

National Transportation Safety Board

Marine Accident Brief

Allision of the ITB Krystal Sea/Cordova Provider with US Coast Guard Cutter Sycamore

| Accident no. | DCA13PM031 |
|-------------------------|---|
| Vessel names | Integrated tug and barge <i>Krystal Sea/Cordova Provider</i> US Coast Guard cutter <i>Sycamore</i> (WLB-209) |
| Accident type | Allision |
| Location | Cordova Harbor, Alaska |
| Date, time | July 28, 2013 0616 Alaska daylight time (universal coordinated time – 8 hours) |
| Injuries | None |
| Damage | Sycamore: \$243,884 Krystal Sea/Cordova Provider: \$5,000 (est.) |
| Environmental damage | None |
| Weather | Variable visibility from 0.25 to 4 miles due to patchy, directional fog/low clouds; calm seas, light winds about 2 knots, air temperature $56\degree$ F, water temperature $52\degree$ F |
| Waterway information | Orca Inlet, an arm of Prince William Sound in southern Alaska, provides access to the port of Cordova from the Gulf of Alaska; calm surface, near high tide, estimated 1-knot ebb current (following) |

The integrated tug and barge *Krystal Sea/Cordova Provider* with four crewmembers on board was maneuvering to dock at the Alaska Marine Lines pier in Cordova, Alaska, when the bow ramp of the barge struck the moored US Coast Guard cutter *Sycamore* at the adjacent pier at 0616 on Sunday, July 28, 2013. The *Sycamore*, with 11 crewmembers on board, suffered about \$244,000 in damage. The *Cordova Provider*'s bow ramp sustained about \$5,000 in damage. No injuries or pollution were reported.



Integrated tug and barge *Krystal Sea/Cordova Provider* departing Cordova a few days after the accident in Orca Inlet, Prince William Sound, Alaska.

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As this casualty involved both Coast Guard and private vessels and the initial damage estimate exceeded \$75,000, the National Transportation Safety Board (NTSB) led the investigation. The parties to the investigation were Bering Marine Corporation, owner and operator of the *Krystal Sea/Cordova Provider*, and the Coast Guard.

Vessels

Krystal Sea/Cordova Provider. The tug *Krystal Sea* was designed to fit the dry cargo barge *Cordova Provider*. When mechanically locked together with the tug bow pushed into a stern notch on the barge, the tug and barge function as a single 260-foot-long unit referred to as an integrated tug and barge (ITB). Although the two vessels primarily operate in this manner, as a dual-mode ITB the *Krystal Sea* also can make up to other barges without a notch and can conduct ship assists. The *Cordova Provider* is capable of loading 32 53-foot containers or 36 40-foot containers.

The ITB provides year-round service in Prince William Sound between the ports of Whittier, Cordova, and Valdez, Alaska. The busiest period for the tug and barge is salmon season, from July to August, when the ITB averages one port arrival and one departure each day, each voyage typically lasting 12 hours with 3 to 4 hours in each port working cargo.



The allision occurred in Cordova, Alaska, east of Prince William Sound. At the time of the accident, the *Krystal Sea/Cordova Provider* was completing a 98-mile transit from Whittier, Alaska, to Cordova. (Background by Google Earth)

The *Krystal Sea* is propelled by twin azimuthing stern drives (ASD). Each ASD is shaft-driven by its respective main engine and able to rotate 360 degrees via integral hydraulic motors. This rotation, used in conjunction with engine throttle control, allows for variable thrust in any direction, eliminating the need for rudders.

As an uninspected towing vessel (UTV), the *Krystal Sea* is not required to be inspected by the Coast Guard. The *Cordova Provider* had a current Coast Guard certificate of inspection (COI), stability letter, and load line certificate. The COI permitted the barge to also operate as an oil spill response vessel with 8 dirty oil tanks and 14 associated response personnel, but prohibited carrying oil cargoes in commercial trade.

