

Adrift in Fog

Poor visibility, errors in judgment, and diminished situational awareness lead to tragedy on the Ohio River.

by Ms. CAROLYN STEELE
Technical Writer

In the foggy pre-dawn darkness of July 12, 2001, the captain of the towboat M/V *Elaine G* heard a cry for help from the dark waters of the Ohio River. It was 5:25 a.m., and the vessel was traveling at a speed of six knots. The captain had just relieved the pilot of his watch and assumed the conn of the 151-foot towboat, which was pushing 14 empty hopper barges along this stretch of river in Kentucky.

Other deckhands on watch had also heard the call from the water, so the captain sounded the general alarm and brought the engines to all stop, and then all back. He maintained position in the river for about 20 minutes while the crew searched for the source of the cry. At 5:50 a.m., having failed to find anyone in the water, the captain backed the 998-foot tow onto the Kentucky bank at Ohio River mile 568 for further investigation. At that point he contacted Coast Guard Group Ohio Valley by VHF radio, and reported that the tow was stopping to investigate. As they searched, crewmembers on the towboat discovered several items, including two seat cushions floating in the water between the starboard and center strings and the port and center strings of the barges. After the fog lifted, another merchant vessel assisted in breaking apart the *Elaine G*'s tow. The only signs of a possible collision with another boat were more items floating in the water, including two paddles, a plastic bucket, and a ball cap.

The Indiana Department of Natural Resources (IDNR) arrived first on the scene at 8:00 a.m., followed by the

Lessons Learned



from **Casualty Investigations**

Coast Guard Marine Safety Office Louisville investigators, who arrived at about 1:00 p.m. MSO Louisville investigators examined reports which revealed that only the tow and a recreational vessel nearby at the time could have been involved in the accident.

On July 18, 2001—six days later—a 17-foot recreational vessel was recovered approximately three miles from where the collision occurred. It was found floating awash in a vertical position with the stern down. The body of a man was found under the starboard side steering console, and a large dog was found under the port side console. Over the next three days, the bodies of five other men were recovered between Ohio River miles 568 and 575. None were wearing personal flotation devices.

Damage to the Vessels

The initial investigation revealed damage that told a decisive story about what had happened—namely, that the smaller boat had drifted directly in front of the tow's barges.

Damage to the towboat and barges

The towboat itself sustained no damage. When they examined its string of barges, Coast Guard and IDNR investigators observed scrape marks on the bow rake of the center lead barge. These marks, which began at 42.5 inches above the waterline and extended down approximately 20 inches, were consistent with the damage found on the recreational vessel.



Damage to the recreational vessel

The boat had scrapes in an 80-degree pattern on the port gunwale beginning approximately 19 inches from the stern and continuing forward three feet and four inches further. This was believed to be the initial contact point with the rake of the center lead barge, OR 2110. A similar pattern of 85-degree scrapes appeared on the port transom top, indicating a slight twisting motion around the time of the initial contact. The windshield was shattered and bent to starboard, and part of the forward handrail was missing, compressed, and bent at a 75-degree angle. The starboard forward handrail, also partially missing, was bent forward and down, puncturing the hull coaming at the bow.

More rust-colored transfer marks were found at several points along the outside of the vessel, and rusty flakes were found on the inside. Investigators discovered that the outdrive could not be shifted into reverse because of a misadjustment of the shift cable on the engine-mounted shift plate; however, it was unclear whether this problem was present before or caused by the accident. All three propeller blades had damage that was not consistent with propeller rotation under power. The boat's red and green bow light lens was not in place, and the glass part of the bulb was broken. Indiana State Crime Laboratory analysis showed that the light was off at the time of impact.

Coast Guard Investigation

The Coast Guard's investigation determined that the center lead barge in the tow (OR 2110) collided with the recreational vessel. The collision rolled the smaller boat,

causing it to take on water over the stern and become awash. The swamping of the boat combined with the force of the collision with the tow drowned all six men aboard.

The question confronting Coast Guard investigators was how the accident could have happened given the fairly routine conditions that existed on the Ohio River that summer morning. Fog is typical along this stretch of the Ohio River. The towboat pilot and captain were seasoned, licensed mariners—between them, they had nearly 10 years of experience navigating the Ohio River. From the testimony of a friend, all the men on the recreational vessel were experienced fishermen and knew the hazards inherent to navigating on the busy Ohio River. The friend added that they were always well prepared when night fishing, and that they usually fished close to the Indiana bank, never in the middle of the river.

