National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: August 26, 2011

In reply refer to: M-11-1 through -4

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The National Transportation Safety Board (NTSB) has completed its investigation of yet another marine accident in which crewmember distraction resulting from nonoperational use of a cell phone or other wireless device has been identified as a causal factor. The findings from the investigation of this fatal accident suggest that Coast Guard actions thus far, with regard to wireless device use by crewmembers engaged in vessel operations, have been inadequate in addressing this critical safety risk and that additional, more effective measures are needed.

Background

On Wednesday, July 7, 2010, the empty 250-foot-long sludge barge *The Resource*, being towed alongside the 78.9-foot-long tugboat *Caribbean Sea*, collided with the anchored 33-foot-long amphibious passenger vehicle (APV) *DUKW 34* in the Delaware River at Philadelphia, Pennsylvania. *DUKW 34* carried 35 passengers and 2 crewmembers. On board the *Caribbean Sea* were five crewmembers. As a result of the collision, *DUKW 34* sank in about 55 feet of water. Two passengers were fatally injured, and 26 passengers suffered minor injuries. No one on the *Caribbean Sea* was injured.[1]

The NTSB determined that the probable cause of this accident was the failure of the mate of the *Caribbean Sea* to maintain a proper lookout due to (1) his decision to operate the vessel from the lower wheelhouse, which was contrary to expectations and to prudent seamanship, and (2) distraction and inattentiveness as a result of his repeated personal use of his cell phone and company laptop computer while he was solely responsible for navigating the vessel. Contributing to the accident was the failure of Ride The Ducks International maintenance personnel to ensure that *DUKW 34*'s surge tank pressure cap was securely in place before allowing the vehicle to return to passenger service on the morning of the accident, and the failure

[1] For more information, see *Collision of Tugboat/Barge* Caribbean Sea/The Resource *with Amphibious Passenger Vehicle* DUKW 34*, Philadelphia, Pennsylvania, July 7, 2010*, Marine Accident Report NTSB/MAR-11/02 (Washington, DC: National Transportation Safety Board, 2011), which is available on our website at <http://www.ntsb.gov/doclib/reports/2011/MAR1102.pdf>.

of the *DUKW 34* master to take actions appropriate to the risk of anchoring his vessel in an active navigation channel.

Location of the *Caribbean Sea* Mate at the Time of the Accident

The *Caribbean Sea* was outfitted with an upper wheelhouse above the main wheelhouse that provided improved visibility. The *Caribbean Sea* master told investigators that before the accident trip he had spoken with the mate about using the upper wheelhouse during the voyage. The master said that the mate had assured him that this was where he would be. In a postaccident interview with Coast Guard investigators, the mate said that he was operating from the upper wheelhouse when the accident occurred. Although *Caribbean Sea* crewmembers confirmed that when the voyage began, the mate was operating from the upper wheelhouse, the NTSB's investigation determined that the mate was not operating from the upper wheelhouse when the accident occurred but was instead occupying the lower wheelhouse.

Had an upper wheelhouse not been available, the mate could have navigated the tow combination safely from the lower wheelhouse. The lower wheelhouse was equipped with radars and radios that would have helped the mate monitor his surroundings and avoid hazards. Despite the presence of these navigation aids, however, with the limited visibility ahead because of the high freeboard of the empty barge, the mate would have needed to assign the deckhand, with a radio, as an additional lookout on the bow area of the barge.

Evidence also indicates that the mate was not actively monitoring the radars and radios while in the lower wheelhouse. The *DUKW 34* master and other mariners clearly radioed warning calls to the tugboat and barge about a minute before the collision. Had the mate been monitoring the radios and radar, even from within the lower wheelhouse, he would have been alerted to the presence of the APV and may have been able to take action to avoid the collision. Based on the mate's own postaccident statements to the Coast Guard, however, he was not aware of the presence of the anchored APV until after the barge had struck it.

The NTSB attempted to determine why, on the day of the accident, a trained, experienced, and otherwise competent mariner failed to effectively carry out routine, but highly crucial, tasks central to his profession. No evidence indicates that the mate was fatigued, and his postaccident toxicological tests showed no signs of alcohol or illegal drugs.

Personal Use of Cell Phone and Laptop Computer by the *Caribbean Sea* Mate

The mate's cell phone records revealed a likely explanation for his poor judgment and inattentiveness to his duties on the day of the accident. The records showed that the mate was engaged in voice communications with several family members beginning just 22 minutes after he assumed the watch and continuing up until the time of the accident.

A K-Sea Transportation official told investigators that, in a conversation with the mate after the accident, the mate informed him that he had learned while on watch that his young child had suffered a serious medical emergency earlier that day. The official said that the mate told him that he had been "consumed" with dealing with this family crisis (medical records obtained

by the NTSB confirmed that the mate's child, who was undergoing a scheduled routine medical procedure that day, had suffered a potentially life-threatening complication less than an hour before the mate went on duty).

