



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 3, 2006

In reply refer to: M-06-10 and -11
and M-02-5 and -10 (Reiterations)

Admiral Thomas H. Collins
Commandant
U.S. Coast Guard
Washington, D.C. 20593-0001

On the morning of October 17, 2004, a fire broke out in the engineroom of the U.S. small passenger vessel *Express Shuttle II* while it was entering the mouth of the Pithlachascotee River near Port Richey, Florida. The shuttle was returning from the Gulf of Mexico, where it had ferried 78 passengers to a casino boat offshore, and was on its way back to the marina operated by the vessel's owner, Paradise of Port Richey. Only the master and two deckhands were on board when the fire broke out. None of the crew activated the vessel's fixed carbon dioxide (CO₂) fire suppression system. The crew attempted to fight the fire with portable extinguishers, but when the fire burned out of control, they prepared to abandon ship. A passing recreational boat, operated by an off-duty Coast Guardsman, rescued the crewmembers. Firefighters from Port Richey and Pasco County fought the blaze, but the vessel, valued at \$800,000, was destroyed.

The National Transportation Safety Board determined that the probable cause of the fire on board the *Express Shuttle II* was a fractured, improperly installed fuel injection line on the inboard side of the starboard engine that allowed diesel fuel to spray onto the engine and ignite. Contributing to the cause of the fire was the failure of Paradise of Port Richey to have a preventive maintenance program, which could have identified the company's ongoing problem with the vessel's fuel lines before a failed line led to the fire. Contributing to the extent of the damage were the vessel's faulty fire detection system and the crew's failure to employ proper marine firefighting techniques.

Preventive Maintenance

Invoices show that between January and October 2004, Paradise of Port Richey purchased a total of 13 replacement fuel lines, all intended for the *Express Shuttle II*'s starboard engine, according to the evidence. Investigators found that the company waited until a fuel line fractured before repairing it and did not keep accurate records of such repairs. In addition, employees who performed the repairs did not consult the engine manufacturer's service manual and did not follow the manufacturer's recommended

procedures regarding fuel line clamps. The Safety Board concluded that the frequent need to replace fuel lines on the *Express Shuttle II* should have alerted the company that it had a problem with the fuel lines, which, if addressed, would have shown that the fuel lines were not being properly installed. The Board found that a written preventive maintenance program could have identified and eliminated the underlying cause of the fuel line failures, thereby avoiding the failure that led to the fire that destroyed the *Express Shuttle II*.

The Safety Board has addressed the issue of preventive maintenance in other recent accidents involving small passenger vessels. In November 2000, the *Port Imperial Manhattan*, a commuter ferry operated by NY Waterway, suffered an engineroom fire while en route from Manhattan to Weehawken, New Jersey. The Board found that the fire was caused by a loose connection in an electrical junction box and concluded that if NY Waterway had had an effective preventive maintenance program, the loose electrical connection would have been detected before it caused the fire.¹

Ten months later, in September 2001, an engine fire broke out on the U.S. small passenger vessel *Seastreak New York* while en route from Highlands, New Jersey, to New York City. The Board determined that the fire was caused by lube oil leaking onto a hot exhaust manifold and igniting. The lube oil hose had been improperly secured, allowing it to contact the hot manifold, become brittle, and break. The Board cited as a contributing cause of the fire “the lack of inspection and maintenance procedures by Circle Navigation Company [the vessel operator] that might have discovered the improper installation.”²

Fourteen months later, in December 2002, the U.S. small passenger vessel *Panther*, a 31-foot tour boat operated by Everglades National Park Boat Tours in Everglades City, Florida, sank in about 12 feet of water with 34 people on board (including 5 children). The Safety Board discovered serious deficiencies in the vessel’s maintenance and determined that the probable cause of the sinking was flooding through a hull breach resulting from an earlier grounding that the vessel’s owner had neglected to address.³

In its report on the *Port Imperial Manhattan* fire, the Safety Board noted that the Federal regulators of other transportation modes (Federal Aviation Administration, Federal Motor Carrier Safety Administration, and Federal Railroad Administration) all require that operators have a systematic program for performing inspection and maintenance. Because the U.S. Coast Guard has authority for oversight of domestic small

¹ National Transportation Safety Board, *Fire On Board the Small Passenger Vessel Port Imperial Manhattan, Hudson River, New York, November 17, 2000*, Marine Accident Report NTSB/MAR/02-02 (Washington, DC: NTSB, 2002).

