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Onboard Safety Technology – Preventing Truck Accidents Before They Happen

by Andrew R. Young

The top three causes of truck crashes are rear end collisions, lane departures, and rollover accidents.¹ A vicarious liability admission by the truck company on behalf of its driver's negligence is all well and good. However, it does not truly represent the best interests of the accident victims because it fails to provide real answers to the following burning questions:

1. Why did this truck crash happen?
2. Was the truck crash and loss to the victim(s) preventable?
3. Can the truck company prevent future similar crashes?

The Federal Motor Carrier Safety Administration (FMCSA) defines the word "accident" as "an occurrence involving a commercial motor vehicle operating on a highway in interstate or intrastate commerce which results in: (I) A fatality; (ii) Bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; or (iii) One or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicles to be transported away from the scene by a tow truck or other motor vehicle."²

A truck company/motor carrier must maintain an "accident register" for three (3) years after the date of each accident.³ Information placed into the "accident register" must include the type of accident and the consequences that resulted.⁴ The FMCSA provides educational materials

that introduce the concepts of "preventability analysis and accident countermeasures" to aid motor carriers in their effort toward safety management proactively reducing the number and severity of truck crashes.⁵ These materials assist motor carriers in analyzing their truck drivers' accidents to determine preventability and "to create strategies to keep similar accidents from happening in the future."⁶

Practice Tip: Take time to explore the Federal Motor Carriers Safety Administration's website and materials available to help motor carriers improve safety within their fleet. Download or print a copy of "A Motor Carrier's Guide To Improving Highway Safety."⁷ The "Accident Countermeasures" section gives great guidance for training drivers to prevent accidents for all potential accident types: struck in rear by other vehicle; accidents at intersections; striking other vehicle in rear; sideswipe and head-on collisions; backing accidents; accidents while passing, etc.⁸

A Truck Company's Direct Negligence

An experienced truck accident attorney understands that in every trucking case a separate claim for negligent entrustment, hiring, training, supervision, retention, and vehicle maintenance must be alleged. More importantly, this attorney recognizes the importance of educating the judge that the truck company's direct negligence is a distinctly different liability claim than the vicarious liability / *respondet superior* admission.

Ohio judges must allow discovery into areas of negligence regarding the truck company's hiring, training, entrustment, supervision, and retention of the defendant truck driver.⁹

Why should the additional discovery matter when liability is already admitted? The purpose is to expose the fact that a trucking company took unnecessary risks by not utilizing the safest available options for equipping their trucks with technology that supervises driving behavior and assists drivers with crash avoidance. The goal is to expose dangerous practices or unnecessary risks that have an effect on the motor carrier's entire fleet of drivers and trucks. This expands the liability exposure beyond the specific accident that is the focus of the litigation. It further allows a jury to determine and apportion fault between the truck company and the truck driver. An act or omission by the truck company likely was a contributing factor for the subject truck and driver failing to either stop in time, maintain his or her lane of travel, or keep the vehicle upright.

Filing suit, issuing written discovery, and taking a few depositions can reveal evidence establishing a motor carrier's patterns of unsafe behavior. The jury's attention can then be focused on the truck company's available safety choices versus simply calculating money damages based on the extent and nature of a victim's injuries. Expose whether the motor carrier's decision-makers failed to institute the safest available options, policies and/or technology and contributed to the cause of the subject crash. In essence, was there a missed opportunity to properly monitor and correct driver behavior and prevent the wreck before it happened? Or, was there technology available to equip the truck to assist the driver to prevent an accident or reduce crash severity?

Ohio common law recognizes that



Andy Young presenting at a Lorain County Bar Association Seminar.

vicarious liability and direct negligence are two distinct and viable claims.¹⁰ The Restatement (Second) of Torts (1965) can assist in persuading the Judge as to the clear difference between the truck company's direct negligence vs. vicarious liability through the truck driver. Under §308 the trucking company is negligent to permit an improper person (truck driver) to use its commercial vehicle which is under its control, if the trucking company "knows or should know" that the subject truck driver is likely to use the commercial motor vehicle "in such a manner as to create an unreasonable risk of harm to others."¹¹ Under §307, it is further direct negligence "to use an instrumentality" (either a truck driver or commercial vehicle) which the motor carrier "knows or should know to be so incompetent, inappropriate, or defective, that its use involves an unreasonable risk of harm to others."¹² To avoid direct negligence, a motor carrier must be proactive in training and supervising its drivers to ensure competency. Similarly, a motor carrier must reasonably maintain its commercial vehicles so that both driver and vehicle present no "unreasonable risk of harm" to other motorists.

