

# Asleep at the Wheel

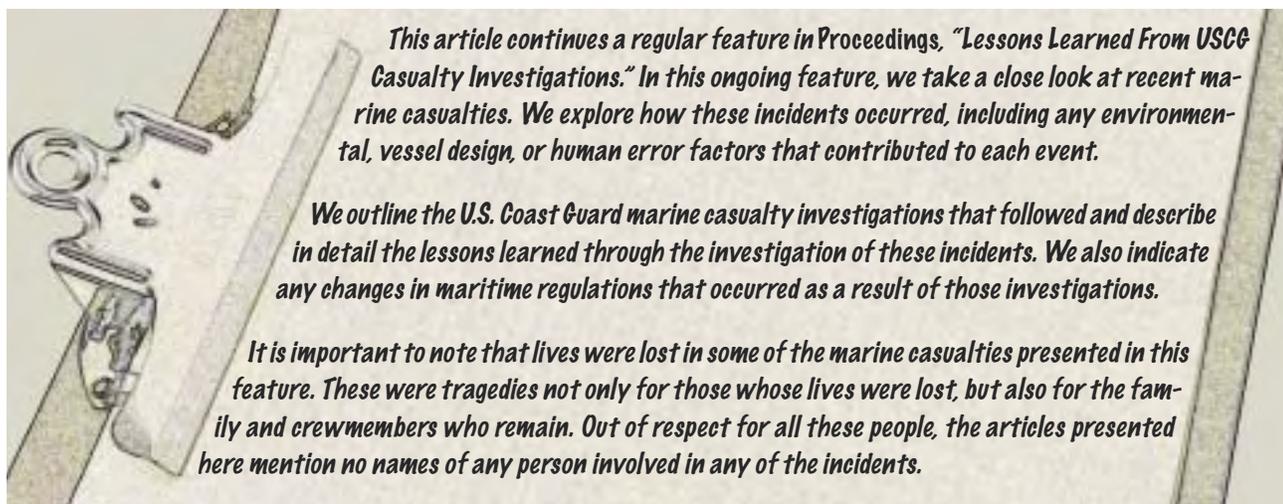
*A routine transit comes to a crashing halt.*

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## Lessons Learned



**from Casualty Investigations**



On the afternoon of October 15<sup>th</sup>, 2003, the large passenger vessel *Andrew J. Barberi* departed Manhattan with approximately 1,500 passengers aboard for a regularly scheduled 22-minute trip to Staten Island. The voyage was ordinary in all respects until the moment it passed a buoy at the entrance to the Kill van Kull waterway, about 1,000 yards from its destination terminal. Instead of reducing speed and applying course corrections at this buoy to prepare for docking, the ferry continued on the same course, at the same speed. Two minutes later, the vessel allided with a maintenance pier 1,800 feet away from the vessel's destination slip, taking most of the crew and passengers by surprise.

As a result of the allision, 10 people died and more than 70 people were injured. An eleventh passenger died later as a result of injuries sustained in the accident. Damages totaled more than \$8 million.<sup>1</sup>

### A Regular Transit

The crew—commanded by a captain and staffed by the assistant captain, two mates, a chief engineer, an assistant engineer, two oilers, and seven deckhands—arrived for its shift as usual on the day of the casualty. The captain started the shift at 1:30 p.m. by piloting the ferry from Staten Island to Manhattan. At 2:00 p.m., the assistant captain took a turn at the helm on the return trip. This pattern continued for the 2:30 and 3:00 p.m. trips. A deckhand also served as a "lookout" on the navigation watch for each pilot.

What the deckhand may or may not have known was that the assistant captain had for years been taking several medications that may have affected his ability to perform his duties. The medications prescribed included Ambien, Tramadol, Lisinopril, Triamterine, and Lipitor. Some side effects of these medications, when taken individually, include drowsiness, unusual fa-



tigue, and unconsciousness. Taken together, these medications act synergistically, heightening the side effects.<sup>2</sup>

There are standard procedures in place to ensure merchant mariners are up to the rigors of their profession. For example, the assistant captain had to regularly turn in a merchant marine personnel physical examination report to the New York Regional Exam Center. The last time he had done so, on August 24, 2000, his doctor did not provide an accurate assessment of his overall health condition, nor did he list the five medications the assistant captain was taking. He continued taking these continuously right up to the day of the casualty. Furthermore, the assistant captain operated without a valid First Class Pilot endorsement ever since August 25, 2001 because nobody followed up on his failure to obtain an annual physical required by Title 46 Code of Federal Regulations 10.709(b).<sup>3</sup>

On top of his health conditions and prescribed medications, his grandchild had been visiting for the past several weeks, which disrupted his regular sleep/rest

patterns. The assistant captain's chronic fatigue likely caused him to lose consciousness for a moment, and, unfortunately, none of the other crewmembers were present at the time to revive him or rectify the ship's course.

