National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 1, 2009

In reply refer to: M-09-17
M-07-1 (Reiteration)

Admiral Thad W. Allen
Commandant
United States Coast Guard
2100 Second Street, SW
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About 0012 Pacific daylight time on April 8, 2008, a fire broke out in the engineroom of the 221-foot-long U.S. small passenger vessel *Queen of the West*. The vintage-style, paddlewheel vessel was traveling east on the Columbia River near Rufus, Oregon, with 124 overnight passengers and 53 crewmembers on board, as part of a 7-day cruise. Though not required by U.S. Coast Guard regulations, the owner of the *Queen of the West*, Majestic America Line, had equipped the vessel with an automatic fire detection system and a fixed fire suppression system. The systems functioned properly, alerting the bridge team to the fire and helping to extinguish the flames. Crewmembers were able to contain the fire to the engineroom, and the vessel did not need to be evacuated. The *Queen of the West* sustained about $3.9 million in damage. One crewmember was treated for mild hypothermia.

The National Transportation Safety Board (NTSB) determined that the probable cause of the fire on board the *Queen of the West* was the failure of a pressurized component on the port main propulsion hydraulic system, resulting in hydraulic oil spraying onto the port engine's exhaust piping and igniting. Contributing to the survivability of the vessel, and to the absence of injury or loss of life, was Majestic America Line's voluntary installation of an automatic fire detection system and a fixed fire suppression system.[1]

The safety issues identified in this investigation were the importance of having a functioning automatic fire detection system and a fixed fire suppression system on small passenger vessels and the inadequate requirements for small passenger vessels regarding out-of-water survival craft for passengers and crew.

[1] For more information, see *Engineroom Fire On Board U.S. Small Passenger Vessel* Queen of the West, *Columbia River, near Rufus, Oregon, April 8, 2008*, Marine Accident Summary Report NTSB/MAR-09/04/SUM (Washington, DC: National Transportation Safety Board, 2009). The report will be available on the NTSB website at <http://www.ntsb.gov/publictn/2009/MAR0904.htm>.

Fire Detection and Suppression On Board Small Passenger Vessels

Because the *Queen of the West* was less than 100 gross registered tons and certificated to carry more than 49 overnight passengers, the vessel was inspected by the Coast Guard according to Title 46 *Code of Federal Regulations* (CFR) subchapter K. However, when the *Queen of the West* was first put in service in 1995, it was certificated under subchapter T, which contained the applicable regulations at the time for small passenger vessels. Being of steel construction (as opposed to wood or fiberglass) and classified as a T-vessel before subchapter K's effective date of March 10, 1996, the *Queen of the West* was not required to have an automatic fire detection system or a fixed fire suppression system, which would have been required had the vessel been built after March 10, 1996. However, Majestic America Line voluntarily equipped the *Queen of the West* with an automatic fire detection system and a fixed fire suppression system. Had these non-mandatory fire systems not been installed on board the vessel and had the fire continued to burn unchecked, hundreds of gallons of diesel oil and hydraulic oil in the engineroom tanks could have ignited, resulting in a fire of far greater severity, possibly necessitating evacuation of the vessel.

The NTSB has previously recommended that small passenger vessels be fitted with fire detection and suppression systems, regardless of their build date or hull material. In March 2007, the NTSB issued Safety Recommendation M-07-1 to the Coast Guard following the June 12, 2006, engineroom fire on board the U.S. commuter ferry M/V *Massachusetts* in Boston Harbor.[2] The *Massachusetts*, carrying 65 passengers and 4 crewmembers, was about 15 minutes into a scheduled transit between Rowe's Wharf in Boston and Hingham, Massachusetts, when black smoke and an engine high-water-temperature alarm alerted the crew to the fire. Like the *Queen of the West*, the *Massachusetts* was not required to have an automatic fire detection system and a fixed fire suppression system. However, unlike the *Queen of the West*, the *Massachusetts* did not carry this equipment on board. As a result of its engineroom fire, the *Massachusetts* sustained about $800,000 in damage,[3] and two passengers were treated for smoke inhalation. Passengers were evacuated to a nearby vessel, and the fire was extinguished by a fire boat from the Boston fire department.

Safety Recommendation M-07-1 asks the Coast Guard to take the following action:

> Require that all small passenger vessels certificated to carry more than 49 passengers, regardless of date of build or hull material, be fitted with an approved fire detection system and a fixed fire suppression system in their enginerooms.[4]

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[2] *Fire on Board U.S. Small Passenger Vessel M/V* Massachusetts*, Boston Harbor, Massachusetts, June 12, 2006*, Marine Accident Brief NTSB/MAB-07/01 (Washington, DC: National Transportation Safety Board, 2007).

[3] The fire damage on board the *Massachusetts* was more extensive than that on the *Queen of the West*; however, because the *Queen of the West*'s propulsion system was more complex and one of a kind, repair and replacement costs were considerably higher for the *Queen of the West* than for the *Massachusetts*.

