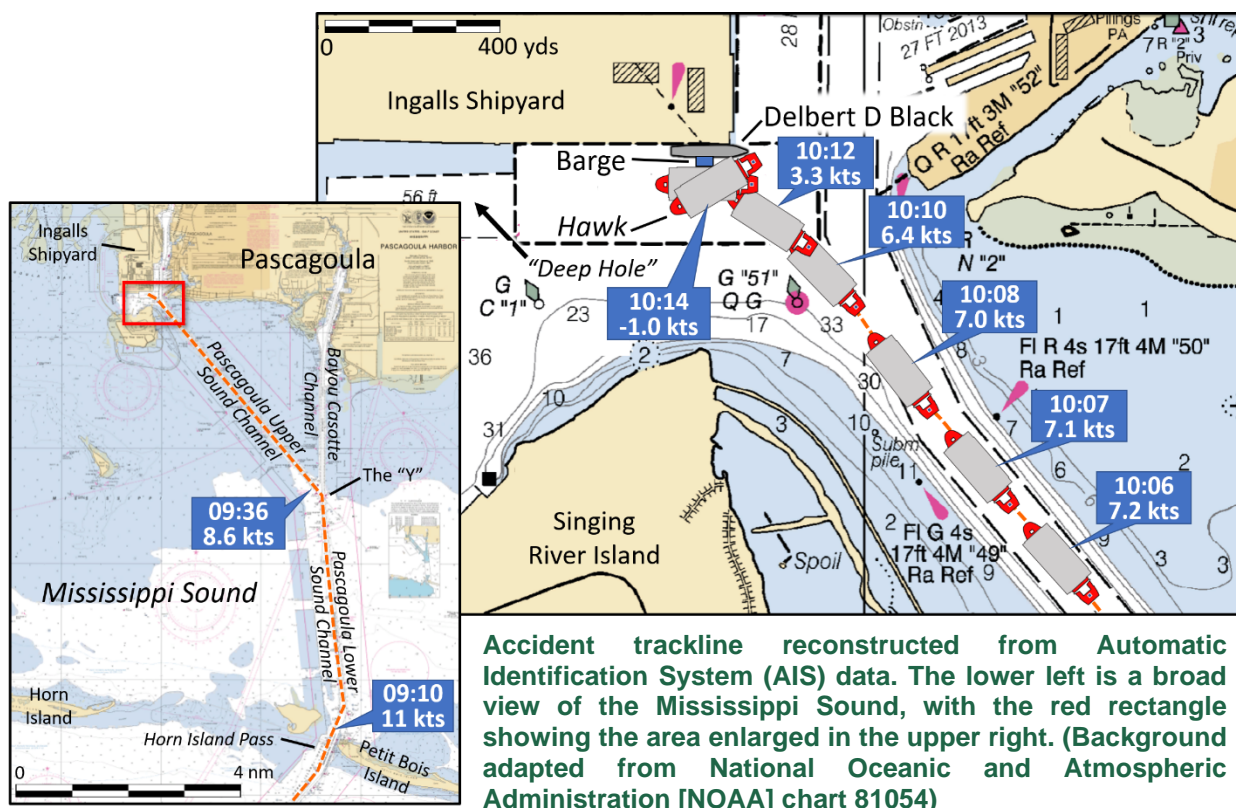
About the time that pilot 1 took the conn, the pilots were informed that the port of Pascagoula was experiencing heavy fog. Consequently, the *Hawk* loitered outside the barrier

³ A PPU unit is a compact laptop computer or tablet device with electronic navigation and charting software that pilots use for navigation (in addition to the vessel's own navigation equipment).

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

islands off the Mississippi coast until the fog cleared. About a half hour later, when pilot 1 stated that he could see the Ingalls Shipyard, he steered the vessel into the ship channel to begin the inbound transit. The ship proceeded through Horn Island Pass at a speed of about 11 knots, making two port turns as it entered the Mississippi Sound. Pilot 1 told investigators that the *Hawk* “came right around” through these turns using 10 degrees rudder, and pilot 2 echoed these remarks, stating that the *Hawk* was “handling well.”