The ITB is operated by Bering Marine, which is owned by Lynden Incorporated, an international transportation and logistics enterprise and one of the largest businesses in Alaska. Lynden owns more than a dozen air, sea, and land transport companies across several industry sectors. The Alaska Marine Lines (AML) pier, where the ITB docked, is also owned by Lynden.

The ITB had a crew of four—a credentialed deck officer and a line handler for each watch. Crewmembers worked 6 hours on and 6 hours off. The two watchstanders handled all arrival, cargo operations, and departure duties. The credentialed deck officers were a captain and a mate, and the line handlers were an able bodied seaman and a deckhand.

Sycamore. The Sycamore, home-ported in Cordova, is a 225-foot buoy tender supporting aids to navigation and conducting marine environmental protection, maritime law enforcement, icebreaking, and search and rescue operations in the region. The cutter had been in port for 2 weeks before the allision. The morning of the accident, the vessel was moored starboard side to the North Fill Pier, Cordova, with "standard mooring lines doubled," per the cutter's logs. The bridge area was used as the quarterdeck while the cutter was docked, with an in-port officer-of-the-deck standing watch and crew maintaining an in-port security watch.



Coast Guard cutter Sycamore under way off the coast of Alaska. (Photo by Coast Guard)

Accident Voyage

The *Krystal Sea/Cordova Provider* departed Whittier on the evening of July 27 for a 12-hour, 98-mile transit to Cordova with a load of containers, most of them empty. The next morning, July 28, the mate had been transiting the Western Channel on autopilot at about 9 knots when the captain relieved the mate at the end of his 0000–0600 watch. They discussed the weather, vessel position, docking, and the plan for the day. With a favorable high tide, they chose to transit through the Western Channel rather than through the longer and deeper Orca Channel, east of Observation Island, to save about 30 minutes between ports.



Approximate course of the *Krystal Sea* based on AIS data (background from NOAA chart 16709). Inset shows details of Cordova Harbor, the *Sycamore* dock, the ITB's intended dock at AML pier, and the Alaska Marine Highway ferry pier where the captain began to disengage autopilot (excerpt from NOAA chart 16710).

Sunrise was at 0511. Before leaving the bridge, the mate turned up the brightness of the indicator lights on the control consoles for daylight operations because they had been dimmed through the night. The captain took over navigation and continued to use the vessel's autopilot system while using the vessel's global positioning system (GPS) and radars to augment his vision. When he reached the south end of the channel, he had both engines' throttles at about half-power, corresponding to 1,200 rpm and about 9 knots.

As the ITB approached the AML dock about an hour after sunrise, visibility was restricted due to variable patches of "low clouds or fog," as reported by the captain. The captain had the ITB's navigation lights on but did not sound fog signals, which he had done on a similar approach a couple of days earlier in heavier fog. The captain stated that "the fog was laid in there" that morning and he "could not see the AML dock until the bow of the barge was about 150 feet from the north dolphin." Although he could see the white superstructure of the Coast Guard cutter, its black hull was obscured (see photo taken from *Sycamore's* foredeck minutes after the accident for indication of visibility).

The captain stated that he reduced the throttle to less than 1,000 rpm as he passed the Alaska Marine Highway ferry pier, which was about one-third of a mile from the AML dock. AIS data indicate that the vessel slowed to 7.5 knots when the ITB was abreast of the ferry pier. At the same time, the captain began his final approach by disengaging the autopilot and operating both ASDs in manual with the port and starboard control levers. He rotated both ASDs to thrust 90 degrees outboard to slow further.