#### **Alone at the Helm**

Perhaps if the deckhand lookout on the navigation watch were there to keep the assistant captain awake, the crash could have been averted. As fate would have it, however, the ferry's senior mate was following up on repairs necessary to the starboard side entrance/exit doors and had assigned the lookout the task of securing the broken doors while the vessel was underway to prevent them from swinging freely and injuring passengers. When the ferry was ready to dock, the lookout would need to untie the doors so that passengers could disembark.

About halfway into the assistant captain's second piloted trip that day (starting at 3:00 p.m.), the senior mate joined him and the lookout in the pilothouse and sat—



Post-accident view of the ferry. USCG photo.

on a padded bench, lower than the navigation area behind the controls, the assistant captain, and the lookout—in the rear of the bridge. After doing some paperwork related to the broken doors, he read a newspaper. The mate further stated that he could not observe the vessel's approach toward the Staten Island piers.<sup>4</sup>

According to [the senior mate], [the assistant captain] made an exclamation and looked down at the position of the vessel. [The senior mate] also stated that he observed [the assistant captain] pull back on the thrust control to the full astern position and steer the vessel



Approximately 1,500 square feet of the maintenance pier surface collapsed into the harbor. USCG photo.

Soon after the senior mate entered, after passing the Kill van Kull buoy, the deckhand left the pilothouse intending to untie the broken doors before attending to his other disembarkation duties.<sup>5</sup>

According to crewmembers, shortly after the ferry passed the Kill van Kull buoy, the standard procedure was for the bridge deckhand on duty to go to the pilothouse on the docking end of the ferry and make an arrival announcement. Those interviewed stated that some lookouts always waited to leave the pilothouse until the bridge deckhand arrived; however, practices varied. On the day of the accident, the lookout left the Staten Island-end pilothouse before the bridge deckhand arrived.

According to the Coast Guard Activities New York report:

“15:21 – As the ferry allided with the pier, [the senior mate] looked up from his seated position in the rear of the Pilothouse and saw [the assistant captain] at the helm who appeared to be dazed.

away from the *Coscrove*, a moored NYC DOT vessel laying ahead of the [vessel's] bow.”<sup>6</sup>

Immediately after the allision, the captain of the ferry ran from the New York end to the pilothouse on the Staten Island end and assumed control of the vessel. The chief engineer arrived seconds later and was able to stay in the pilothouse to help the captain transfer propulsion control to the New York-end pilothouse because the Staten Island end was destroyed. The captain then left the pilothouse and entered the New York end to accept the transfer of propulsion control from the other end.

#### **Damages, Injuries, and Casualties**

The ferry had struck the concrete maintenance pier at an oblique angle and continued to move forward, allowing the concrete to tear a 210-foot-long gash into the main deck on the vessel's side. Approximately 1,500 square feet of the surface of pier B-1 collapsed into the harbor.



According to the USCG report:

"The [vessel] allided with the southeast corner of the B-1 maintenance pier at the St. George ferry terminal on Staten Island. The [vessel] a made contact with the pier on the Staten Island end, New Jersey side of the vessel. The most significant damage was on the main deck of the vessel. The damage extended from the bow of the ferry from the outer edge on the New Jersey side to a point about 3 feet past the centerline and extended for approximately 210 feet towards the New York end of the vessel. ...

... Pier B1 ... is a pier approximately 1,000 feet long and 50 feet wide. The impact occurred on the southeast corner of the pier and approximately 1,500 square feet of the pier collapsed into the harbor. The damage to the pier did not appear to extend beyond the area of the collapsed section and the pilings that were sheared off."

### **Stunned Reaction**

None of the crewmembers or passengers recalled hearing any warning announcements, alarms, or other alerts before the accident. The crew didn't recognize that the ferry was in danger because they didn't hear the usual sounds the ferry made as it slowed down and changed course at the Kill van Kull buoy. Only one deckhand—the lookout who had left the pilothouse to untie the broken doors—realized that the ferry wasn't slowing down at the last minute, and tried to chase passengers to the other end of the boat. Passengers who could see the impending allision estimated that they had only seconds to move away or brace themselves for the impact. Other passengers took no action to lessen the effects of the accident, such as those who had no view of the pier or who were facing the opposite direction. Passengers reported hearing no emergency instructions from ferry crewmembers after the allision, either.