Training, experience, and supervision matter! Pursuant to Restatement (Second) of Torts (1965) §390, the motor carrier must not assume that the truck driver will conduct himself properly if the facts which are known or should be known to the motor carrier allow the motor carrier to realize the truck driver poses an unreasonable risk of physical harm to himself and to the motoring public.¹³ As such, a motor carrier is not entitled to assume that the truck driver will use a commercial motor vehicle safely if the motor carrier knows or has reason to know that the truck driver is likely to use it dangerously or lacks the training and experience necessary for such use. Specifically, the motor carrier knows that the truck driver has on other occasions acted dangerously or misused a commercial motor vehicle.

Practice Tip: Written discovery and deposition questions should focus on discovering the names of managers and decision-makers. Specifically consider those who have responsibility over the truck driver: dispatchers; human resources personnel (those with responsibility for hiring, training, and testing driver experience and knowledge); driver managers or coaches;

route planners; safety directors; and, truck company executives / owners. Perform a similar inquiry by considering those who have responsibility over the commercial motor vehicle itself: fleet maintenance managers; head mechanics; annual maintenance inspectors; acquisition managers (those who purchase the trucks and determine which safety features are to be installed on the truck); and, truck company executives / owners. Those who exercise control over the driver or the truck itself must be questioned regarding their thought processes toward fleet safety performance, compliance, and liability. Fleet-wide decision-making awareness is important for instituting the right safety and training policies and reasonably selecting the right safety equipment and technology that has an impact on fleet safety, crash severity, and prevention.

In-Cab Driver Performance Technology

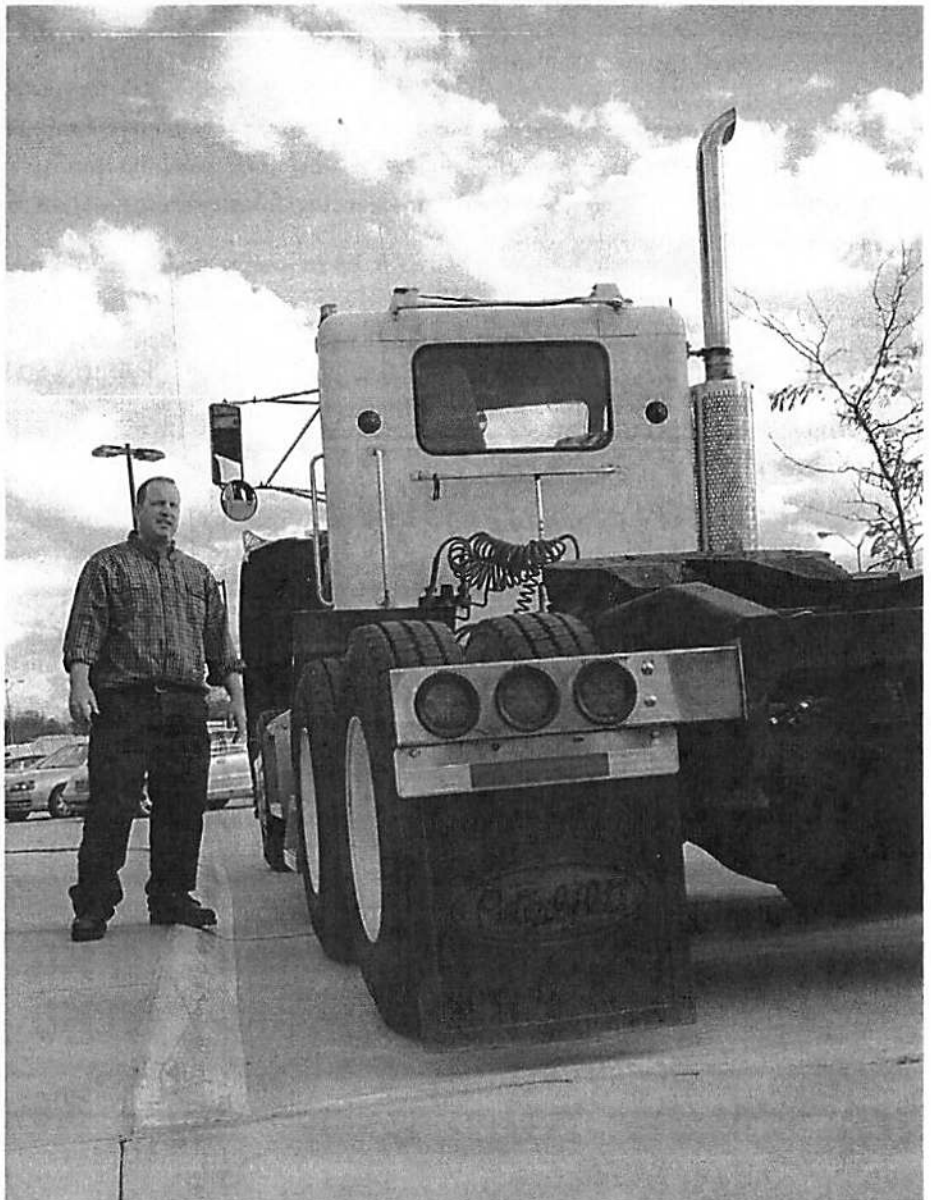
“Ultimately, I am not the one behind the wheel of the truck,” was the answer of one truck company owner to a deposition question about whether he had the ability to prevent the subject rear-end collision from happening.¹⁴ Further inquiry revealed this truck company owner was unaware of the aforementioned FMCSA training materials published to assist a motor carrier to improve highway safety and to reduce the number and severity of crashes by instituting accident countermeasures. This deponent was also unaware of the technology available to assist drivers in collision avoidance and to monitor driver performance.