Up to this point, the approach had been typical and routine, but the captain noticed the ITB was not slowing at the rate he anticipated, and he confirmed this by verifying his speed on the GPS. He first thought the following current was pushing the ITB forward, and in response he gave both ASDs more thrust because greater outboard thrust slows the vessel at a faster rate. He stated that at the corner of the AML dock, with the bow of the barge about 350 feet from the Coast Guard cutter's bow, the ITB was at a 45 degree angle to the pier and still not slowing as expected. He therefore rotated both ASDs and increased throttle to provide maximum stopping power. The ITB slowed but again not as much as expected, and at this time the captain realized he had a problem with the vessel. He then rotated the port ASD to thrust outboard and kept the starboard ASD thrusting forward in an attempt to "swing the bow out" to avoid impact with the cutter.

The captain was unaware at the time that, although the port ASD was thrusting as directed by his manual helm input, the starboard unit was not successfully disengaged from autopilot and remained thrusting in a direction to maintain his last autopilot course input, which the accident captain stated was parallel with the dock.

The captain sounded five blasts on the ship's whistle as a danger signal. After two blasts, the ITB's bow ramp struck the port bow of the moored *Sycamore* at about a 45 degree angle and slid down the cutter's bulwark. After contact, the captain put both propulsion units to idle.



Position and speed of *Krystal Sea/Cordova Provider* based on AIS data for the minutes leading up to the allision. The ferry *Chenega* was docked at the Alaska Marine Highway ferry pier. (Images provided by Coast Guard)

The mate was in his cabin when he heard throttle changes and then felt some "waffling." Concerned, he stepped outside, saw the bow ramp at an odd angle, and headed to the wheelhouse. Upon entering the wheelhouse, he stated that he immediately saw the starboard autopilot "engaged" light was lit. He moved to the console and pressed the button to disengage the starboard autopilot and then pressed another button for manual control; he took control of the vessel from the captain and backed the ITB away from the cutter. He then returned control to the captain, who brought the tug and barge back around to the AML pier and tied up.

The able bodied seaman was on deck getting set to tie up the ITB when he also heard unusual changes in throttle as the *Krystal Sea* approached the pier. He called the wheelhouse on his handheld VHF radio but received no response. He was heading toward the bow when he saw the vessel pass its intended dock, and he said he tried several more times to contact the captain using his VHF radio, still with no reply.

Aboard the *Sycamore*, the watch crew had secured the cutter's deck lights at sunrise but kept its aircraft warning lights on. Three crewmembers on the bridge saw the ITB approach the harbor about 0600 and near the pier at 0610. At 0615, they believed the ITB was too close. The bridge watch heard the *Krystal Sea*'s danger signals, two before impact and three afterwards. Crewmembers reported they noticed the *Krystal Sea* was approaching the cutter at an unusual angle and at a faster speed than normal.

Witnesses on the cutter felt the impact and saw the *Cordova Provider*'s bow ramp bend the cutter's steel portside bulwark over. The cutter surged aft and starboard against the dock before bouncing back. The allision was recorded in the cutter's log remarks sheet at 0616. After impact, watchstanders on board the *Sycamore* sounded the collision signal (two blasts on the whistle) and accounted for all crew. Immediate internal inspection of the ship's hull by the crew was completed by 0620 and revealed no damage below the waterline.



Folded portside forecastle bulwark of the cutter Sycamore a few minutes following the allision, foreground. Visible just ahead of the Sycamore's bow, the ITB Krystal Sea/Cordova Provider nears the Alaska Marine Lines pier to dock following the accident. (Photo by Coast Guard)

Damage

The bow ramp of the *Cordova Provider* struck the portside forecastle bulwark on the *Sycamore* about 15 feet from the stem and raked along its length. A surveyor's report indicated the barge's bow ramp forced the cutter's port side down while pushing the vessel aft and starboard against the mooring fenders at the waterline. The *Sycamore* then rolled to starboard before the cutter's bow impacted the dock. The report stated the 3/8-inch-thick steel plating of the port bulwark was bent inward over an area 41 feet long and 4.5 feet high, and eleven 44-inch-tall, 3/8-inch-thick bulwark frames were bent and fractured, as was all the damaged bulwark's longitudinal framing. Five tank vents, including a fuel oil tank vent, and other piping located immediately inside of the damaged bulwark were bent and cracked, and a main fire valve and a 50-caliber gun mount were severely damaged. One of the forward bow lines (no. 2) was completely parted, and a spring line (no. 5) was stretched and later determined unusable. The damage to the hull was sustained from the vessel being rammed into the fenders between the hull and the pier.