After the initial impact of the incident, passengers and crewmembers tried to help as they could. Some passengers with cell phones called 911 to report the accident. A Coast Guard enlisted man, who was a regular ferry passenger, used his cell phone to contact the Coast Guard's Activities New York command center at Ft. Wadsworth, Staten Island. The director of ferry operations also called 911 requesting emergency medical assistance and then directly called the chief of the marine safety division of Coast Guard ACTNY to advise him of the situation. An off-duty lieutenant with the New York City Fire Department (FDNY) called his dispatcher in Staten Island, described the accident, and advised sending multiple units in response. He described the

scene after the allision as chaos, with people screaming and yelling.

Crewmembers helped the wounded as much as they could, moved debris, and tried to keep uninjured passengers away from the vessel's damaged areas. They also directed EMS personnel to the most seriously injured passengers, and tried to make an announcement on the public address system, but it was not working. Some radios and phones were also out of order.

The ferry reached its slip at St. George about 20 minutes after the allision. The director of ferry operations, who entered with the first responders, spoke briefly with the assistant captain. The assistant captain then pulled away and ran to the dock. The director sent two of his NYC Department of Transportation employees to track the assistant captain down at his home, where they found him with self-inflicted, life-threatening injuries. They called 911 to transport him to a nearby hospital, where he underwent emergency surgery and later recovered.

Blood and urine samples of the assistant captain obtained at the hospital were tested for evidence. While the results were negative for alcohol and illegal drugs, the analysis found 0.76 micrograms/milliliter of tramadol (a prescription narcotic-like analgesic) in the blood.<sup>8</sup>

### **Emergency Response**

When the ferry docked, emergency personnel immediately entered the vessel to help the injured. Hundreds of responders, including dozens of emergency vehicles and vessels, included the New York City Police Department (NYPD), New York City Fire Department, emergency medical services, the Coast Guard, and the U.S. Army Corps of Engineers.

FDNY personnel established an incident command system to oversee rescue efforts. Emergency personnel first searched for victims and provided them with initial medical care. Those in need were stabilized and transported to area hospitals. They also worked to locate and extricate trapped victims, and helped to brace the upper decks of the vessel on the damaged side. Hundreds of personnel continued to assist during the afternoon and evening helping the injured, taking witness statements, interviewing crewmembers and passengers, organizing crowd control and traffic control, and forming a protective area around the ferry terminal.

In addition to these rescue efforts, Coast Guard Vessel Traffic Center New York established a safety zone of 400 yards around the ferry. They also broadcast to ves-

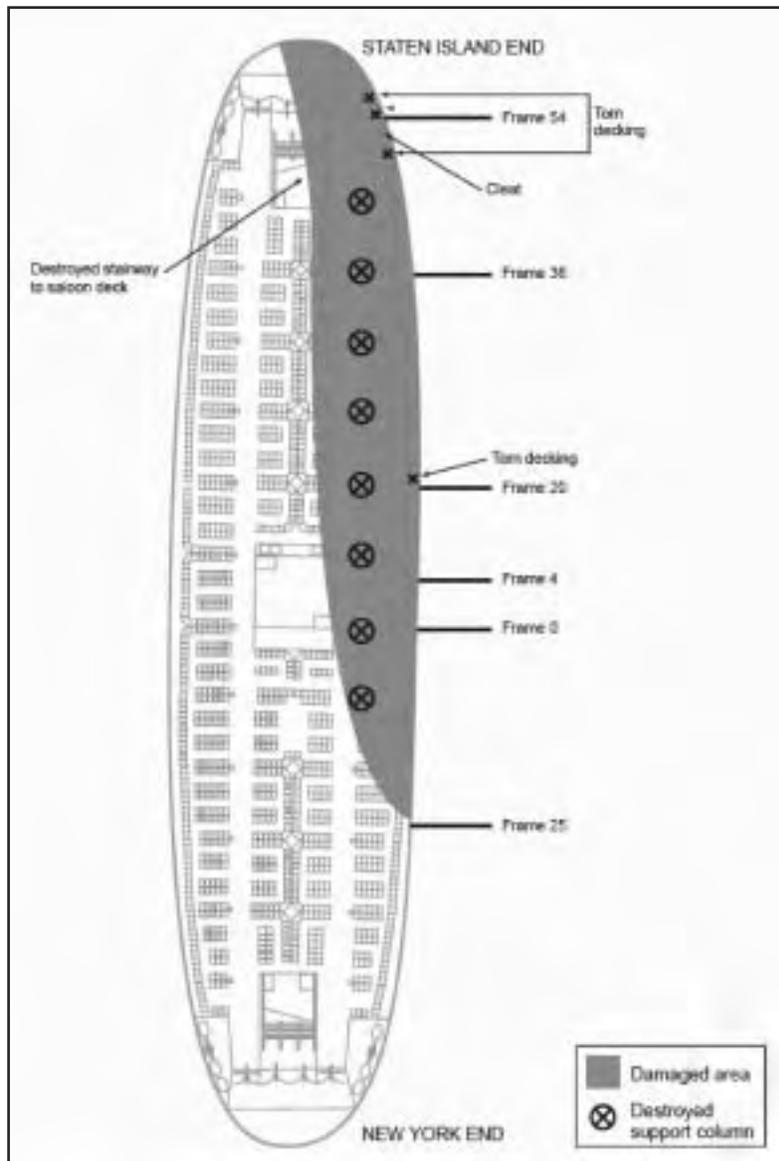
sels in the waterway about the debris field moving through the waterway as a result of the ebb tide and westerly winds, and halted all Staten Island Ferry operations. As more than one person was in the water near the scene of the accident, Coast Guard personnel conducted a search for passengers overboard. USCG remained on scene to assist with the investigation, search areas near the ferry terminal, keep water traffic away from the terminal, and monitor possible hazards in the water.