[4] Safety Recommendation M-07-1 supersedes Safety Recommendations M-02-6 and -8, which were issued to the Coast Guard following the November 17, 2000, engineroom fire on board small passenger vessel *Port Imperial Manhattan*. Eight passengers and three crewmembers were on board. As a result of the accident, one passenger was treated for smoke inhalation and the cost to repair the vessel was estimated at $1.2 million. Safety Recommendations M-02-6 and -8 asked the Coast Guard to require that all small passenger vessels in commuter and ferry service, regardless of their date of build, be fitted with a fire detection system and a fixed fire suppression system in the engineroom. The recommendations are classified "Closed—Unacceptable Action/Superseded."

The NTSB directed Safety Recommendation M-07-1 toward vessels carrying more than 49 passengers because of vessel design considerations. Vessels certificated to carry fewer than 49 passengers are typically smaller, do not always have segregated engine spaces to accommodate an automatic fire detection system and a fixed fire suppression system, and are often propelled by stern-mounted outboard engines.

In correspondence and at a meeting with NTSB staff to discuss Safety Recommendation M-07-1, the Coast Guard indicated that it did not concur with the recommendation, citing system costs, a lack of injuries from similar accidents, and the small number of fires that would be affected by the recommendation. As of the date of this letter, the Coast Guard has not implemented M-07-1, and the recommendation is currently classified "Open—Unacceptable Response."

Because the fire on board the *Queen of the West* illustrates how effective an automatic fire detection system and a fixed fire suppression system can be in minimizing damage and preventing injury, the NTSB reiterates Safety Recommendation M-07-1 to the Coast Guard and urges the installation of these systems to protect vessel passengers and crew.

Out-of-Water Flotation

The *Queen of the West* did not carry any survival craft, such as liferafts, and was not required by regulations to do so. The only compulsory craft on board the vessel was a rescue boat. This rescue boat, a small, six-person craft, was required by Sector Portland's Officer in Charge of Marine Inspection and identified on the *Queen of the West*'s certificate of inspection in accordance with 46 CFR 117.208. In carrying the rescue boat, the *Queen of the West* was in compliance with Coast Guard regulations. However, had the *Queen of the West*'s fire suppression system and crewmembers not performed as well as they did in combating the fire, or had the fire intensified beyond the crew's ability to fight it, the master would have had no choice but to evacuate the 177 persons on board by way of the small rescue boat that could only carry six people at a time, two of whom had to be crewmembers. One of these two crewmembers would have needed to return the rescue boat to the ship to pick up the next five persons in line (four passengers and one crewmember). The situation would have deteriorated quickly, and the master would have had little choice but to order all remaining persons on board into the 44º F water with only their lifejackets. At that temperature, hypothermia would have quickly set in.

Though no evacuation was required and no one was injured, the *Queen of the West* accident highlights the potential for significant casualties when passenger vessels do not carry out-of-water flotation for all persons on board. The NTSB has previously recommended that passenger vessels, regardless of what body of water they travel on, be equipped with enough primary lifesaving equipment to safely carry all passengers and crew in craft designed to prevent immersion in water. For example, in September 1994, following the December 1993 sinking of the 58-foot-long U.S. passenger vessel *El Toro II* on the Chesapeake Bay near Point Lookout, Maryland,[5] with loss of life, the NTSB issued Safety Recommendation M-94-26 to the Coast Guard and also placed the recommendation on the NTSB Most Wanted List of Transportation Safety Improvements in 1995:

[5] *Sinking of U.S. Small Passenger Vessel* El Toro II, *Near Point Lookout, Maryland, Chesapeake Bay, December 5, 1993*, Marine Accident Report NTSB/MAR-94/03 (Washington, DC: National Transportation Safety Board, 1994).

> Require that out-of-the-water survival craft for all passengers and crew be provided onboard small passenger vessels on all routes. (Class II, Priority Action)

The Coast Guard did not implement Safety Recommendation M-94-26, and in March 1997, the NTSB classified the recommendation "Closed—Unacceptable Action" and removed it from the Most Wanted List in 1998. In correspondence to the Coast Guard in connection with closing Safety Recommendation M-94-26, the NTSB stated in part: "The Board holds firm in its belief, as it has stated in many accident investigation reports involving loss of life, that there must be 100 percent out-of-water survival craft for all passengers on all routes regardless of the [water] temperature. . . . We will continue to highlight this issue in future investigations where appropriate."

Based on the circumstances of the *Queen of the West* accident and the NTSB's commitment to continue highlighting the importance of out-of-water flotation for all passengers and crew on board small passenger vessels, the NTSB recommends that the Coast Guard require that out-of-water survival craft for all passengers and crew be provided on board small passenger vessels on all routes.

In summary, as a result of the accident on board the *Queen of the West*, the NTSB makes the following safety recommendation to the Coast Guard:

> Require that out-of-water survival craft for all passengers and crew be provided on board small passenger vessels on all routes. (M-09-17)

Also as a result of this accident investigation, the NTSB reiterates Safety Recommendation M-07-1, previously issued to the Coast Guard:

> Require that all small passenger vessels certificated to carry more than 49 passengers, regardless of date of build or hull material, be fitted with an approved fire detection system and a fixed fire suppression system in their enginerooms. (M-07-1)

In response to the recommendations in this letter, please refer to Safety Recommendations M-09-17 and M-07-1. 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 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 Member SUMWALT concurred in these recommendations.

[Original Signed]

By: Deborah A.P. Hersman
Chairman