² National Transportation Safety Board, *Fire on Board the Small Passenger Vessel Seastreak New York, Sandy Hook, New Jersey, September 28, 2001*, Marine Accident Report NTSB/MAR-02/04 (Washington, DC: NTSB, 2002).

³ National Transportation Safety Board, *Sinking of the U.S. Small Passenger Vessel Panther Near Everglades City, Florida, December 30, 2002*, Marine Accident Report NTSB/MAR-04/01 (Washington, DC: NTSB, 2004).

passenger vessels, the Board issued the following safety recommendation to the Coast Guard:

M-02-5

Require that companies operating domestic passenger vessels develop and implement a preventive maintenance program for all systems affecting the safe operation of their vessels, including the hull and mechanical and electrical systems.

The Coast Guard disagreed with the recommendation, stating that “small passenger vessels are subject to a comprehensive set of regulations that are designed to promote vessel safety,” that vessel operators can participate in the Streamlined Inspection Program (SIP), and that “the recommended requirements would be unnecessarily burdensome and duplicative of existing requirements.”

The Safety Board generally agrees that small passenger vessel regulations are comprehensive in that they list the vessel components and devices that are subject to inspections and tests and stipulate the standards with which these devices must comply to allow for the safe operation of a vessel. However, regarding the upkeep of the vessel, the regulations state only that repairs and maintenance must be accomplished in compliance with existing standards. The regulations do not promote or require a vessel owner or operator to develop a systematic program for addressing repairs and maintenance. The continuing occurrence of small passenger vessel accidents that stem from maintenance failures demonstrates the need for vessel owners or operators to develop such programs. The Passenger Vessel Association has posted on its Web site worksheets and checklists that vessel owners and operators can use to set up their own preventive maintenance programs. Preventive maintenance programs should not be considered burdensome to vessel operators but rather a means of improving the quality, reliability, and safety of a vessel and its operation. In addition, Coast Guard figures indicate that the small passenger vessel industry has generally ignored the SIP.⁴

The Safety Board has classified Safety Recommendation M-02-5 “Open—Unacceptable Response.” The Board believes that the Coast Guard should reconsider requiring operators of inspected small passenger vessels to develop and implement preventive maintenance programs for safety-critical vessel systems, including the hull and the mechanical and electrical systems, and therefore reiterates Safety Recommendation M-02-5.

Crew Response to the Fire Emergency

The crew of the *Express Shuttle II* did not use proper firefighting techniques. The deckhands delayed notifying the master of the fire, and the master did not respond immediately to their warning. Rather than securing the engine room ventilation and closing all access to the space containing the fire, crewmembers opened the hatches to the

⁴ According to the most recent available data, as of October 2003, only 29 of the 10,125 small passenger vessels the Coast Guard inspects had enrolled in the SIP.

engineroom at least three times, feeding the fire with oxygen each time. The master did not try to activate the vessel's fixed CO₂ fire-extinguishing system, which neither deckhand even knew about. The deckhands had not undergone any emergency training, including fire drills, although they had worked 1 and 2 months, respectively, for the company. The Safety Board concluded that the crewmembers' firefighting efforts were ineffective in controlling or extinguishing the *Express Shuttle II* fire because they lacked adequate firefighting training and because the master did not take appropriate fire suppression measures.

The Safety Board has investigated past accidents on small passenger vessels where crew training in fire emergency procedures was a safety issue. Having concluded as a result of its investigation of the *Port Imperial Manhattan* fire that the crewmembers did not use proper firefighting techniques and that their "inability to appropriately respond to this emergency was the direct result of a lack of adequate training," the Board issued the following safety recommendation to the Coast Guard:

M-02-9

Establish firefighting training requirements for crewmembers on board small passenger vessels in commuter and ferry service.

The Coast Guard responded that it partially concurred with the recommendation but that it believed "the current requirements and recommendations are sufficient" and that it intended to take no further action. The Safety Board emphasizes that Federal regulations do not require masters and deckhands on small passenger vessels to undergo formal firefighting training, but rather, stipulate only that newly hired deckhands be instructed as to their duties in an emergency and that masters hold "sufficient fire drills" to familiarize crewmembers with their duties in case of a fire. The format and depth of the required instruction for new deckhands and the requirement for masters to hold "sufficient fire drills" are subject to discretionary compliance. Moreover, masters are not required to complete training in firefighting techniques and may not be prepared to train others or to evaluate the effectiveness of fire drills. In light of the evidence from the *Express Shuttle II* and previous vessel fires that it has investigated, the Safety Board believes that the Coast Guard should establish firefighting training requirements for crewmembers on board all small passenger vessels. Safety Recommendation M-02-9, previously classified "Open—Unacceptable Response," is therefore classified "Closed—Superseded."