About 0936, as the vessel neared a channel intersection known as the “Y,” pilot 1 ordered the engine to half ahead, and when the *Hawk* had completed the turn through the Y, the ship’s speed had reduced to 8.3 knots. Three tugboats, the *Signet Victory*, *Signet Valiant*, and *Signet Reliance*, had been standing by at the Y, and as the *Hawk* steadied on course in the Pascagoula Upper Sound Channel, Pilot 1 ordered the *Signet Victory* and *Signet Valiant* to make up to *Hawk*’s stern on the port and starboard sides, respectively. The two tugboats made up as ordered, each paying out about 100 feet of line so that they were running parallel with each other astern of the *Hawk*. Pilot 1 ordered the *Signet Reliance* to make up to the *Hawk*’s port bow, but the tugboat’s captain told the pilot that the overhang of the ship’s cargo prevented him from safely making up to the location. Consequently, the *Signet Reliance* ran alongside the heavy lift ship, standing off the port bow. Pilot 2 later told investigators that, although he had sometimes used a forward tug to help maneuver the ship in the past, it had not been the plan to use the *Signet Reliance* in this way—the tugboat was there to assist with the anchoring.



As the *Hawk* transited up the Pascagoula Lower Sound Channel, pilot 2 discussed with pilot 1 the need for a fourth tugboat to assist with positioning the vessel for anchoring when it arrived at the Deep Hole. Both agreed that the extra tugboat was needed, so pilot 2 made a call to order the tugboat. The pilots stated that the additional tugboat was needed only to assist with anchoring at the Deep Hole and was not intended to assist with maneuvering in the channel.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

The *Hawk* master told investigators that, about 2 miles before the ship entered the pass that marked the entrance to the Pascagoula River, he recommended slowing the vessel. He informed the pilots that, as a loaded heavy lift ship, the *Hawk*'s speed reduced very slowly (during interviews, pilot 2 confirmed that the master had so advised them). Pilot 1 ordered the aft tugboats to drag (that is, to take engines to idle so that the weight of the tugboats took strain on the towing lines) and then to "work slow astern."

As the ship passed beacon 47 at 1002, about a mile from the final turn toward the Deep Hole, pilot 1 ordered the *Hawk*'s engine to slow ahead. The vessel's speed was 7.5 knots. About the same time, he called a fishing vessel that was downbound on the Pascagoula River and asked the vessel's captain about the current in the river. The fishing vessel's captain replied that he was not experiencing any current.

As the ship passed between beacons 49 and 50, its speed had only reduced by 0.4 knots. Pilot 2 stated that he advised pilot 1 that "we need to slow down," to which pilot 1 responded, "I'm trying to slow down." Noting that the speed was not decreasing, pilot 1 ordered the aft tugboats to back half. At that time, he also checked tidal information using his mobile phone, and noted that it was about midway through a flood tide. Checking the ship's speed again, he observed that it was still not decreasing. Consequently, he ordered the tugboats to back full.

North of beacons 49 and 50, where the channel makes a slight turn to starboard, pilot 1 ordered 10 degrees starboard rudder. He allowed the ship to begin to turn to starboard before he checked the swing.⁴ Pilot 1 told investigators that he considered stopping the ship's engine to slow down, but he was concerned that the ship would lose steerageway. He believed that the *Hawk* was being set to the port side of the channel, and the ship needed to get past buoy 51 on the port side before turning toward the Deep Hole.

As the *Hawk* passed buoy 51 at 1010, pilot 1 ordered port 20 degrees rudder to make the turn. Pilot 2 recommended rudder hard to port, and pilot 1 increased the rudder order to hard to port. Pilot 1 told investigators that the ship began to turn to port, but then the rate of turn slowed.

Ahead of the *Hawk*, the *Delbert D Black*, a destroyer under construction for the US Navy, was moored at the southeast end of the Ingalls Shipbuilding facility, port side to the dock. On the day of the accident, shipyard personnel were testing the vessel's three generators. A barge carrying an electrical load bank was moored outboard the destroyer, and electrical cables had been rigged from the load bank to the ship's switchboards. The *Delbert D Black*'s generators were online at the time of the accident and providing power to the barge load bank.

Realizing that the *Hawk* was turning wide and was in danger of hitting the barge, pilot 1 ordered the two aft tugboats to "pull to the east." By pulling in this direction, off the heavy lift ship's starboard quarter, the pilot hoped to increase the rate of turn. About the same time, the *Hawk*'s master put both the bow and stern thrusters to port. As the ship continued moving forward, pilot 1 ordered the engine to stop. He then ordered the engine to half astern, followed by full astern on the recommendation of pilot 2.