The mate's cell phone records indicated that 18 outgoing or incoming calls were made or received while the mate was solely responsible for navigating the tugboat and barge. The mate spent at least one-third of his time making or taking calls when he should have been attending to the safe passage of his vessel. It is likely that the mate was using his cell phone at least during the time of the radio calls and possibly at the time of the collision itself. Moreover, he simultaneously conducted Internet searches on the company laptop computer,[2] which further distracted him from his navigational responsibility. The NTSB therefore concluded that the mate of the *Caribbean Sea* failed to maintain an appropriate lookout, including monitoring the radios, while navigating the vessel because he was distracted by personal use of his cell phone and the company laptop computer in dealing with a serious family medical emergency.

All of the calls on the mate's cell phone during the time leading up to the accident were of relatively short duration and were to or from an immediate family member, which suggests that all of the calls were in regard to the medical emergency. The fact that the calls involved an emotionally troubling event that was likely evolving over a period of time increased the likelihood that the calls would distract the mate from his duties. Although such a distraction is understandable, personal concerns cannot be allowed to create risks for others. If the mariner is unable to fully carry out his responsibilities, for whatever reason, his duty is to turn over those responsibilities to someone else.

Personal Cell Phone Use by the *DUKW 34* Deckhand

While standing on the bow of the anchored APV, the *DUKW 34* deckhand was the individual on board with the greatest height of eye and a 360° unobstructed field of view. He could have used this vantage point to continuously monitor the position of the approaching tugboat/barge combination and, at a minimum, keep the master informed about its progress. Instead, according to the deckhand, he only acted as lookout in the upriver direction (forward), assuming that the master was covering the lookout responsibilities downriver (aft). Additionally, cell phone records reviewed by the NTSB revealed that, while the deckhand was on the bow, he transmitted two text messages and his phone received two others. The last text message that he sent was about 1 minute before he jumped into the water, just before the collision. The NTSB therefore concluded that the *DUKW 34* deckhand's use of his cell phone to send text messages while he was on the bow of the vessel distracted him from effectively performing his duty as a lookout.

[2] K-Sea Transportation provided all company vessels with laptop computers for the purpose of general communication, aids to navigation, and transmission of data for billing. On the *Caribbean Sea*, the laptop computer, which had Internet connectivity, was located in the lower wheelhouse. Following the accident, NTSB investigators removed the laptop computer for analysis. In June 2011, the Federal Bureau of Investigation, which had further examined the computer, informed the NTSB that on the day of the accident, between about 1400 and 1420, the computer had been used to look up medical information.

Nonoperational Use of Cell Phones and Other Wireless Devices

Using cellular telephones and other wireless electronic devices has been demonstrated to be visually, manually, and cognitively distracting.[3] Talking on cell phones can have serious consequences in safety-critical situations, and sending or reading text messages is potentially even more distracting than talking because texting requires visual attention to the display screen of the device.

As a result of its preliminary investigations of two marine accidents occurring in December 2009 involving collisions between Coast Guard and civilian vessels, the NTSB, on August 11, 2010, issued the following safety recommendation to the Coast Guard:

> Issue a safety advisory to the maritime industry that (1) promotes awareness of the risk posed by the use of cellular telephones and other wireless devices while operating vessels and (2) encourages the voluntary development of operational policies to address the risk. (M-10-3)

In response to Safety Recommendation M-10-3, the Coast Guard, on October 29, 2010, issued Marine Safety Advisory 01-10, *Distracted Operations–Don't let it be you*, which warned mariners of the danger and potential for distraction from duty caused by the use of a cellular telephone or wireless device for purposes unrelated to vessel operation. That safety alert specifically mentioned the risk of using these devices when mariners were performing navigation duties alone, as was the mate on the *Caribbean Sea*. Based on this response, Safety Recommendation M-10-3 was classified "Closed—Acceptable Action" on December 14, 2010.

Cell phone use has been a factor in accidents in all transportation modes. For example, the NTSB has investigated several fatal railroad accidents in which use of a wireless device was identified as causal or contributing. In its investigation of a May 28, 2002, head-on collision of a coal train with an intermodal train near Clarendon, Texas,[4] in which the engineer of the intermodal train was killed, the NTSB determined that the probable cause of the accident was the coal train engineer's use of a personal cell phone during the time he should have been attending to the requirements of the track authorization under which his train was operating. As a result of that accident investigation, the NTSB made the following safety recommendation to the Federal Railroad Administration:

> Promulgate new or amended regulations that will control the use of cellular telephones and similar wireless communication devices by railroad operating employees while on duty so that such use does not affect operational safety. (R-03-1)

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[3] For research information, see U.S. Department of Transportation website on distracted driving <http://www.distraction.gov>.