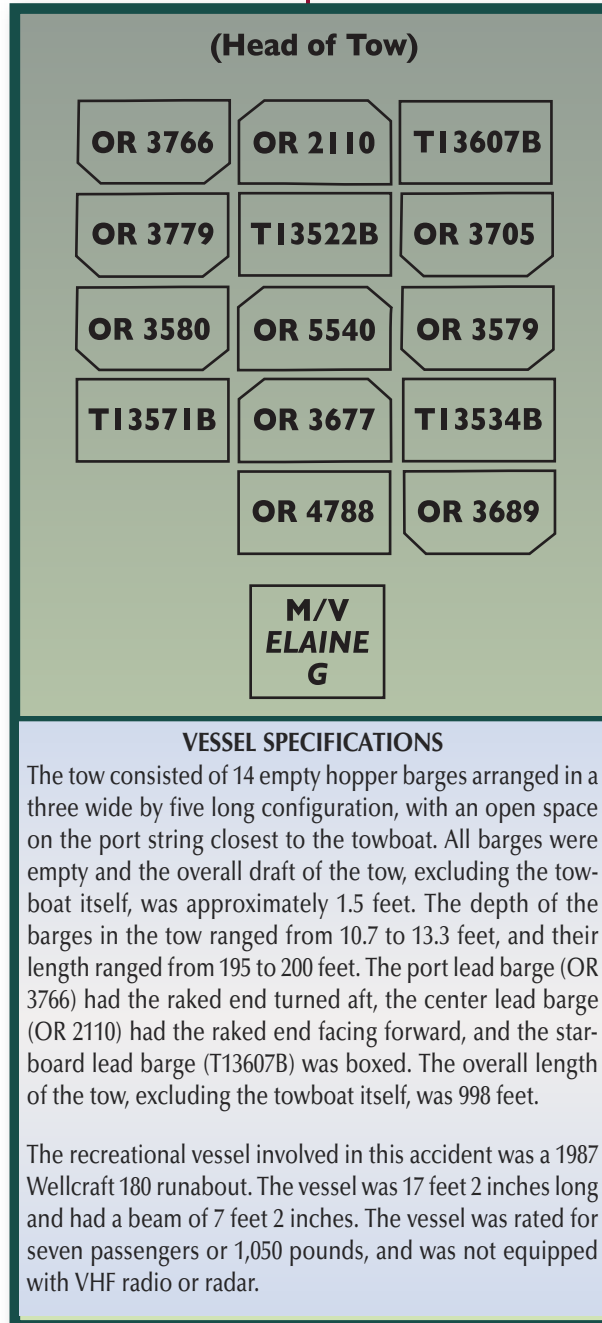
The Coast Guard investigation examined key issues, including visibility at the time of the accident, the status of lights aboard the fishing boat, the fishing boat's profile in the water in relation to its radar signature, and the watchfulness of the occupants of both vessels.

Non-causal Factors

A variety of issues were considered in the investiga-

tion to determine not only what went wrong, but also what went right. On the towboat, nothing in the areas of equipment or crew experience appeared to have contributed to the accident.

Equipment: The pilot stated that he turned on the automatic fog signal just before the watch relief, as the



captain entered the pilothouse. The towboat was equipped with standard navigational equipment, including two radars and two VHF radios. Both radars had been recently serviced and were functioning properly. The tow was lit with a green running light on the forward starboard corner, a red running light on the forward port corner, a special flashing amber light on the forward centerline, and a seven-watt white “steering light” on a seven- to eight-foot pole located all the way forward in the center of the tow. In addition, the tow had 2’ by 2’ low-intensity lights at each barge coupling on the port and starboard sides.

Crew Experience: The captain held a fourth issue of a Coast Guard license. He had been a vessel captain for his current employer for approximately 2.5 years. The pilot held a second issue of a Coast Guard license. He had operated towing vessels for the company for approximately seven years.

Situational Awareness: The captain said that he was well rested, alert, and monitoring the radar at the time of the collision, stating he had about eight hours of sleep in the 24 hours before the accident. Blood analyses revealed that neither the captain nor the pilot took any medications that would impede their situational awareness.