Bering Marine stated that Coast Guard invoices reported the total cost to repair the *Sycamore* was about \$243,884, including an underwater hull survey.



Damaged port bulwark plating and frames of Sycamore.

Bering Marine received a repair estimate of \$5,000 for the ITB *Krystal Sea*, citing minor damage to a port side beam and paint. The accident did not affect the operation of the ramp or alter the vessel's schedule.

Personnel

At the time of the accident, the *Krystal Sea* captain had worked in the maritime industry for more than 40 years, sailing as captain since 1980. He held a master's credential with qualifications for radar, automatic radar plotting aids (ARPA), and electronic chart display and information systems (ECDIS). He had been on board the ITB for 1 week before the accident, and the *Krystal Sea* was the first vessel he operated with azimuthing stern drives, although he had about 14 years' experience operating maneuverable vessels with Voith-Schneider propulsion drives. He had worked for Bering Marine for about 45 days on various vessels when the accident occurred. Because he was new to the *Krystal Sea*, Bering Marine arranged for the vessel's senior captain, who had worked in the marine industry for more than 20 years with 7 years of direct experience operating the *Krystal Sea*, to remain on board and overlap with the newer captain had witnessed two docking maneuvers, handled four such maneuvers of the *Krystal Sea/Cordova Provider* under the supervision of the senior captain, and docked and undocked the ITB alone at least twice in Cordova and a few times in Whittier and Valdez. The senior captain said he was very comfortable with the performance of the new captain.

The senior captain stated he had trained five other new operators in the previous five years and provided verbal assessments to the Bering Marine port captain. The port captain was responsible for personnel management and training, safety, and overall fleet operations. Additionally, he served intermittently as relief captain of the ITB and on occasion personally conducted onboard familiarization training for new operators.

The mate on the *Krystal Sea* had been sailing for 18 years at the time of the accident and was credentialed as mate of 500-ton towing vessels on near-coastal waters and as an able seaman. He was a seasonal employee and had been with the company for 2 months during the

busy summer season. The able bodied seaman on watch with the captain at the time of the allision had 6 years of experience with the company, solely on board the *Krystal Sea*.

After the incident, the *Krystal Sea*'s two watchstanders—the captain and the deckhand—were tested for drugs and alcohol, both with negative results. Investigator review of the records of the vessel cell phone and the captain's personal cell phone indicate that phone use was not a distraction.

Autopilot and ASD Operation

The Simrad AP9 MK3 autopilot on the *Krystal Sea* is connected to both the port and starboard ASDs. When the vessel is in autopilot mode, the operator manually controls the ASD propeller thrust to adjust vessel speed, but the autopilot unit continually adjusts the ASD rotation to hold the operator's chosen course. The autopilot mode has two settings—Auto and Work. The Work setting provides a quicker response and holds a tighter course than the Auto setting.

The autopilot system displays the tug's ordered course, its actual course, and the autopilot's actual command to the ASDs to achieve the ordered course. When autopilot is engaged, the operator can either turn a knob to adjust the course heading or make adjustments in increments of 1 degree using port or starboard pushbuttons. The autopilot aboard the *Krystal Sea* does not have GPS input and cannot follow a programmed trackline. The operator must adjust the heading for each course change and manually compensate for set and drift.

In manual mode, the autopilot is passive and manual steering commands are carried out using the separately mounted port and starboard ASD control levers (see photo below). These levers combine rotation and thrust in a single control—rotating the levers changes the direction of thrust, while moving the levers up and down controls the amount of thrust by changing the engine throttle. Each ASD is also fitted with a thrust indicator panel that shows the thrust direction and propeller rpm for the ASD.



