

PUBLICATION:

Parking Brake Fires in Commercial Vehicles

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PUBLISHED IN:



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SYNOPSIS:

This publication addresses the appropriate methodologies used to determine the correct origin and cause of parking brake failures in commercial vehicles. Fire origin and cause analysis in commercial vehicles can be challenging due to the lack of familiarity and understanding by the fire investigation community about specific pneumatic and mechanical systems associated with foundation air brakes and spring applied parking brake systems common to commercial vehicles. This analysis will focus on heavier trucks, tractor-trailers, buses equipped with air drum brake systems, and dual wheel/tire combinations at the wheel ends.

The authors provide a review of the typical function of foundation air brake systems and their associated mechanical parking brake systems. This paper discusses

common parking brake configurations and explains how their pneumatic circuits work. Additionally, it reviews typical axle and wheel end configurations to familiarize the investigator with other potential causes of wheel end fires and the mechanical inspection procedures recommended to determine if operating the vehicle with the parking brakes applied caused the fire. The publication also provides a discussion of typical fire patterns caused by parking brake fires to assist in making a proper origin and cause determination, as well as all other potential fire causes and fuel loads at a typical wheel end.