Causal Factors

Problems on the towboat

Visibility: Fog in the area limited visibility to less than half a mile, which is why the pilot activated the towboat’s automatic fog signal. The captain and the pilot testified that they were unable to see either riverbank at a distance of approximately 1,000 feet. The captain of another merchant vessel 1.5 miles upriver said the fog was so thick he was planning to push his vessel into the bank if visibility did not improve soon. This witness went on to say that he could neither see the towboat’s stern tow lights nor hear her sound signals from his location.

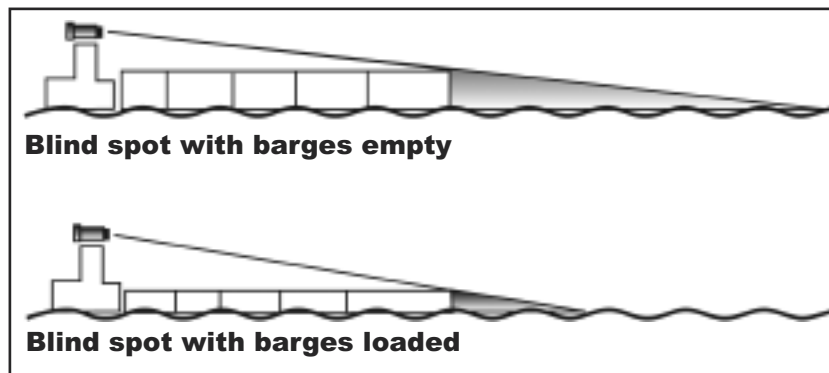
The pilot of the *Elaine G* testified he began seeing fog when the vessel was about 3.5 miles from Ohio River mile 566.7, where he was relieved. He said that, when looking forward, he could see the “swing light” and the glow of the navigation lights mounted on the head of the tow, and possibly a little farther. The towboat’s empty barges were riding high in the water, making it harder for him to see objects in front of them.

Blind spots: Visual and radar blind spots from the vantage point of the towboat’s pilothouse prevented the pilot and captain from detecting the recreational vessel. Visual contact was made even more difficult by the fact that the small boat was unlit and riding low in the water.

The pilot and the captain of the towboat were relying heavily on radar that morning, and did not understand the full extent of these blind spots. The fact that the barges were unloaded exacerbated the problem. If they had taken these factors into account, they might have halted the voyage until conditions improved.

Diminished awareness resulting from the watch change: The captain and the pilot estimated that the watch relief took roughly five minutes to complete. However, investigators who later conducted mock relief changes found that it might well have taken less time. That means the recreational vessel may have already been in the towboat’s radar and/or visual blind spot when the captain relieved the watch, and the attention of the two men was diverted.

Lookout: The captain was serving as the sole lookout from the pilothouse at the time of the collision. A dedicated lookout on the head of the tow would have had



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a view of what was happening in the vessel’s blind spot—a view not available to the operator in the pilothouse—and would have been better able to hear any sounds indicating a risk of collision.

Radar clutter: Moments before the collision, radar clutter may have made the radar less able to display the recreational vessel on the screen. A large “ghost” image was probably showing on each of the radar screens, making the tow appear longer and wider than it actually was. A radar expert stated that open hopper barges,



especially empty ones without metal covers, cause radar signals to bounce erratically off the inside plating, producing a large cluttered image on the radar screen. Because these bouncing signals make the image of the tow itself appear larger to the radar viewer, they obscure radar contacts that fall within the oversized image. Even without the clutter, a small fiberglass boat riding low in the water would probably not have presented a surface reflective enough to produce a distinct image on the towboat's radar screen.

Problems on the recreational vessel

The lack of a forward lookout and radar clutter on the towboat notwithstanding, the condition of the recreational vessel and its crew significantly contributed to the tragedy.

Lights: The recreational vessel did not have any navigation lights on at the time of the collision. When the boat was recovered, the red and green lens for its bow light was not in place, and the glass part of the bulb was broken. Analysis of the bulb revealed that the light was off at the time of impact. The vessel was recovered with no stern light in place and no locking mechanism on the stern light base. The stern light itself was never found.