[4] *Collision of Two Burlington Northern Santa Fe Freight Trains Near Clarendon, Texas, May 28, 2002*, Railroad Accident Report NTSB/RAR-03/01 (Washington, DC: National Transportation Safety Board, 2003), which is available at our website at <http://www.ntsb.gov/doclib/reports/2003/RAR0301.pdf>.

In its investigation of the September 12, 2008, head-on collision of a westbound commuter train with an eastbound freight train near Chatsworth, California,[5] in which 25 people were killed, the NTSB determined that the probable cause of the accident was the failure of the engineer of the commuter train to observe and appropriately respond to a red signal aspect because he was engaged in prohibited use of a wireless device, specifically text messaging, that distracted him from his duties.

Inappropriate use of cell phones or other wireless electronic devices has also been cited as a causal or contributing factor in highway accidents that the NTSB has investigated.[6]

In this accident, the *Caribbean Sea* mate was operating the vessel from the lower, rather than the upper, wheelhouse when the accident occurred, an action possibly explained by his desire for an environment favorable for using his cell phone and accessing K-Sea's laptop computer for Internet searches. On *DUKW 34* leading up to the collision, the deckhand was using his personal cell phone to send text messages instead of performing his duty as lookout.

The NTSB was unable to determine the extent to which cell phone use by mariners has caused or contributed to marine accidents. Coast Guard investigations typically have not verified nonoperational cell phone use following marine accidents. As a result, the Coast Guard's marine accident database does not explicitly record instances in which nonoperational use of a cell phone or other wireless device has been causal in an accident. The ability to determine the extent of inappropriate cell phone or other wireless device use will provide investigators and policymakers with important information about this form of distracted operations on board marine vessels, but this information will have been gathered after accidents have occurred. The NTSB believes that critical measures can be taken to keep those accidents from happening. These include a continuing outreach program of information and education to the maritime industry on this issue, regulations to prohibit nonoperational use of communication devices, and enforcement mechanisms to ensure that the regulations are being adhered to.

The NTSB recognizes the difficulty of this task. Establishing that a wireless communication device was actually used leading up to an accident can be an involved and time consuming process. Additionally, the devices in question are small and therefore easily concealable, and those individuals or employees wishing to circumvent the prohibitions on their use can frequently do so undetected. But the consequences that can result from such use, as shown by this accident, are serious enough to demand that every feasible action be taken to prevent it.

Because cell phones and other wireless electronic devices have come to play such a prominent role in the day-to-day activities of people in all walks of life and because their use has

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[5] *Collision of Metrolink Train 111 with Union Pacific Train LOF65–12, Chatsworth, California, September 12, 2008*, Railroad Accident Report NTSB/RAR-10/01 (Washington, DC: National Transportation Safety Board, 2010) <http://www.ntsb.gov/doclib/reports/2010/RAR1001.pdf>.

[6] See (a) *Ford Explorer Sport Collision with Ford Windstar Minivan and Jeep Grand Cherokee on Interstate 95/495 near Largo, Maryland, on February 1, 2002*, Highway Accident Report NTSB/HAR-03/02 (Washington, DC: National Transportation Board, 2003) <http://www.ntsb.gov/doclib/reports/2003/HAR0302.pdf>; (b) *Motorcoach Collision With the Alexandria Avenue Bridge Overpass, George Washington Memorial Parkway, Alexandria, Virginia, November 14, 2004*, Highway Accident Report NTSB/HAR-06/04 (Washington, DC: National Transportation Safety Board, 2006) <http://www.ntsb.gov/publictn/2006/HAR0604.pdf>.

been implicated in accidents across all transportation modes, the NTSB concluded that increased Coast Guard focus on and oversight of mariners' use of cell phones and other wireless electronic devices will prevent accidents and save lives.

Therefore, the National Transportation Safety Board makes the following safety recommendations to the U.S. Coast Guard:

> Develop and implement an investigative protocol that directs your investigation officers to routinely check for nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions involved in marine accidents. (M-11-1)
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> Revise your commercial vessel accident database (MISLE) to maintain a record of nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions when such use is causal or contributory to marine accidents. (M-11-2)
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> Regulate and enforce the restriction on nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions so that such use does not adversely affect vessel operational safety. (M-11-3)
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> Until you can develop regulations governing nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions, continue your outreach program of information and education to the maritime industry on this issue. (M-11-4)

The NTSB also issued one safety recommendation to Ride The Ducks International, LLC, one safety recommendation to K-Sea Transportation Partners L.P., and one safety recommendation to The American Waterways Operators.

The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendations. In response to the recommendations in this letter, please refer to Safety Recommendations M-11-1 through -4. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, ROSEKIND, and WEENER concurred in these recommendations.

[Original Signed]

By: Deborah A.P. Hersman
Chairman