⁴ To *check the swing* of a vessel means to slow or stop the vessel from turning. This may require simply moving the rudder to amidship, or it may require a brief period of opposite rudder to counteract the turning momentum. When interviewed by investigators, pilot 1 did not state what rudder order he used to check the swing of the *Hawk*.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

As the ship approached the barge, pilot 1 ordered the tugboats to sound their whistles and ordered the *Hawk*'s crew to drop the port anchor in an attempt to arrest the forward motion of the vessel. At the sound of the whistles, shipyard workers on the *Delbert D Black* began evacuating to shore. The captain of the *Signet Reliance*, which had been standing off the *Hawk*'s port bow, asked pilot 1 if he wanted the tugboat to move to the starboard bow and attempt to push the heavy lift ship away from the barge. The pilot agreed, and the *Signet Reliance* repositioned to the opposite bow. However, once the tugboat was on the starboard side, there was little room between the *Hawk* and the barge. The *Signet Reliance* captain stated that he was forced to move out of the way to avoid endangering his vessel and crew. The tugboat moved aft along the starboard side of the *Hawk* until it was clear of the larger vessel.

At 1012, the starboard side of the drydock on the *Hawk* struck the electrical testing barge, puncturing the side of the drydock. At the time of the impact, the heavy lift ship was making 3.3 knots. An electrical fire broke out on the barge and was extinguished by shipyard workers using portable CO₂ extinguishers. The force of the impact drove a 3-foot-high steel beam on the barge into the *Delbert D Black*, causing damage to the destroyer's weather decks, boat davit, and a bulkhead on the aft superstructure. The barge was driven into the side of the destroyer's hull, creating a breach at the waterline that resulted in flooding in berthing and equipment spaces on the ship.

After the initial collision, the stern of the *Hawk* continued to swing, pivoting on the barge toward the destroyer's bow. Concerned with the stern's movement, pilot 3 took control of the aft tugboats and ordered the *Signet Valiant* to pull the port stern at a 90-degree angle to the side of the ship at full astern power. However, before the tugboat came up to full speed, the line to the *Hawk* parted. The *Hawk* then began moving astern until the aft starboard corner of the drydock struck the starboard bow of the *Delbert D Black*, causing indentations in the hull and deck plating along the deck edge.

Additional Information

The loadmaster for the *Hawk* told investigators that a "special meeting" had been conducted on March 26, prior to the ship's arrival, with the service provider who arranged for tugboats and pilots, the Jackson County Harbor Master, and the vessel owner.⁵ The loadmaster stated that during this meeting, he had informed attendees that "this cargo is a less comfortable cargo" than the oil rigs that the *Hawk* usually carried. The loadmaster had been involved in the loading of the drydock in China and noted that visibility from each of the bridges was obscured and that wind had a large effect. The pilots were not informed of this meeting, and when asked by investigators, the Harbor Master could not recall the meeting.

Pilot 1 stated that he had attended an earlier meeting, held in February, during which he had requested larger tugboats for the ship movement. With a 42.5-ton-bollard-pull rating, the *Signet Victory* and *Signet Valiant* were smaller compared to other tugboats in the Signet fleet. The *Signet Reliance* was a 63-ton-bollard-pull vessel. According to the tugboat company representative responsible for assigning tugboats, additional larger tugboats were not available at the time of the *Hawk*'s transit into Pascagoula.

⁵ The *loadmaster* was an employee of the *Hawk*'s operator and a former heavy-lift ship master who was responsible for the loading and unloading of the cargo at the departure and arrival ports. He was not a member of the crew and preceded the ship's arrival in Pascagoula.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

Pilot 1 had been a pilot in Pascagoula for 14 years. He stated that he had piloted more than 3,000 ship movements prior to the accident, all without incident. He had conned heavy lift ships about 25 times in the past, both loaded and unloaded. Most of the loaded vessels had been carrying oil rigs and jack-up boats; none had been carrying a load the size of the drydock. Pilot 2 had been a pilot in Pascagoula for 7 years and had piloted 10–12 heavy lift ships, both loaded and unloaded, prior to the accident voyage. He said that he had never piloted a ship carrying a cargo with the large overhangs and reduced visibility created by the drydock. Pilot 3 had been a pilot in Pascagoula for 33 years and told investigators that he piloted between 5–6 heavy lifts ships per year, about half of which were loaded.

