

H-179

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: May 25, 1979

Forwarded to:

Honorable Karl Bowers
Administrator
Federal Highway Administration
Washington, D.C. 20590

Honorable Joan Claybrook
Administrator
National Highway Traffic Safety
Administration
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

H-79-32

On November 30, 1978, at about 6:50 a.m., two left rear tires of an 8,000-gallon semitrailer caught fire and burned while the truck was stopped in the eastbound right curb lane of Interstate 95 on the Woodrow Wilson Memorial Bridge over the Potomac River between Maryland and Virginia.

The driver of the fully loaded tractor/semitrailer had departed Fairfax, Virginia, and had traveled 15 miles when he noted smoke coming from the left rear tires of the trailer tandem and stopped the vehicle. By the time he got out of the cab, the left rear tires had begun to burn. He unsuccessfully attempted to extinguish the fire with a 10-pound class A:B:C fire extinguisher. Another truckdriver stopped and assisted with another 10-pound extinguisher. At 7:01 a.m., firefighting equipment from Prince George's County, Maryland, arrived at the scene and extinguished the fire.

The flames from the tires burned through a 3/32-inch-thick aluminum fender and an aluminum vent tube. The fire also burned a hole in an aluminum hose storage tube. There was soot on the outside surface of the cargo tank shell; however, it was not breached. If the fire department had not arrived quickly, the aluminum tank would have been heated, causing fumes to escape through the tank vent system, or the tank shell above the level of the liquid could have melted, exposing the cargo to the flames. The resulting fire would have created a hazard to the bridge and nearby vehicles.

Postaccident inspection of the vehicle revealed that the left front brake linings of the trailer tandem were completely carbonized. Safety Board investigators concluded that these brakes had been dragging. The driver reported that he had tested the brakes during his pre-trip inspection by applying the brakes and stopping from a low speed. This test, made under a full load, would not normally alert a driver to a dragging brake, so it is not known if the brakes were dragging at the start of the trip. The reason for the dragging brakes could not be determined.

Truck tire fires can develop from different sources. The American Trucking Association (ATA) conducted tests related to tire fires in the late 1950's. In the ATA tests, a trailer brake was purposely dragged for 17 miles with 15 psi air pressure on the brake chamber diaphragm. Brake drum heat caused the wheel bearing grease seal to fail, allowing wheel bearing grease to flow onto the hot drum. The auto-ignition temperature of the grease is about 400° F to 600° F and is lower than the probable brake drum temperature (800° F to 1,100° F). The grease began to burn while the test vehicle was in motion, with much of the heat buildup being dissipated by the airflow around the tires. When the test vehicle was stopped, the grease fire spread to the tires. Although burning wheel bearing grease has been known to start tire fires, the cause of the tire fire on November 30, 1978, could not be determined.

On November 20, 1975, in Arlington, Virginia, a failed wheel bearing on a left rear wheel assembly of a Washington Metropolitan Area Transit Authority bus caused a fire that burned through a fiberglass wheelwell and into the interior of the bus. Only the expeditious action of the driver and 65 passengers averted a major catastrophe. At that time, the Safety Board recommended that the National Highway Traffic Safety Administration (NHTSA) develop standards for wheelwell components that can withstand fire and protect the bus interior. The NHTSA has reported that most new buses ordered for transit use from General Motors Corporation, AM General Corporation, and the Grumman FLXIBLE Company are being produced with a wheelwell which will protect the occupant area of the bus from fire and projected rocks, metal, or other items.

On January 18, 1974, the collision of a tankship and a bulk carrier on the lower Mississippi River resulted in a major fire. The Safety Board concluded from its investigation that:

"The magnitude of the fire...increased when aluminum hatchcovers, which secured cargo tanks, melted and allowed gasoline in tanks that were not damaged by the collision to become involved in the fire."

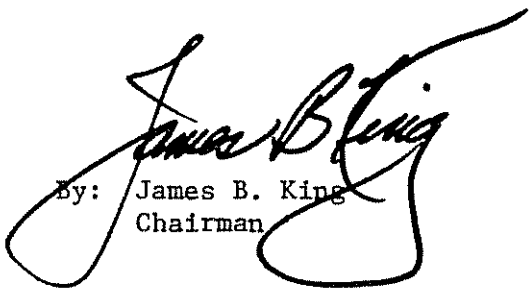
The Board further stated that "...this accident demonstrates that...metals that have low melting points are unsafe for tankcover use." The Board recommended that the U.S. Coast Guard "Prohibit the use of metals with low melting points...in both tankcovers and deck piping systems on tankships." As a result of this recommendation, the Coast Guard evaluated the use of aluminum hatchcovers and has initiated rulemaking action to require a retrofiting of steel hatchcovers for all vessels equipped with aluminum hatchcovers.

Tire and brake fires, while few in number, do occur and can lead to destruction of the entire vehicle. It is important to contain tire fires to allow for time to control the emergency through either the removal of the tire or the application of large quantities of water. This containment can be accomplished by providing fenders or wheelwell units that are fire resistant or that have a higher melting point than the 1,100° F of aluminum.

Therefore, the National Transportation Safety Board recommends that the Federal Highway Administration and the National Highway Traffic Safety Administration:

Cooperate in the promulgation of vehicle safety regulations to require, over the wheels of trailers transporting hazardous materials subject to adverse actions of heat or fire, fenders or other devices that are fabricated of fire-resistant materials and that are designed in such a way so as to resist any wheel or tire fire. (Class II, Priority Action) (H-79-32)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in this recommendation.


By: James B. King
Chairman