Without constant feedback, even the best drivers can develop unsafe behaviors or routines that can lead to accidents. In-cab driver-behavior technology gives the motor carrier and the driver constructive feedback regarding safe, aggressive, or unsafe maneuvers.¹⁵ With built-in

display on the dashboard, the driver receives real-time information regarding performance.¹⁶ Driver performance monitoring systems use a host of technologies designed to alert drivers and fleet managers whenever a driver exhibits unsafe driving practices, such as hard braking, sudden acceleration, or sharp turning. Web based reports are generated for both managers and drivers, allowing both to review safety performance and trends.¹⁷

The industry uses the term “telematics” to describe the technology that is rapidly evolving and allowing for greater

driver performance monitoring.¹⁸ Telematics refers to any integrated use of telecommunications and informatics also known as ICT (Information and Communications Technology). It involves the technology of sending, receiving, and storing information via telecommunication devices linked directly to the truck’s engine control module (ECM) and GPS technology. For instance, Freightliner’s trucks have a “Hard-Braking Advisor” that determines when braking is severe enough to produce lockup at one or more wheels and/or rapid vehicle deceleration.¹⁹ Thereafter, an advisory message is sent to the driver



Andy Young giving a trucking presentation with his semi-truck.

message center, recording and displaying both hard-braking event data and roll stability encounters.²⁰

There are many different manufacturers (Green Road, Lytx's DriveCam, SmartDrive, Inthinc waySmart, PeopleNet) of driver-performance based software, each employing variations of the same concept. Most utilize an accelerometer to detect extreme acceleration or lateral movement and are integrated into the truck's ECM, which monitors information such as the gear engagement, engine speed, brake activity, accelerator pedal position, ignition switch status, and GPS location. Whenever a driver brakes hard, accelerates suddenly, or exhibits some other form of "unsafe driving," the device records the data from the ECM, and may send that information to alert the fleet manager and/or the driver. Fleet managers can review drivers' behavior by month, driving day, or each leg of the trip. Often, drivers themselves receive weekly emails to update their safety performance, including a personal trend chart to highlight the drivers' improvements or what they need to work on and where they can improve.²¹ The systems are now providing driver-feedback through mobile applications compatible with Android or Apple iOS platforms, even on medium duty trucks.²²

Some devices supplement the telematics system with cameras that record what's going on in front of and/or in the cab when unsafe driving triggers occur. The information can then be used for training, to reinforce safe driving practices and prevent accidents.²³ For instance, the DriveCam system has two cameras, one facing inside the cab and another facing outside the truck. The system triggers and begins recording when an unsafe driving maneuver is detected. The cameras record the eight seconds leading up to the trigger, and four seconds after the trigger. A flashing

red light lets the driver know he or she is being recorded.²⁴ The program works as follows:

1. captures risky driving behavior;
2. uploads triggered event via wireless network;
3. reviews, analyzes, and scores the event;
4. downloads the event to a confidential website report for fleet manager access;
5. allows an opportunity to coach or train the driver; and,
6. the driver returns to the field with added knowledge and improved safety behavior.²⁵