### Investigation

Upon arriving at the St. George (Staten Island) Ferry Terminal, USCG Activities New York (ACTNY) marine investigators found the vessel docked at slip #5 and multiple municipal emergency response agencies on scene. ACTNY's investigation team proceeded to the pilothouse to begin interviews and conduct post-casualty alcohol testing of the crew. NYPD had already begun questioning the crew, so, upon completion of the alcohol testing, crewmembers were taken for further interviews with representatives from the police department and USCG Activities New York investigators present.

The USCG contacted the National Transportation Safety Board (NTSB) per previously established protocols due to the scope and severity of the casualty. The NTSB assumed the role of lead investigative agency and dispatched a team. The NTSB's lead investigator initiated a field investigation, which included the formation of four separate investigative teams to conduct the on scene investigation. Each team was comprised of members from the NTSB, ACTNY, New York State Department of Transportation, NYPD, and the New York City Department of Transportation Staten Island Ferry Operations Division. The on-scene investigation lasted for approximately eight days.

Shortly after the accident, the vessel's crew submitted blood and urine specimen results to the Coast Guard and the NYPD after toxicological testing in response to a combined NYPD/Coast Guard request. For all crewmembers, the results were negative for alcohol and the five drugs of abuse that the U.S. Department of Transportation screens for in post-accident testing



Plan view of the ferry's main deck highlighting damaged areas. Graphic courtesy of NTSB.

(marijuana, cocaine, opiates, amphetamines, and phenylclidine).

### Findings

Coast Guard Activities New York determined that the primary causal factor of this accident was the assistant captain's unexplained incapacitation while in navigational control.<sup>9</sup> The failure of the New York City Department of Transportation to implement and oversee safe, effective operating procedures for its ferries, as well as the captain's failure to exercise his command responsibility over the vessel by ensuring the safety of its operations contributed to the chain of events.

Safety issues were identified in the following areas:

#### 1. Actions of assistant captain and captain

The Coast Guard has established numerous regulations to help prevent marine casualties. Two such regulations



require that a proper lookout be maintained at all time and no less than two people stand a pilothouse watch. These requirements were violated and directly contributed to this casualty. Thus, when the assistant captain became unresponsive, there was no backup watchstander to recognize the danger and prevent the casualty.

As a licensed merchant mariner, the assistant captain had the responsibility to ensure he stood his watch in accordance with good seamanship and all applicable regulations. However, the captain is charged with the ultimate responsibility for the vessel's safety. Unfortunately, the captain knew that the crew's prevailing prac-

tices did not ensure a proper pilothouse watch, and failed to do anything about it.

The assistant captain was obviously cognizant of his poor health and the risks associated with the mix of prescription medications he was taking. He pled guilty in August 2004 to federal charges that he knowingly made a false report to the Coast Guard on his medical evaluation form, saying he didn't want them to know because he was afraid it would jeopardize his job.<sup>10</sup> In doing so, he perpetuated a situation where he was responsible for the lives of thousands of people a day despite being physically unfit to carry out those responsibilities with minimal risk.