Sound-producing mechanism: There was no fog signal in place aboard the vessel. The boat was equipped with a conventional horn; however, as fog absorbs sound, it was unlikely that this would have been heard even if it had been used.

Radar: The vessel was not equipped with VHF radio or radar, and had no radar reflector.

Overload: The recreational vessel's loading exceeded the maximum weight rating recommended by the manufacturer by approximately 229 pounds, which would have decreased both the vessel's radar signature and its visibility.

Unanchored vessel: The anchor and line were found inside the vessel when it was recovered, revealing that it was adrift at the time of the collision. As fog obscured the riverbanks, the fact that the victims were adrift meant they would have had no point of reference, and may have been unaware of their position in the river.

Crew situational awareness: The victims may have had severely diminished situational awareness at the time of the collision. Postmortem examinations revealed narcotics and alcohol in all six of the victims' blood-

streams. The men had been out all night, and two of them had been on the water boating for approximately 16 hours, so fatigue may have also been a factor.

Lifesaving apparatus: No one aboard the recreational vessel was wearing a personal flotation device at the time of the accident. The coroner concluded that the external injuries found on the victims were not severe enough to have caused their death, so if the fishermen had been wearing personal flotation devices they might have survived.

Coast Guard Conclusions

The Coast Guard concluded that the collision occurred because the towboat operators failed to detect the recreational vessel and also because the crew aboard the recreational vessel did not detect the tow in time to take evasive action.

The Coast Guard cited violations of the following Inland Navigation Rules by the operators of the towing vessel:

- Rule 5—Every vessel shall at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.
- Rule 19(c)—Every vessel shall have due regard to the prevailing circumstance and conditions of restricted visibility when complying with rules 4-10.

In addition to possible violations of rules 5 and 19c, the Coast Guard cited possible violations of the following Inland Navigation Rules by the operator of the recreational vessel:

- Rule 9(b)—A vessel of less than 20 meters in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway.
- Rule 23(c)(i)—A power-driven vessel of less than 12 meters in length may in lieu of the lights prescribed in paragraph (a) of this rule exhibit an all-round white light and sidelights.
- Rule 35(b)—A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than 2 minutes two prolonged blasts in succession with an interval of about 2 seconds between them.

Lessons Learned

Employ a designated lookout. As this story illustrates, radar alone cannot take the place of human eyes and ears when a vessel is pushing ahead nearly 1,000 feet of barges at night in heavy fog. Both the captain and the pilot of the towboat were well aware that visibility was a problem: They later told investigators that they could not see either riverbank 1,000 feet away. As seasoned professional mariners, they should have been aware that both the large visual and the radar blind spots further diminished their ability to see. Other vessels in the area had either pulled over to the riverbank or considered doing so.

Don't let your guard down. Even though things may seem routine, complacency can be deadly.

Good seamanship. Always keep in mind that fundamental principles of good seamanship apply to all mariners, regardless of vessel or crew size. Although the current maritime rules are not as stringent as those on the highway, the hazards of boating under the influence are the same. Boaters should have at least one person aboard who is alert and sober at all times—to do otherwise risks your own and other boaters' safety. Boating without proper equipment is also extremely dangerous, particularly at night, in inclement weather, and on busy commercial waterways.

For the fishermen on the recreational vessel, what began as a fun night out on the river with friends turned deadly. This event serves as a cautionary tale for anyone who considers boating to be a risk-free pastime. In addition to carrying proper equipment in good working condition, safe boating requires vigilance and a high degree of situational awareness at all times.

No one from the smaller vessel's crew survived to be held accountable, so the licensed crewmembers on the towboat shouldered most of the blame for the accident. Certainly they made errors, for which they were censured. However, those on the unlit vessel—drifting slowly into the path of an oncoming barge in the foggy darkness of that July morning—made many mistakes as well. Unfortunately, they paid the ultimate price for their lapse in judgment.

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About the author:

Ms. Carolyn Steele has over 20 years of experience in the communications field. As a freelance writer/editor she has worked on numerous Coast Guard projects since 2006, including the USCG Marine Safety Manual, the USCG Maritime Law Enforcement Manual, and USCG Publication 1. She is also the editor and designer of the Crew Endurance Management newsletter. Besides writing, Ms. Steele has an extensive background in graphic design and fine art.