Utilizing in-cab, driver-performance monitoring has proven successful as evidenced by the following feedback from trucking industry executives:

"It keeps people honest. Before we had the video, we really had no way of knowing what had happened in an accident." Michael Belcher, Safety Director, DS Waters, [about DriveCam];²⁶

"The presence of the camera in the vehicle heightens the drivers' attention to what they're doing. They're less likely to take the risks that they had taken before." Dennis Dellinger, President, Cargo Transporters, [about DriveCam];²⁷

"The first two weeks the driver has the technology, we get calls from him saying the unit must be broken because it's going off all the time. Three weeks later, we get another call from the driver thanking us for fixing it, because it doesn't go off nearly as much anymore. And we haven't done a thing." Thom Prong, Corporate Vice President for Safety, C.R. England;²⁸ and,

"It's had a huge impact on compliance

with the company's safety policy. It's changing driver behavior." Joe Pennesi, Safety Director, Quarles Petroleum, [about SmartDrive].²⁹

The devices cost between \$400 and \$1,000 per vehicle, plus monthly fees of \$20 to \$40 per vehicle.³⁰ The result: fleet management awareness regarding driving behavior allowing for an opportunity to supervise, train, and/or dismiss truck drivers before accidents happen.

Practice Tip: Through written discovery and deposition testimony, determine whether any consideration was ever given to installing or utilizing driver-performance monitoring technology. Request copies of all OmniTRAC, Qualcomm, GPS, MVPC, QTRACS, OmniExpress, TruckMail, TrailerTRACS, SensorTRACS, JTRACS, XRS, WebTech, PeopleNet, Green Roads, Lytx's DriveCam, SmartDrive, Inthinc waySmart, PeopleNet, Driver Fatigue Monitors; Driver-Behavior Performance Monitoring, and other similar telematics / systems data for the six (6) months prior to the collision and the day of the collision, for the subject truck driver.

Onboard Driver Assistance Safety Technology

A. Forward Collision Warning Systems

Rear end collisions account for 33,000 or 23.1% of all truck accidents each year.³¹ How is a truck company responsible for a truck driver stopping short of a collision? By choosing to install collision warning / mitigation systems. This technology can prevent rear end collisions or reduce crash severity by emitting an urgent audible alert and a driver display to warn the truck driver of an impending collision or that the following distance is unsafe.³²

Collision Warning / Mitigation encompasses three related technologies: 1) Forward Collision Warning / Alert systems; 2) Adaptive Cruise Control; and, 3) Collision Mitigation Systems. 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.

On-board radar is mounted in the front bumper to detect vehicles up to 500 feet in front of the truck.³³ The radar systems can only track metallic vehicles, and may miss smaller vehicles, such as motorcycles and bicycles. Radar systems are also unable to detect pedestrians.

Newer improved technologies use a camera-based system that have enhanced detection capabilities that will detect pedestrians and bicyclists.³⁴

At the Mid-American Truck Show (Trucking Industry Trade Show) in Louisville, Kentucky this past March, 2015, advanced technology was revealed wherein cameras have now been installed in new trucks that read posted speed limit signs.³⁵ 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.³⁶

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."³⁷ Trucker, Collin Copeland, posted on twitter that, "seeing the speed of a car up to 300 yards ahead of you is nice."³⁸ He further commented that, "it will also slow you down if you get cut off or if you come up on someone too fast." 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.³⁹ 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.⁴⁰

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B. Lane Departure Warning Systems

Out-of-lane collisions and side-swipe/same direction lane departures account for approximately 35,000 truck accidents each year.⁴¹ These accidents often have the most devastating results due to a geometrical mismatch between the heights of the side of the commercial vehicle colliding with the side of the smaller passenger vehicle. These accidents often result in "side underride" with the first point of impact being the glass above the car body and the second point of impact being the heads of the occupants in the smaller vehicle as the smaller vehicle ends up underneath the trailer. The result is far too often wrongful death (sometimes by decapitation); open skull fracture / traumatic brain injuries; and paralysis due to spinal cord injuries. The safety engineering and features of a car, such as air bags and crumple zones, do not protect passengers in a side underride crash.