Krystal Sea bridge console, port side, looking forward. Starboard side ASD controls are similar.

To disengage the *Krystal Sea* autopilot and engage manual control for both propulsion ASDs, the operator must push three buttons in two steps:

- 1. Push "engage/disengage" button on both the port and starboard ASD propulsion control panels
- 2. Push "helmsman" button on the autopilot panel

Although the accident captain believed he had correctly pushed the sequence of buttons to gain manual control for both ASDs, he said he was concentrating on piloting and traffic and did not notice that the autopilot "engaged" indicator button on the starboard ASD propulsion control panel remained lighted. This indicator showed autopilot was still active on the starboard propulsion unit and it would not respond to his manual steering commands.

The ASD propulsion control panel buttons are back-lit, with activated buttons brighter than the others (see photos below). When investigators examined the ASD propulsion control panel back-lighting, the autopilot "engaged" indicator light was clearly visible both night and day. When the mate arrived on the bridge just after the allision, he was able to see from several feet away that the starboard autopilot "engaged" indicator was lit. When the autopilot is disengaged, this light is extinguished. In addition to illumination of the button, an audible chirp sounds to indicate autopilot is engaged or disengaged, but the port captain stated this was sometimes difficult to hear and the accident captain was unaware of the sound.



At left, the *Krystal Sea*'s starboard ASD propulsion control panel with the autopilot "engaged" pushbutton illuminated at night. At right, the same panel in daylight ("engaged" pushbutton not illuminated in this photo).

The senior captain said the ITB with a 1,000-ton load normally could be stopped within about 400 feet. He typically comes out of autopilot about 0.34 nautical miles before the pier, both while operating alone and during familiarization training for new captains. However, he said he did not direct new operators to disengage specifically at this distance.

When arriving in Cordova, he said, the typical procedure for switching out of autopilot to manual control aboard the *Krystal Sea* is to

- 1. Disengage from autopilot near the Alaska Marine Highway ferry dock, about 0.34 miles from the AML dock;
- 2. Check the steering status by turning ASD control levers and observe the change in thrust/steering indicators; and
- 3. Check propulsion by throttling down the engines with the control levers and observing speed changes.

The senior captain and the port captain both mentioned that when engaging or disengaging from autopilot, the operator must double-check to ensure the system responds as expected. If the pushbuttons are not pressed firmly enough and on center, the autopilot system may not register the input and therefore not engage/disengage, so the indicator light on the ASD control panel will not illuminate/turn off. In this case, the buttons may need to be pressed again.

The *Krystal Sea* senior captain said his familiarization for the new captain included reviewing how to engage and disengage autopilot. The accident captain said autopilot systems he had operated previously required only a single button to engage or disengage autopilot, in contrast to the *Krystal Sea*'s three-step process. He described pushing all three required buttons as he approached the pier on the day of the accident: "I'm looking out the window still because of the visibility and because of everything else, and pushed that button, I pushed this button, pushed the button on the autopilot. And I'm still looking out, watching my position And I didn't look down to make sure that light changed."

At the time of the allision, Bering Marine's safety program described the company's general operational procedure for autopilot use:

The autopilot must be turned off at an adequate distance from the dock. The manual controls at this time will be tested to ensure that that they function properly. At no time will the vessel be allowed to come in close proximity to the dock without testing the steering controls.

The company updated this procedure on the day of the incident, adding details on engaging and disengaging the autopilot and function-testing the controls and directing the operator to use the Work mode in manual control.

The port captain also posted instructions in the *Krystal Sea*'s wheelhouse beneath the autopilot panel, shown below, as a reminder to the operator. These instructions specified that the autopilot is to be disengaged 0.5 miles from the intended dock.



Autopilot panel with new procedure placard on the Krystal Sea.