The Safety Board issued the following safety recommendation as an interim measure the Coast Guard could take while it acted on Safety Recommendation M-02-9:

M-02-10

Revise Navigation and Vessel Inspection Circular [NVIC] No. 1-91 so that it provides more in-depth guidance in training and drills for firefighting on board small passenger vessels.

The Coast Guard responded that it did not concur with the recommendation because NVIC 1-91 was intended only to give general guidance to marine employers and masters and that it intended to take no further action. The Board has classified Safety Recommendation M-02-10 as “Open—Unacceptable Response” and continues to believe that NVIC 1-91 should be revised to provide detailed guidance, rather than only a list of tasks, regarding training and drills for firefighting on board small passenger vessels. The Board therefore reiterates Safety Recommendation M-02-10.

Fire Detection System

The Safety Board found that the *Express Shuttle II*'s fire detection system did not sound an alarm at any point during the fire and concluded that the system was not functioning at the time of the accident. Investigators discovered that the alarm panel had not been approved for use in fire detection systems, as required by Coast Guard regulations.⁵ In addition, the system's circuits were not wired in compliance with Coast Guard requirements for electrical supervision.⁶

The earlier a fire is detected and responded to, the better the chance of extinguishing it before it spreads out of control. If the deckhands had heard an alarm from the vessel's fire detection system, they would not have had to open and close the hatches to determine where the fire was and what was on fire. If the alarm panel had given the master early notification of the fire (and if he had been adequately trained in marine firefighting), he could have activated the vessel's fixed CO₂ fire suppression system. The crew's efforts to fight the fire with a portable extinguisher were ineffective, and by the time the crew abandoned the vessel, the fire was climbing onto the upper deck. The Safety Board concluded that the *Express Shuttle II*'s faulty fire detection system prevented early detection of the fire and precluded its early and effective suppression.

The Safety Board is concerned that other small passenger vessels might be equipped with noncompliant fire detection systems similar to the one installed on the *Express Shuttle II*, which would put other passengers and crewmembers at risk from undetected shipboard fires. The Board therefore believes that the Coast Guard should require that Officers-in-Charge, Marine Inspection, before issuing a certificate of inspection to a small passenger vessel that is required to have a fire detection system, verify that all system components are approved for use in fire detection systems and that the circuits of the system are electrically supervised.

Recommendations

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

Establish firefighting training requirements for crewmembers on board all small passenger vessels. (M-06-10)

⁵ Title 46 *Code of Federal Regulations* (CFR) section 181.400(c).

⁶ Title 46 CFR section 161.002-10(c).

Require that Officers-in-Charge, Marine Inspection, before issuing a certificate of inspection to a small passenger vessel that is required to have a fire detection system, verify that all system components are approved for use in fire detection systems and that the circuits of the system are electrically supervised. (M-06-11)

The National Transportation Safety Board also reiterates the following recommendations to the Coast Guard:

Require that companies operating domestic passenger vessels develop and implement a preventive maintenance program for all systems affecting the safe operation of their vessels, including the hull and mechanical and electrical systems. (M-02-5)

Revise Navigation and Vessel Inspection Circular No. 1-91 so that it provides more in-depth guidance in training and drills for firefighting on board small passenger vessels. (M-02-10)

In addition, the following previously issued recommendation to the Coast Guard is classified "Closed—Superseded":

Establish firefighting training requirements for crewmembers on board small passenger vessels in commuter and ferry service. (M-02-9)

As a result of its investigation of the *Express Shuttle II* accident, the Safety Board has also issued safety recommendations to Paradise of Port Richey and Caterpillar, Inc. The Board would appreciate a response from you within 90 days addressing actions you have taken or intend to take to implement our recommendations. In your response, please refer to M-06-10, M-06-11, M-02-5, and M-02-10. For additional information, you may call Captain Michael Brown at (202) 314-6174.

Acting Chairman ROSENKER and Members ENGLEMAN CONNERS, HERSMAN, and HIGGINS concurred in these recommendations.

[Original Signed]

By: Mark V. Rosenker
Acting Chairman