

NTSB MOST WANTED LIST

CRITICAL CHANGES NEEDED TO REDUCE TRANSPORTATION ACCIDENTS AND SAVE LIVES

2014

IMPROVE FIRE SAFETY IN TRANSPORTATION

What is the Problem?

Fire can contribute to accidents, injuries, and deaths in all modes of transportation. Fire safety in transportation concerns many elements, such as materials, design, and fire detection and suppression technologies.

Among the most notable fire-related investigations completed by the NTSB in recent years are the following:

- Aviation – Three cargo fires accidents in the past seven years have resulted in the deaths of two flight crews and the total loss of three aircraft. The NTSB investigations for all three accidents revealed deficiencies in fire safety strategy used for both fire detection and suppression, and noted the role played by cargo container materials.
- Highway – In 2005, 23 passengers were killed in a motorcoach fire near Wilmer, Texas as they were evacuating as a result of Hurricane Rita. The NTSB found that deficiencies with design, materials, and fire detection systems enabled a wheel well fire to spread rapidly throughout the vehicle.
- Marine – In 2006 in Boston Harbor, a fire in the unmanned engine room of a commuter ferry resulted in an estimated \$800,000 in damages, though fortunately no serious injuries or deaths occurred.
- Rail – In 2011 near Miriam, Nevada, an Amtrak passenger train experienced a fire following a collision with a commercial truck. It was determined that use of fire doors between train cars could have prevented the spread of smoke and fire.

What can be done?

Preventing, detecting, and suppressing a fire in an aircraft at 30,000 feet or on a ship many miles from shore raises different challenges



Photo of CO2 fire suppression system components taken during NTSB's investigation of the April 8, 2008, *Queen of the West* engine room fire.

and requires different countermeasures than a fire in surface transportation. There is, however, a common need in all transportation modes for early fire detection and response. Detection can range from mounting devices in unmanned engine rooms of marine vessels to installing technology to monitor temperatures in motorcoach wheel wells. The key is to provide as early a warning as possible to an impending fire so that crews and drivers have as much response time as possible.

Once a fire starts, materials and design can slow fire propagation, allowing the operator more time to respond. For example, in motorcoaches, the use of fire-resistant materials for sidewalls in fire-prone areas could prevent fires from entering passenger compartments. In passenger rail, use of fire doors between train cars could prevent the spread of smoke and fire. In aircraft, use of fire-resistant and fire-retardant materials can limit the spread of fire, providing additional time for appropriate response or evacuation. Important work is being done by federal agencies and private companies to develop, test, and improve fire-retardant and fire-resistant materials, as well as fire detection and suppression systems for all modes of transportation.

Fire suppression holds the greatest potential for saving lives, reducing costs, and minimizing damage. These vehicles must be capable of controlling a fire through on-board fire suppression systems and can include systems within individual containers as well as vehicle compartments.

for more information, visit: www.nts.gov/mostwanted



National
Transportation
Safety Board

IMPROVE FIRE SAFETY IN TRANSPORTATION

What is the NTSB doing?

Over the years, NTSB investigations in all modes of transportation have revealed a variety of deficiencies in the implementation of fire safety practices, such as those noted above. We have issued a variety of recommendations aimed at preventing and detecting fires, as well as protecting the lives of operators and passengers in the event of fires.

In April 2013, the NTSB held a two-day forum to look into the growing role of lithium-ion batteries in transportation. The forum highlighted the opportunities that are made possible by lithium battery technology, but also how the industries involved must evaluate and manage the risk of lithium-ion batteries in transportation, particularly where fire is concerned.

A January 2013 battery fire on board a Japan Airlines Boeing 787 on the ground at Boston Logan airport is currently under investigation; the NTSB anticipates completing this investigation in the Fall of 2014. The NTSB is also participating in the United Kingdom investigation into an on-the-ground fire on an Ethiopian Airlines Boeing 787, seemingly related to electrical problems in the emergency location transmitter.

Regarding marine safety, a forum is being planned for later in 2014 to discuss cruise ship safety following recent on-board fires that left thousands of cruise passengers stranded at sea.

The NTSB will continue to promote fire safety in transportation across all modes of transportation.

**Critical changes
needed to reduce
transportation
accidents
and save lives**



National
Transportation
Safety Board

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation - railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the Federal Government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

