

Lessons Learned from Fatal Accidents

Warning to Small Passenger Vessel Operators: Out-of-Date Weight Standards Threaten Safety, Compromise Vessel Stability

Underestimating the weight of passengers aboard small vessels can contribute to accidents and deaths, the National Transportation Safety Board (NTSB) warns. Until the U.S. Coast Guard revises passenger weight standards, the NTSB urges operators to be aware that average weight assumptions may be inaccurate and that excess passenger weight may lead to reduced vessel stability.

After several fatal accidents, one involving a small passenger vessel, the NTSB has urged federal regulators to revise out-of-date average passenger weight standards because they were factors in the accidents. The average weight of Americans has increased significantly since these standards were established; they use an average weight of 140 pounds per person to calculate how many passengers a vessel may carry in protected waters and assume a mix of men, women, and children. For unprotected waters, the weight standard is 160 pounds. These out-of-date standards underestimate current passenger weight by as much as 25 pounds per person.

The NTSB recently issued a final report on the most recent weight-related accident—the capsizing of the *Lady D*, a small passenger pontoon-style vessel in Baltimore Harbor.

The accident occurred on the afternoon of March 6, 2004, as the vessel was en route from Fort McHenry to Fells Point, Maryland, with 23 passengers and 2 crewmembers on board. The number of people permitted on the *Lady D* was based on an out-of-date Coast Guard weight standard of 140 pounds per person. The actual cumulative weight of the passengers and crew—more than 700 pounds above the approved load—significantly reduced the buoyancy of the vessel, compromising its stability. When the pontoon vessel encountered a rapidly developing storm with high winds and waves, it began to rock, could not recover, and overturned. Five passengers died and four suffered serious injuries.

“This report highlights important facts that mariners need to know,” Acting NTSB Chairman Mark V. Rosenker said. “The plain blunt truth is that people are getting heavier. This vessel carried too many people based on an out-of-date weight allowance, and that extra weight compromised the stability of the vessel so greatly that it could not handle the load that it carried in the existing wind and wave conditions.”

In the *Lady D* accident final report, the NTSB listed these lessons learned and conclusions:

- The combination of the use of an out-of-date average weight standard for occupants of small passenger vessels and the excessive number of persons permitted in the *Lady D*'s original certification resulted in the pontoon boat

carrying a load that reduced its reserve buoyancy and compromised its stability characteristics, which made it more susceptible to capsizing on the day of the accident.

- The *Lady D* capsized as a result of the combined effects of the excessive load carried and the wind and wave conditions experienced at the time of the accident.
- Masters need a simple and ready means such as a mark on the hull to determine whether their vessels are overloaded and potentially unsafe.

As a result of the accident, the NTSB again called for the Coast Guard to revise regulations to require that passenger capacity for domestic passenger vessels be calculated based on a statistically representative average passenger weight standard that is periodically updated.

The NTSB also recommended that the Coast Guard—

- Identify a method for determining the maximum safe load condition of a small passenger vessel at the time of loading, such as a mark on the side of the hull, and require that the vessel owners implement that method.
- Revise the stability criteria for small passenger pontoon vessels for all passenger loading conditions to minimize the potential for capsizing in wind and waves.
- Until weight standards and the stability criteria are revised, develop interim pontoon passenger vessel stability guidance based on static and dynamic intact stability considerations.

The NTSB found that this problem is not isolated to small passenger vessels. In its investigation of a US Airways Express regional aircraft that crashed in Charlotte, North Carolina, in January 2003 that killed all 21 on board, investigators determined that the Federal Aviation Administration's (FAA) weight and balance guidance at the time of the accident contributed to the accident because the guidance underestimated average passenger weights. In June 2005, the FAA issued revised guidance to airlines increasing weight standards, and it will periodically review standards based on government health agency surveys.

The *Lady D* and the US Airways Express accident reports may be found on the NTSB Web site, www.nts.gov, under "Publications."