Safety Management System Development

Bering Marine employed about 35 people and operated two tugs/barges, one landing craft, and two hovercraft in addition to the *Krystal Sea/Cordova Provider*. The company's management began developing a safety management system (SMS) in 2007 in consultation with

a third party and has continually updated the program. The Bering Marine SMS was generic for the fleet, but the port captain had begun implementing vessel-specific operating instructions and procedures, including some hands-on training. However, the senior captain stated he was not familiar with the general operational procedure for autopilot use found in the Bering Marine safety program.

As part of the safety program, the *Bering Marine Handbook* issued to employees on board company vessels outlined general expectations of employees. The handbook was supplemented by required familiarization training for all new crewmembers when joining a vessel.

With respect to using autopilot, the safety program included only general fleet-wide written guidance for operators to function-test manual controls when disengaging autopilot prior to docking. The company did not have ship-specific procedures or describe how to come out of autopilot. Bering's corrective actions following the accident—expanding written procedures to address these two items and posting autopilot instructions in the wheelhouse—are examples of "continuous improvement" upheld by typical marine SMSs.

Bering Marine undertook design and implementation of its SMS in part in anticipation of upcoming Coast Guard towing vessel regulations as well as subcontractor requirements for future work with large oil companies. The new towing vessel regulations at 46 *Code of Federal Regulations* (CFR) Subchapter M, anticipated to be partially implemented in 2015, will require an operator of a US-flagged towing vessel greater than 26 feet in length to develop and comply with a towing safety management system (TSMS) or submit to an annual Coast Guard inspection. Tow operators may work with third-party auditors and inspectors to verify their compliance with TSMS structural, mechanical, electrical, steering, lifesaving, and other equipment specifications and management, procedural, and personnel policies to promote safer operations.

The NTSB has long supported the development and implementation of SMS for domestic vessels, including uninspected towing vessels. In 2000, the NTSB recommended that the Coast Guard seek authority to require all domestic towing companies to develop and implement an SMS. Most recently, in October 2006, the uninspected towing vessel *Miss Megan* was under way with two deck barges when the barge spud accidentally released. The spud struck a submerged high-pressure natural gas pipeline, resulting in six deaths. As a result of the accident, the NTSB recommended that the Coast Guard finalize and implement the new towing vessel inspection regulations and require the establishment of SMS appropriate for the characteristics, methods of operation, and nature of service of towing vessels (NTSB Safety Recommendation M-07-06).

Docking Arrangements and Previous Incidents

The ITB docks directly north of the *Sycamore* at the AML barge facility. Site plans show that the distance between the AML dock's southern dolphin and the north end of the *Sycamore's* pier is 137 feet. Investigators estimated that, when docked, the distance between the bow of the *Cordova Provider* and the bow of the *Sycamore* was about 150 feet.



View of the moored Sycamore and the docked Krystal Sea/Cordova Provider at the AML dock a few days after the allision.



View of the Sycamore from the Krystal Sea wheelhouse looking over containers on the Cordova Provider a few days after the allision.

Crewmembers from the *Sycamore* stated that about a week prior to the allision a barge larger than the *Cordova Provider* came close enough to the cutter to prompt the ship's crane operator to evacuate and the officer-of-the-deck to prepare to sound the collision alarm.

The AML port manager stated he knew of one earlier accident at the Cordova pier. In July 2005, the docked *Sycamore* was struck by the tug and barge *Alaska Mariner* and *Whittier Provider*, which were approaching the AML pier to dock. The Coast Guard investigation report indicated that a 1.7-knot current created by the incoming tide coupled with the relative darkness appear to have been the cause of the allision. The top of the *Sycamore*'s bulwark suffered paint damage and was dented from contact with the *Whittier Provider*'s bow. Damage was estimated at less than \$50,000.

