

How Fleets Are Implementing Advanced Vehicle Safety Systems To Drive Safety Improvements

October 17, 2019




Advanced Vehicle Safety Systems

This webcast will cover ...

- A regulatory overview
- Best practices in compliance
- A case study in implementation
- Question & Answer

Attention Attendees:

- +Thank you for attending!
- +You will be muted during the event.
- +Please use the Q&A feature to send in questions to us. We'll try to answer them during the Q&A period if they are not covered in the presentation.
- +The slides and recording will be posted within 7 days at: www.jjkeller.com/nptcinfo



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Meet Your Presenters



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Active Safety Technologies



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ABS

- Antilock braking systems
 - Senses wheel lock up and “modulates” brakes so vehicle stays under control when braking
 - Required under §393.55 for all air brake vehicles built after 1997/1998
 - Must be functional at all times



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ABS Malfunction Lights

- March 1997 Tractors must have ABS light on dash
- March 1998: Trucks must have ABS light on dash
- March 1998: Trailers must have ABS light on left rear corner
- March 2001: Tractors have to have a dash light for trailer malfunctions and trailers have to signal tractors




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ESC

- Electronic Stability Control
 - Use pitch and roll sensors, and selective braking to stabilize vehicle if edge of envelop reached
 - Retrofitting older tractors not required




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ELDs

- Electronic Logging Devices
 - Device must automatically capture “dataset” at specific times
 - Dataset and driver entries create record of duty status
 - Driver to provide officers today and last seven days by way of data transfer




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Other Government Activity

- NTSB:
- 15 open recommendations starting in 1995 related to installing/requiring “ADAS” covering:
 - CWS
 - Lane departure
 - Adaptive cruise control
 - AEB
 - Also on the “Most Wanted” list



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Other Government Activity

- NHTSA AEB initiative
 - Asking manufacturers to voluntarily add AEB to all new vehicles
 - Goal is 100 percent voluntary adoption by 2022 (required in EU starting 2022)
 - Dynamic braking support and crash imminent braking
 - As of 2017:
 - 50 percent or more of the new vehicles built by four automakers built with AEB
 - 30 percent of the new vehicles built by five other automakers built with AEB
 - The rest of the top 20 automakers installing AEB in some vehicles



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Other Government Activity

- NHTSA autonomous vehicle initiative
 - 0: Driver does all driving, no assistance
 - 1: Driver controls, vehicle only assist with braking or steering when necessary
 - 2: Driver drives, automation steps in with braking and/or steering when needed
 - 3: Vehicle drives in specific circumstances with driver ready to step in, driver drives at other times
 - 4: Vehicle does all driving functions under certain circumstances, driver need not monitor when vehicle self-driving
 - 5: Fully automated vehicle drives itself under any and all conditions



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Other Government Activity

- NHTSA autonomous vehicle initiative
 - Providing guidelines on moving toward Level 5
 - AV 2.0 and 3.0 guidelines
 - Part of “Road to Zero” initiative
 - 94 percent of crashes are due to driver error
 - Automated vehicles have potential to remove human error from the equation



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Other Government Activity

- FMCSA
 - Asking what rule changes are needed to advance automated safety systems and autonomous vehicles



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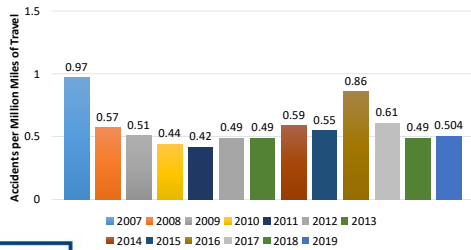
Fleet Best Practices



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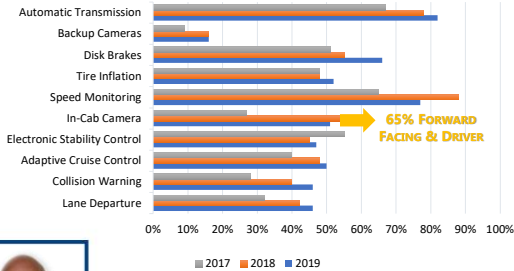
DOT Recordable Accidents



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Independent vs Dependent Technologies

- Independent – the technology provides the majority of its safety value without driver and/or management intervention.
 - Automated systems such as Roll Stability, ABS, Automated Collision Avoidance System, Speed Limiters, etc...
- Dependent – in order to get substantive safety value, there must be effective driver and/or management intervention in conjunction with the technology.
 - Lane Departure, Speed Monitoring, Blind Spot Detection, Video Telematics, Electronic On Board Recording devices, etc...
- Management Systems are critical to the success of dependent technologies



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Implementing Active Technology

- Safety culture
- Communication, education and training
- Data aggregation protocols
- Revisit metrics to determine relevance
- Review safety policies
- Position profiles
- Coaching



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Technology Is Good, Provided We...