View of damage to the New Jersey side of main deck showing collapsed stairway to saloon deck, destroyed columns, crushed seats, ruined ceiling panels, dislodged cables and fixtures, and other destruction. USCG photo.

## 2. New York City Department of Transportation oversight of ferry operations

According to the conclusion of the USCG Activities New York report of investigation:

“An attitude prevailed within the ferry organization where the safety of the passengers and crew was not necessarily of paramount importance. The normal practice of the crew left the Captains and Assistant Captains alone in the Pilothouse during the highly risky maneuver of approaching the ferry terminal. The position of Non-navigating Mate [the deckhand lookout] held little responsibility for contributing to the safe navigation of the ferries, and Management knew little of

whether or not the Captains, to whom they entrusted the vessels, crew and passengers, complied with federal qualification requirements.”<sup>11</sup>

## 3. Medical oversight of mariners

The Coast Guard has also implemented specific safety regulations in an effort to prevent mariners from being rendered physically incapable of performing their duties by requiring U.S. merchant mariners to undergo recurring physical examinations. The assistant captain and his physician failed to fully disclose his medical conditions and his prescription medications. Had they done so, it is highly unlikely he would have been able to keep his license.

Also according to the conclusion of the ACTNY report of investigation, the Coast Guard's medical oversight program at the time allowed:

"[mariners] ...to obtain a Merchant Mariner license despite not meeting the minimum health standards—whether it be intentionally or unintentionally. A physician familiar with the requirements of the maritime industry need not conduct the required physical examinations. Federal guidance to physicians, Regional Exam Centers, and Marine Safety Offices regarding what medications are acceptable for mariners is not clear and consistent. There is no proactive effort to ensure First Class Pilots comply with the annual physical examination requirement. Finally, there is no clear requirement for a mariner to report changes in his physical condition. The potential result is a mariner who, despite being unfit for service, continues to be placed in a position of responsibility and liability."<sup>12</sup>

#### 4. Safety management systems

The New York Department of Transportation had not instituted a documented safety management system or standard operating procedures despite the fact that it carried more than 20 million passengers per year. Although not required by regulation, such a system would have laid the foundation for the indoctrination and training of all ferry employees and established the preventative processes and protocols necessary to ensure the safe operation of the vessels.

#### 5. Potential contribution of navigation technology to the safety of ferry operations

The NTSB Safety Board noted that:

"At the time of the accident, the pilothouses of the Staten Island ferries lacked many of the common technological innovations that can assist operators during restricted visibility conditions in determining vessel location, heading, speed, approaching vessels, and other key navigational parameters. Modern equipment is also available to monitor vessel condition and alert operators to recognize out-of-profile or unsafe conditions. Vessels lacked even such basic instrumentation as speed indicators.

Further, bridge layout was found to be suboptimal in presenting critical information to operators ... These potential deficiencies, which can lead to deficient operator performance, were noted by the GMATS [Global Mar-

itime and Transportation School] assessment that was performed after the accident at the request of the NYC DOT."<sup>13</sup>

#### Collective Factors to Blame

The press gave the casualty much attention as the details of the investigation unfolded, paying particular attention to the role of the assistant captain at the wheel, who admitted he had blacked out shortly before the crash occurred. However, the ACTNY investigators' report of investigation gave a clearer picture of the full story:

"As is too often the case in situations such as this, many elements occur collectively and create a scenario that permits a casualty to take place. Eliminate just one element and the casualty may be averted. Tragically that did not happen in this case where a poor safety culture, noncompliance with federal safety regulations, gaps in oversight and the poor health of the assistant captain ... coalesced as causal factors that led to the deaths of 11 people and over 70 injuries."<sup>14</sup>

#### About the author:

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#### Acknowledgement:

*Proceedings gratefully acknowledges the support of LCDR Charles Barbee, who provides final review of all "Lessons Learned" articles.*

