Automatic Emergency Braking – Preventing Truck Crashes With Forward Collision Avoidance and Mitigation Technology

On July 1, 2016, the National Highway Traffic Safety Administration ("NHTSA") reported a 7.7% increase in motor vehicle crash deaths for 2015[1] Ohio is listed in a region that saw an alarming 9% increase in traffic fatalities.[2] The report includes statistics for crashes of all types including commercial motor vehicles, passenger vehicles, motorcycles, bicycles and pedestrians. This article focuses specifically on forward collision safety technology available to reduce the number of rear-end collisions and fatalities caused by commercial trucks.

The top three causes of truck crashes are rear-end collisions, lane departures, and rollover accidents.[3] Original equipment manufacturers continue to introduce safety technology to prevent each of the top three causes of crashes including automatic emergency braking, lane departure warning, and electronic stability control systems to prevent rollover crashes. Rear-end collisions are listed as the top cause of truck crashes annually, accounting for approximately 33,000 or 23.1% of all truck wrecks.[4] Automatic braking technology is proving to have great success at preventing rear-end collisions. It is anticipated that once automatic braking technology is mandated by regulation, rear-end collisions will no longer top this list.

15 Years of Forward Collision Technology

Early collision warning systems have been in existence for well over a decade. Penske Logistics announced on September 18, 2001 (15 years ago) that they were installing collision warning system equipment on its entire tractor fleet.[5] At that time, Penske Logistics' Vice President of Safety, Paul Pentazer, was quoted as stating, "we feel so strongly about the benefits...we now include it as standard equipment on all new tractor orders."[6] This older technology did not include automatic emergency braking. Forward collision warning technology (without automatic braking) simply emits an urgent audible alert with a driver display to warn the driver of an impending collision or that the driver's following distance is unsafe.

Collision Warning / Mitigation encompasses three related technologies: 1) Forward Collision Warning / Alert Systems; 2) Adaptive Cruise Control; and, 3) Collision Mitigation Systems.[7] Forward Collision Warning is the most basic, simply alerting drivers (both audibly and visually, on an in-cab display) that a rear-end collision is imminent. Adaptive Cruise Control allows a truck to maintain a set time-gap between it and a vehicle in front of it, by automatically decelerating if the other vehicle slows down, and re-accelerating (up to a set speed) if the other vehicle speeds up or switches lanes. The most advanced systems alert drivers to potential conflicts with objects AND automatically initiate emergency braking stopping the commercial vehicle from a rear-end collision or reducing the severity of it.

On-board radar is mounted in the front bumper to detect vehicles up to 500 feet in front of the truck.[8] Earlier radar systems could only track metallic vehicles, and had a tendency to miss smaller vehicles, such as motorcycles and bicycles. Radar systems were also unable to detect pedestrians. Newer improved technologies use a camera-based system that have enhanced detection capabilities that will detect pedestrians and bicyclists.[9]

Speeding is also a cause of rear-end collisions. Last year, advanced technology was revealed wherein cameras have now been installed in new trucks that read posted speed limits signs.[10] The technology then compares the posted speed limit to the truck's current speed. An audible alert is issued to the truck driver when the truck is more than 5 mph over the posted speed limit. If the truck is more than 10 mph over the speed limit, the audible alert is accompanied with a one-second speed reduction (automated engine throttle reduction) to slow down the truck and further get the driver's attention.[11]

Choosing to Stop Short

The choices made by a truck company's fleet acquisition personnel determine whether or not a potential defendant truck company cares to stop short of a fatal crash. Forward Collision Avoidance and Mitigation ("FCAM") technology with automatic emergency braking is currently available as a market option when purchasing heavy equipment from an original equipment manufacturer.[12] The truck safety community would like government regulators to make this market option mandatory. By choosing to install FCAM technology, a trucking company's purchasing decision can dramatically reduce the number of preventable rear-end collisions or at the very least, reduce crash severity and likely prevent a fatality. Bendix's Wingman Advance® and Meritor WABCO's OnGuard® are the two leading FCAM options available to install on fleet equipment.

According to Dean Newell, Vice President of Safety, Maverick USA, "we have seen a clear downward trend in rear-end incidents since we started putting OnGuard systems on our trucks...our rear-end accidents were at a rate of 0.09 per million miles in 2008, and they went down to 0.06 per million miles in 2011."[13] Scott Manthey, Vice President of Safety for Interstate Distributors (a 1,500 unit motor carrier) served on a 2016 panel discussion and indicated that the majority of his company's fleet now has forward collision technology.[14] The results have been a significant reduction in yearly rear-end collisions that were historically in the teens now down to just a few.[15] Jim Boyd, manager of fleet technical services at Southeastern Freight (a 3,000 unit motor carrier), utilized both Bendix and Meritor WABCO collision avoidance systems and has given them a positive review. He has been quoted as stating, the systems "might not completely help you avoid a crash, but they certainly can take some of the speed out of a crash. We feel like our success with the systems has already made a positive impact on accident reduction."[16]