The AML dock was constructed in 2002 and designed for the larger 400-foot-long *Whittier Provider*. The port manager stated he did not have a specific concern with the distance between the two docks. The *Whittier Provider* was a rail barge of greater size and capacity (300 containers and 45 rail cars), which, in his opinion, was more subject to the effects of winds and currents than the *Krystal Sea/Cordova Provider*. The *Alaska Mariner/Whittier Provider* was a traditional tug-barge rather than a paired ITB such as the *Krystal Sea/Cordova Provider*, which is highly maneuverable and was built specifically for the docks it services. The senior captain stated that, compared to Valdez and Whittier, the Cordova docking was "probably the easiest" as the tide is parallel to the dock and the winds are seldom a problem.



View from the Sycamore bridge of the AML pier's dolphins and ramp where the ITB docks in Cordova.

Summary

The investigation found that the navigation systems, propulsion, and control systems operated satisfactorily. The accident captain was experienced with tows, and although new to the vessel, he had been assessed satisfactorily after 3 days of observation and had docked the ITB alone several times. The accident captain's statements indicate he believed he followed the proper sequence to disengage both ASDs from autopilot in preparation for docking; however, he did not successfully press one button required to disengage the port unit and did not notice its associated "engaged" indicator remained lit. Although he attempted to disengage and take manual control at a distance consistent with his familiarization training, he did not function-test manual control of propulsion and steering. Due to reductions in throttle and the port ASD unit's response, he did not realize he had lost control of the starboard ASD. Only as the vessel neared the dock did the captain recognize he had an unknown control problem, but insufficient time remained to troubleshoot the issue, and he was unable to avoid overrunning his intended dock and striking the moored cutter.

Other *Krystal Sea* operators stated that disengaging from autopilot was a multistep process that included checking visual lighted indicators and function-testing the propulsion ASDs to verify manual control. Even with an initially unsuccessful attempt to disengage autopilot, this type of function check would have alerted the captain to the partial loss of control.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the allision of the integrated tug and barge *Krystal Sea/Cordova Provider* with the US Coast Guard cutter *Sycamore* was the loss of directional control of one of two azimuthing stern drive propulsion units during an unsuccessful attempt by the *Krystal Sea*'s new captain to transfer from autopilot to manual control while approaching the intended dock. Contributing to the accident was the lack of function-testing of manual steering and propulsion control after disengaging the autopilot at a distance from the dock sufficient to allow time for corrective action.

| Vessel | Krystal Sea | Cordova Provider | USCGC Sycamore |
|-------------------------------|--|--|--|
| Owner/operator | Bering Marine Corp./ Krystal Sea LLC | Bering Marine Corp./ Cordova Provider LLC | US Coast Guard |
| Port of registry | Juneau, AK | Juneau, AK | _ |
| Flag | US | US | US |
| Туре | Tug | Freight barge | Seagoing buoy tender |
| Year built | 2005 | 1981 | 2001 |
| Official number (US) | 1171600 | 639268 | WLB209 |
| Construction | Steel | Steel | Steel |
| Length | 49.9 ft (15.2 m) | 209.8 ft (64.0 m) | 225.0 ft (68.6 m) |
| Draft | 12.5 ft (3.8 m) | 4.5 ft (1.4 m) | 13.0 ft (4.0 m) |
| Beam/width | 34.0 ft (10.4 m) | 65 ft (19.8 m) | 46.0 ft (14.0 m) |
| Tonnage | 96 gross tons | 1,202 gross tons | 2,000 gross tons |
| Engine power, manufacturer | Twin 2,000 hp (1,491 kW) Caterpillar Model 3508 | - | Twin 3,100 hp (2,312 kW) Caterpillar Model 3608 |
| Propulsion | Twin, fixed-pitch azimuthing stern drives (ASDs) | _ | Single controllable pitch propeller |
| Persons on board | 4 | 0 | 11 |

Vessel Particulars

For more details about this accident, visit <u>www.ntsb.gov/investigations/dms.html</u> and search for NTSB accident ID DCA13PM031.

Adopted: February 18, 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.

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).