#### Endnotes:

1. USCG Activities New York (ACTNY), "Investigators Report of Investigation into Allision of the Ferry *Andrew J. Barberi*, Staten Island, NY 15 Oct 03," p. 1.
2. *Ibid*, p. 7.
3. *Ibid*, p. 3.
4. United States Coast Guard (USCG), "Report of Investigation into the Circumstances Surrounding the Incident Involving Allision/Personnel Casualties - *Andrew J. Barberi* on 10/15/2003," p. 70.
5. *Ibid*, p. 71.
6. ACTNY, p. 5.
7. USCG, p. 76.
8. ACTNY, p. 7.
9. *Ibid*, p. 15.
10. National Transportation Safety Board, "Allision of Staten Island Ferry *Andrew J. Barberi*, St. George, Staten Island, New York, October 15, 2003." Marine Accident Report NTSB/MAR-05/01, 2005, p. 15.
11. ACTNY, p. 13.
12. *Ibid*, p. 14.
13. NTSB, p. 69.
14. ACTNY, p. 12.
15. Additionally, this casualty was one of several that led the Coast Guard to seek amendment of its suspension and revocation (S&R) authority in 46 USC Chapter 77. The Coast Guard and Maritime Transportation Act of 2004 amended the bases for the S&R section by adding 7703(4), which authorizes S&R when a holder of a Coast Guard-issued Merchant Mariner Credential (MMC) has committed an act of incompetence relating to the operation of a vessel. Prior to this amendment, the Coast Guard had to establish that the act of incompetence occurred while the MMC holder was acting under the authority of the MMC. The pilot in this incident was not acting under the authority of his MMC; thus, initiation of S&R action was not authorized.

## RECOMMENDATIONS—U.S. Coast Guard<sup>15</sup>

*The Coast Guard's investigators report of investigation recommended:*

- The Coast Guard should create and implement a marine medical examiner program similar to the Federal Aviation Administration's existing flight recertification program, which would ensure physicians are certified and familiar with the requirements of personnel engaged in the marine industry and also ensure that physical examination requirements are met.
- The Coast Guard should develop policy or regulations providing amplifying information as to when medical conditions, or medications, would preclude mariners from safely fulfilling their duties and responsibilities.
- Discontinue the practice of issuing "non-navigating mate" licenses because it is inadvisable to place a mariner with a "limited" license in a position where he would be reasonably expected to exercise the duties and responsibilities of a similar mariner whose license was not likewise constrained. Mariners with such licenses should be re-evaluated and issued an appropriate credential upon their next renewal.
- The New York City Department of Transportation should also eliminate the position of "non-navigating mate" on all Staten Island Ferries and develop other ways to manage the existing crew hierarchy within the ferry system while working toward enhancing marine safety.
- The New York City Department of Transportation should develop a safety management system structured upon existing international guidance to ensure each ferry is properly manned, all crewmembers understand their responsibilities, and all regulatory requirements are met for the vessels' safe operation.

## RECOMMENDATIONS—NTSB

*As a result of its investigation, the National Transportation Safety Board made recommendations to the New York City Department of Transportation, the U.S. Coast Guard, the states that operate public ferries, and the Passenger Vessel Association.*

### **New York City Department of Transportation:**

- Licensed pilots should be required to provide proof of compliance with the Coast Guard medical certification requirements.
- Adhere to October 2005 target for implementation of a comprehensive safety management system, incorporating all matters recommended by the Global Maritime and Transportation School assessment, and ensuring medical fitness oversight (requiring, minimally, assurance of compliance with Coast Guard requirements).
- As part of its response to the Global Maritime and Transportation School assessment, fully comply with the technology-related recommendations of the Global Maritime and Transportation School, and establish a recurrent evaluation process to assess the use of navigation technology.

### **U.S. Coast Guard:**

- Revise regulation 46 CFR 10.709 to require that the results of all physical examinations be reported to the Coast Guard, and provide guidance to mariners, employers, and mariner medical examiners on the specific actions required to comply with these regulations.
- In formal consultation with experts in the field of occupational medicine, review the medical oversight process and take actions to address, at a minimum, the lack of tracking of performed examinations; the potential for inconsistent interpretations and evaluations between medical practitioners; deficiencies in the system of storing medical data; the absence of requirements for mariners or others to report changes in medical condition between examinations; and the limited ability of the Coast Guard to review medical evaluations made by personal health care providers.
- Seek legislative authority to require all U.S.-flag ferry operators to implement safety management systems, and once obtained, require all U.S.-flag ferry operators to do so.

### **States Operating Public Ferries:**

- Encourage public ferry operators to voluntarily request application of the federal requirements at 33 CFR 96 for implementing a safety management system, if they have not already done so.

### **Passenger Vessel Association:**

- Encourage member ferry operators to voluntarily request application of the federal requirements at 33 CFR 96 for implementing a safety management system, if they have not already done so.