Lane departure warning systems provide the truck driver with an assistance feature that monitors the truck's position within roadway lane markings. When the commercial vehicle strays from its lane and crosses the lane markings, an audible in-cab sound warns the truck driver that the truck has left its lane of travel.⁴² The sound, similar to that of a rumble strip, is emitted from the side of the vehicle that has drifted out-of-lane. This prompts the driver to steer away from the sound and correct the truck's path of travel centering the vehicle in the correct lane. The system triggers when the turn signal is not on and the vehicle is traveling more than 37 mph.⁴³ An in-cab switch can temporarily disable the lane departure warning system.

Safety Director Jeff Mercandante of Pitt Ohio states, "at first it takes a little

getting used to because it's a change to the drivers, but once the drivers have it, they seem to like the system. It teaches them to be better drivers because you're always maintaining your position in the middle of those two lines."⁴⁴ According to the same FMCSA study, between 3,863 and 8,103 truck crashes could be prevented annually through the use of Lane Departure Warning systems.⁴⁵

Practice Tip: Did the accident truck have a lane departure warning system? If not, why did the truck company not opt to have this feature included at the time the truck was purchased from the original equipment manufacturer or thereafter? If so, did the truck driver disable it prior to the accident? If not, was the truck driver otherwise impaired, distracted or fatigued?

C. Electronic Stability Control Systems

Roll over accidents account for approximately 13,000 accidents each year.⁴⁶ Driver assistance technology has been developed to help truck drivers prevent rollover accidents. There are two different kinds of roll stability systems – Roll Stability Control (RSC) and Electronic Stability Control (ESC). RSC is the more basic system, and is designed to prevent rollovers by detecting excessive lateral-acceleration and applying the tractor brakes.⁴⁷ Dashboard warning lights and an audible sound alert the driver shortly after a curve, lane change, or other maneuver that results in a rollover-detection. This advises the truck driver that the previous maneuver produced a rollover risk. ESC includes all of the functions of an RSC in detecting lateral-acceleration plus the ability to mitigate severe oversteer or understeer by automatically applying brake force at selected wheel-ends by monitoring yaw or rotational movement. The system then applies the tractor's brakes and

the trailer's foundation brakes.⁴⁸ This reduces the likelihood of drift-out or jackknife situations causing hazards for other motorists.⁴⁹

The National Highway Traffic Safety Administration (NHTSA) has a Notice of Proposed Rulemaking to establish a new Federal Motor Vehicle Safety Standard No. 136 to require ESC systems on truck tractors. The purpose is to mandate ESC systems on trucks to mitigate severe understeer or oversteer conditions that lead to loss of control by using automatic computer-controlled braking.⁵⁰ The latest NHTSA Department of Transportation reports forecast May 7, 2015 for the Final Rule to be published.⁵¹ Between 1,422 and 2,037 rollover crashes could be prevented each year through the use of rollover stability control.⁵²

Practice Tip: Participate in an inspection of the subject-accident truck, even in a rear-end accident. 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."⁵³ Look for and capture a photograph of the driver's manual. The manuals themselves have their own designated Part Number. Capture the manual's part number so that you can order a copy or have it produced through a production of documents request at a later date. Earlier this year, I participated in an inspection of a Freightliner involved in a rear-end accident. The driver's manual revealed an entire section entitled "Driver Assistance Features" outlining technology for Collision Warning; Lane Departure; Roll Stability and Enhanced Stability. 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."⁵⁴

Conclusion

A truck company's owner or safety director must be aware of the accident preventability and accident countermeasures materials available through the FMCSA. They should also be aware of the numerous telematics devices available to record hard-braking event data. As such the truck company has the ability to "be behind the wheel" and "knows or should know" if a truck driver it employs is likely to use the commercial motor vehicle in such a manner as to create an unreasonable risk of harm to others. Additionally, did the truck company provide its drivers with the safest available technology to assist in accident prevention and/or reduce crash severity.

Each truck company must be held accountable for its negligent acts that led to the truck driver and truck being involved in the subject admitted liability accident. Discover and prove "WHY" this company failed to prevent this accident through the corporate decision-makers responsible for training and monitoring driver performance and outfitting its fleet of trucks with onboard safety systems that likely would have prevented wrongful death and/or catastrophic injury. By putting forth extra effort and doing a little digging, evidence may be unearthed that could potentially expose the subject truck company to punitive damages. Or, at the very least, answer the three aforementioned burning questions. ■

End Notes

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- One or Two-Camera Videotaping to DVD
- A-Day-In-The-Life Videotaping
- Video Equipment Rental
- Video Streaming
- Still Pictures From Videotapes
- Video Editing
- Video Teleconferencing
- Trial Director Presentation Services
- Digital Still Photos on Disk



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