Trucker, Collin Copeland, posted on twitter that, "seeing the speed of a car up to 300 yards ahead of you is nice."[17] He further commented that, "it will also slow you down if you get cut off or if you come up on someone too fast."[18] An FMCSA study found that between 8,597 and 18,013 rear-end crashes could be prevented annually through the use of Forward Collision Warning systems.[19] This same study found that rear-end crashes cost on average $239,063 for an injury-related crash, and $1,056,221 for a fatal crash.[20]

On February 5, 2016, the American Trucking Associations (ATA) published a public comment stating that "ATA strongly believes that preventing rear-end crashes is a far better strategic goal than mitigating them and strongly recommends that all vehicles (light and heavy) be equipped with

forward collision warning and mitigation braking technology."[21] The fact that this is the public position of the ATA should assist in proving that the industry standard is to exercise the safest available option to install FCAM technology with new equipment purchases.

The National Highway Traffic Safety Administration along with the Virginia Tech Transportation Institute recently completed a year-long test of trucks equipped with collision avoidance systems. The test was a success involving 150 trucks, more than 100 drivers, from 7 unidentified motor carriers traveling and producing 3 million miles of data, with no rear-end crashes.[22] NHTSA reported that the fleet safety managers would recommend crash avoidance system technology with new fleet acquisitions.[23] On October 16, 2015, NHTSA granted a petition submitted by truck safety advocates "to establish a safety standard to require automatic forward collision avoidance and mitigation systems on certain heavy vehicles."[24] The granting of this petition along with the positive results published in the field study increase the likelihood of an upcoming regulatory FCAM mandate.

Practice Tips

The aforementioned can be drawn upon to establish that purchasing FCAM technology is already industry standard, particularly if the subject-crash involves a newer truck. Participate in an inspection of the truck, even in a rear-end crash. The original equipment manufacturer's "Driver's Manual" should be inside the truck. In fact, the manuals often state, "keep this manual in the vehicle at all times."[25] Look for and capture a photograph of the driver's manual. The manuals themselves have their own designated part number so that you can order a copy or have it produced through a production of documents request at a later date. This author participated in an inspection of a newer Freightliner following a rear-end collision. The driver's manual revealed an entire section entitled "Driver Assistance Features" outlining Technology for Forward Collision Avoidance and Mitigation. During written discovery, retail pricing was produced for the various types of obstacle detection systems available for purchase. The "WABCO OnGuard Collision Warning Adaptive Cruise Control and Collision Mitigation" and "Detroit Assurance Collision Warning, Adaptive Cruise Control, Collision Mitigation and Active Brake Assist with Adjustable Headway Control" ranged in price between $4,000.00 and $5,000.00.[26] This is a small price to pay to avoid a highway fatality. Be mindful, the manuals also include various warnings – that the "system is not a substitute for safe normal driving procedures, nor will it compensate for any driver impairment such as drugs, alcohol or fatigue."[27]

All too often we hear about a truck driver who is drowsy, distracted, drunk or drugged causing multiple fatalities. For example, on June 25, 2015, truck driver Benjamin Brewer was reported to have been awake for 55 hours straight and on methamphetamine when he caused six fatalities after rear ending seven vehicles that had stopped in a construction zone.[28] Truck driver John Wayne Johnson was charged with a rear-end crash that took the lives of five Georgia Southern University nursing students and severely injured two others in an April 2015 crash.[29]

The American Association for Justice's Trucking Litigation Group ("AAJ TLG") is asking its members to inquire, at deposition, with each safety director, operations manager, and truck company owner as to whether or not the defendant truck company has and/or is actively

purchasing FCAM technology. The Truck Safety Section of OAJ should assist the AAJ TLG in efforts to keep track of this information. If the truck company does not utilize available technology, then this presents an opportunity at the time of settlement to require the defendant truck company to begin FCAM purchases as part of the global resolution. Together, one truck case at a time, we can all work on behalf of our clients' best interests to net the best possible result AND make the roads safer to prevent a repeat tragedy by pushing in favor of FCAM technology. Automatic emergency braking technology is certain to prevent truck crashes and lower the number of highway deaths in the future.

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1. The United States Department of Transportation, National Highway Traffic Safety Administration, "Traffic Safety Facts Crash Stats" DOT HS 812 269, July 2016, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812269.

2. Id. at page 3.

3. James Hedlund and Daniel Blower, *The Large Truck Crash Causation Study (LTCCS) Analysis Series: Using LTCCS Data for Statistical Analyses of Crash risk*, January 2006, Office of Information Management, Publication #: FMCSA-RI-05-037, "Table 4 - Estimated Number of Trucks in Crashes by Crash Type."

4. Id.

5. "Penske Logistics to Install Eaton® Vorad® Collision Warning System Throughout Tractor Fleet Following Successful Pilot Program with Whirlpool Corporation." Published September 18, 2001, http://www.prnewswire.com/news-releases/penske-logistics-to-install-eatonr-voradr-collision-warning-system-throughout-tractor-fleet-following-successful-pilot-program-with-whirlpool-corporation-72060747.html
Note to Reader: The Vorad from Eaton was acquired by Bendix Commercial Vehicle Systems, LLC (an Elyria, Ohio based company) in 2009.

