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

Meet Your Presenters
Active Safety Technologies

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

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
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

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

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
### 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

**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

**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
Other Government Activity

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

Fleet Best Practices

DOT Recordable Accidents
**Active Safety Technologies**

- Automatic Transmission
- Backup Cameras
- Disk Brakes
- Tire inflation
- Speed Monitoring
- In-Cab Camera
- Electronic Stability Control
- Adaptive Cruise Control
- Collision Warning
- Lane Departure

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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
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 you’re 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

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

Example - Leveraging Video Telematics to Fine-tune 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
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.

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

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
The Fleet Perspective: 
Sunrise Transport, Inc.

Sunrise Transport Inc.
Part of The Four Seasons Family of Companies

Sunrise Transport Inc. Overview

- 129 Drivers
  - 89 Local
  - 40 Regional
- 82 tractors
- 27 Straight Trucks
- 100 trailers
- 7.5MM Miles in 2018
- Handled Over 13M Cases
- 2,000 stops per week
- 70 routes per day
- 7 days/week – 24hrs/day
**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
Hill Start Aid

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

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

Partial Braking

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

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*

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
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

Use the Data

• 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

Question & Answer Session

Gary Petty
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Tom Bray
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Thank you for participating in today’s webcast!

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