The master of the *Hawk* said that he had held a master's credential for 23 years. He had 12 years' experience on heavy lift ships, 5 years as chief mate and 7 years as master. The accident voyage was his third contract aboard the *Hawk*, totaling 1 year on board. Previously, he had captained the heavy lift ship *Triumph* into Pascagoula while the ship was in ballast.

Despite the fog that initially delayed the *Hawk's* entry into port, visibility at the time of the accident was clear. When the ship began its inbound transit through the Mississippi Sound, a 3–4 knot wind was out of the northeast. By the time of the accident, the winds had increased to 6–8 knots and had shifted to the southeast. The change in direction was consistent with the normal sea breeze circulation expected in the area. The predicted range of tide on the accident date was 1.44 feet, with low tide at 0441 and high tide at 1635.⁶

Analysis

As the *Hawk* approached the end of the channel prior to the turn into the Ingalls shipyard basin, the southeast wind (which had increased to 6–8 knots) was on the vessel's stern. As the vessel commenced the turn towards the Deep Hole, the wind that was previously on the vessel's stern was on its port quarter and port side, pushing the vessel towards the dock and the destroyer. Considering the large sail area presented by the drydock, the NTSB conducted a study to estimate the impact of the wind on the turning ability of the *Hawk* during the maneuver into the Deep Hole (*M/V Hawk Wind Effect Study*). The study found that the 8-knot wind had only a small effect. Thus, the increased wind was likely not a significant factor in the accident.

Although the tidal current was near maximum flood at the time of the accident, the range of tide was small (1.44 feet), and the period was long (nearly 12 hours). The effect of the flood current was likely minimal. A captain of a fishing vessel located in the Pascagoula River related to the pilots that he was experiencing no current.

As the *Hawk* approached the entrance to the Pascagoula River, the master warned the pilots that the vessel was slow in reducing speed and recommended reducing speed earlier. However, pilot 1 was reluctant to reduce the vessel's engine speed over concerns that he would have less rudder control and that the vessel would be set down onto the port side of the channel. The pilot instead opted to use the tugboats made up to the stern to slow the *Hawk*, eventually ordering back full on both tugboats. Pilot 2 told investigators that “we knew we had a speed problem before the turn” toward the Deep Hole. The vessel did not slow as pilot 1 expected, and the tugboats made

⁶ Tidal predications and measurements from the Pascagoula National Oceanic and Atmospheric Administration (NOAA) Laboratory located 1.3 miles north of the accident site on the Pascagoula River.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

up to the stern did not have enough power to sufficiently reduce the *Hawk*'s speed prior to making the turn.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision of the heavy lift vessel *Hawk* with a docked barge and the destroyer *Delbert D Black* was the speed at which the conning pilot was operating the *Hawk* while attempting to turn and anchor in a shipyard basin.

Collision of Heavy Lift Vessel *Hawk* with Unnamed Barge and Destroyer *Delbert D Black*

Vessel Particulars

Vessels	<i>Hawk</i>	<i>Delbert D Black</i>	Barge
Owner/operator	OHT Hawk AS/ OHT Management AS	Ingalls Shipbuilding	Ingalls Shipbuilding
Port of Registry/ Homeport	Oslo	Undesignated – under construction	Pascagoula
Flag	Norway	Undesignated – under construction	United States
Type	Heavy lift vessel	Destroyer	Barge
Year built	1989 (converted 2008)	Under construction	Unknown
IMO number	8616556	N/A	N/A
Classification society	DNV-GL	N/A	N/A
Construction	Steel	Steel	Steel
Length	732 ft (223.1 m)	509.5 ft (155.3 m)	110 ft (33.5 m)
Beam/width	182.1 ft (55.5 m)	66.4 ft (20.2 m)	52 ft (15.8 m)
Draft	33.1 ft (10.1 m)	32.5 ft (9.9 m)	7 ft (2.1 m)
Tonnage	44,657 GT ITC	N/A	Unknown
Displacement	89,057 long tons (90,486 metric tons)	9,200 long tons (9,348 metric tons)	Unknown
Engine power; manufacturer	15,955 hp (11,898 kW) Split-MAN B&W 6S70MC diesel engine (direct drive)	4 X 30,000 hp (22,371 kW) General Electric LM2500 gas turbine engines	None
Persons on board	35	Approximately 350 shipyard and other personnel between both vessels	

NTSB investigators worked closely with our counterparts from Coast Guard Sector Mobile throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA19FM029.

Issued: January 22, 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).