6. Id.

7. Freightliner Cascadia's Driver's Manual, Publication Number STI-478-6 (2/13), Part Number STI 478, Page 6.1, Daimler Trucks North America, LLC.

8. Meritor WABCO "OnGuard", http://www.meritorwabco.com/Product,2,15,2,OnGuard%e2%84%a2-Collision-Safety-Systems-.aspx; Bendix "Wingman Advance", http://www.bendix.com/en/products/acb/wingmanadvanced_1.jsp

9. "Development of a Camera-Based Forward Collision Alert System" General Motors Company and Mobileye Vision Technologies, Ltd.; http://www.mobileye.com/technology/applications/vehicledetection/forward-collision-warning/.

10. "Bendix Takes Wingman Collision Avoidance Tech To Next Level, Includes Auto Slowdown for Speeding." Overdrive, http://www.overdriveonline.com/bendix-takes-wingman-collision-avoidancetech-to-next-level-includes-auto-slowdown-for-speeding/.

11. Id.

12. A Bendix Commerical Vehicle Systems, LLC publication indicates that the Bendix® Wingman® ACB (Active Cruise Control with Braking) has been made available as a purchase option when ordering a tractor from one of the following: Peterbilt, Kenworth, Mack, International, and Volvo. "Bendix - Helping to keep highways safer with advanced active safety solutions." http://www.bendix.com/media/documents/products_1/acb_1/bw2757aoeproductsalescodes.pdf

13. "Anti-Crash Systems Proliferate as Fleets See Safety Benefits," Transport Topics, January 23, 2012 (Transport Topics Publishing Group, a division of American Trucking Association, Inc.).

14. May 5, 2016 Truck Underride Roundtable, Hosted by AnnaLeah & Mary for Truck Safety, The Truck Safety Coalition and the Insurance Institute for Highway Safety (attended by nearly 100 researches, safety advocates, policymakers and industry representatives) to address problems of underride truck crashes, Ruckersville, Virginia. Scott Manthey, Vice President of Safety, Interstate Distributors, was a panel member at this conference to add his knowledge regarding rear impact guards and rear-end collisions. This author was the Moderator for that panel discussion.

15. Id.

16. Eric Miller, "Collision Avoidance systems Succeed in NHTSA Field Test," Transport Topics, page 23, June 20, 2016 (Transport Topics Publishing Group, a division of American Trucking Association, inc.).

17. Twitter, Collin Copeland, @memorywillrust, self-described "OTR (over-the-road) Truck Driver," responded to a question that this author posted on twitter on August 6, 2013 asking truckers about their experience with Forward Collision Warning Systems.

18. Id.

19. Benefit-Cost Analyses of Onboard Safety Systems," by Amy Houser (MC-RRT), February, 2009, Federal Motor Carrier Safety Administration Office of Analysis, Research and Technology.

20. Id.

21. Ted Scott, Director of Engineering, American Trucking Associations, February 5, 2016 Public Comment on NHTSA Federal Motor Vehicle Safety Standards: FMVSS No. 223 and 224

Rear Impact Guards, Rear Impact Protection, DOCKET NO. NHTSA-2015-0118. https://www.regulations.gov/document?D=NHTSA-2015-0118-0015

22. The United States Department of Transportation, National Highway Traffic Safety Administration, "Field Study of Heavy-Vehicle Crash Avoidance Systems" DOT HS 812 280, June 2016; Eric Miller, "Collision Avoidance Systems Succeed in NHTSA Field Test," Transport Topics, June 20, 2016, Page 1 (Transport Topics Publishing Group, a division of American Trucking Association, Inc.).

23. Id.

24. The United States Department of Transportation, National Highway Traffic Safety Administration, Grant of Petition for Rulemaking, "Federal Motor Vehicle Safety Standard; Automatic Emergency Braking." DOCKET NO. NHTSA-2015-0099, October 2015.

25. Freightliner Cascadia's Driver's Manual, Publication Number STI-478-6 (2/13), Part Number STI 478, See Introduction, Foreword, Daimler Trucks North America, LLC.

26. Freightliner Cascadia's Data Book, Section 30 Instruments and Controls, Version: 4.20, Page 8 of 20, Daimler Trucks North America, LLC. This document was produced during litigation. Please contact this author for a copy.

27. Freightliner Cascadia's Driver's Manual, Publication Number STI-478-6 (2/13), Part Number STI 478, Page 6.1, Daimler Trucks North America, LLC.

28. Shelly Bradbury and Alex Green, "Death on the Highway: Six People Died When A Tractor-Trailer Slammed Into Traffic on June 25 – But the Crash Was One of Many, And It Will Happen Again," Chattanooga Times Free Press, December 20, 2015.

29. David Elfin, "Driver, Company Indicted in 2015 Truck Crash That Killed Five," Transport Topics, page 23, June 20, 2016 (Transport Topics Publishing Group, a division of American Trucking Association, Inc.).