- Understand the technology -- what it can and cannot do
- Prioritize and select the right technology given the objectives and experience
- Properly implement the technology
 - including developing and implementing the necessary support systems, training, etc...
- Use the technology
 - if your not going to use it properly, don't put it in...
- Understand the benefits and limitations of the data
- Use the technology and data to drive behavioral change



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Suggested Minimum Policy Requirements

- Overview of technology, intended use, etc...
- Accountabilities – who is accountable for what?
- Process or procedures for how to use the technology (SOPs, instructions, etc...)
- Rules/Regulations surrounding the technology
- Documentation requirements including records retention
- Other support material



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Example - Leveraging Video Telematics to Finetune Safety

- Even the best drivers are improving thru use of video
 - Coaching
 - Accountability
- Video provides information and videos to help us do better job of training and education
- Can show good and bad behaviors to help all improve
- Most appreciate the coaching and ability to improve
- Like an athlete watching game tapes



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Technology Drives Accountability

- Certain behaviors are unacceptable, but the industry never had tools to prove
- Video, speed, engine telematics give us the evidence we need to hold people accountable
- People improve because they know data exists
- This flows over to all safety protocols, training, rules, and procedures
 - Be careful of false positives – complete investigation before taking action.



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Technology Drives Behavior Changes

- Behavior changes are critical to ongoing success
- Coaching and training are the first and most important steps
- Having actual video, data and examples makes a big impact
- Having meaningful, actionable and timely data is essential
- Unfortunately, some just will not learn and take the coaching
- Once you have coached multiple times then they should not be surprised when corrective action is taken



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Coaching

- Enables learning and development (and thus improvement) after an incident
- Involves an interview process to discuss the coachable event
- Focuses on behavior and observations to improve driver safety
- Helps reinforce desired behavior and action



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Safety Technology

- ELD
- Trailer Air Disc Brakes
- Hill Start Aid
- Forward Collision Avoidance
- Partial Braking
- Adaptive Cruise Control
- Lane Departure
- Tailgate Warning
- Side Guard Assist



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ELD

- Driver Daily Logs
- Messaging
- Onboard Event Recording
 - MPG
 - Idle
 - Hard Brake
 - Over Speed
 - Roll Stability
- GPS Tracking
- Electronic DVIRs





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Trailer Braking System



- Improved braking
- Shorter stopping distances
- Improved safety
- Longer service life, reduced downtime
- Less Weight



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Hill Start Aid



- Prevents rollback for up to 3 seconds
- Provides appropriate acceleration & torque

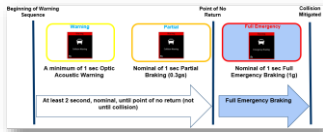


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Forward Collision Avoidance

- Full braking of tractor
- Delivers 3 series of warnings
 - Warning – no brake
 - Warning with partial brake
 - Full emergency brake
- Works on stationary vehicles



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Partial Braking

- Provides partial braking under 25MPH
- Visual and audible warnings
- Capable of identifying pedestrians



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Adaptive Cruise Control

- Automatically adjusts speed based on distance from vehicle 2
- Utilizes engine & service brakes to slow
- Accelerates when forward vehicle clears or increases distance
- Adjustable distance (3.6 seconds)

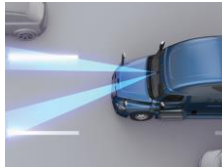


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Lane Departure

- Positions truck between lines
- Reads reflective paint & reflectors
- Audible warning when drifting
- Disable for 15 minutes
- ***May not work if lines are faint or covered***

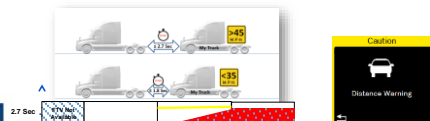


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Tailgate Warning

- Visual and audible warning when following too close
- Notifies after 10 seconds of following too close
- 45MPH+ allows 2.7+ seconds of following distance
- 35MPH- allows 1.8 seconds of following distance



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Side Guard Assist

Radar sensors capturing entire length of tractor & trailer

- Lane Change Assist:** Detects moving objects on passenger side of the truck and warns the driver to avoid a lane change
- Turn Assist:** Detects moving objects in the passenger side, when the truck is stopped, initiating a turn, or turning at slow speeds
- Trailer Sweep Assist:** Calculates when the trailer or rear of the tractor might come into contact with stationary objects



Lane Change Assist



Turn Assist (Urban) Trailer Sweep Assist (Urban)



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Use the Data

Driver	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	100
Driver Name	Fuel Economy Score	Fuel Economy Long Mile %	Long Mile Score	Over Speed %	Over Speed Score	Sudden Stop Alarms	Sudden Stop Alarms Score	Over Speed Alarms	Over Speed Alarms Score	Driver HOS Violations Count	Driver HOS Violations Score	100	100	100	100	100
James Clark	8.8	2.0%	15.0	0.0%	8.0	2.0	20.0	0.0	20.0	0.0	20.0	0.0	10.0	100.0	100.0	100.0
Mark Latham	8.8	0.0%	15.0	0.0%	20.0	1.0	20.0	0.0	20.0	0.0	20.0	0.0	10.0	100.0	100.0	100.0
Charles Wu	7.5	3.0%	15.0	0.0%	12.0	2.0	20.0	1.0	20.0	0.0	20.0	0.0	10.0	100.0	100.0	100.0
Michael Wu	7.5	10.0%	15.0	0.0%	10.0	4.0	10.0	0.0	20.0	0.0	20.0	0.0	10.0	100.0	100.0	100.0

- Collect and share data timely
- Create easy to read reports, post & share
- Distribute to driver managers
 - Use as coaching tool
 - Compliment drivers with good driving behaviors
- Compare week-to-week, measure improvements & focus on improvements
- Incentive program – quarterly and/or annually



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Question & Answer Session



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More Questions?



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