FMCSA Safety and Security Accomplishments

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Lane Departure Warning Systems and Deployment

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Roadway Departures

- Crashes resulting from simply leaving the roadway represent a substantial portion of the total crash problem
- Occur on both straight and curved sections
- Often involve either rollover of the vehicle or collisions with fixed objects such as trees, utility poles, etc.
- 13,000 roadway departure crashes involving large trucks occurred in 2003 (General Estimates System)

Lane Departure Warning Systems

- Lane Departure Warning Systems (LDWS)
  - Camera surveys road ahead – not driver
  - Tracks road and vehicle position in lane
  - Monitors weaving and lane drifts
  - Alerts driver before lane and road departures
- Blocks warnings automatically
  - Turn signal is used
  - Speed is less than threshold (approximately 35 mph)
- Warning functions disabled
  - Poor visibility
  - Not well-defined lane boundaries
  - Poor confidence in lane position calculation

Mack Intelligent Vehicle Initiative

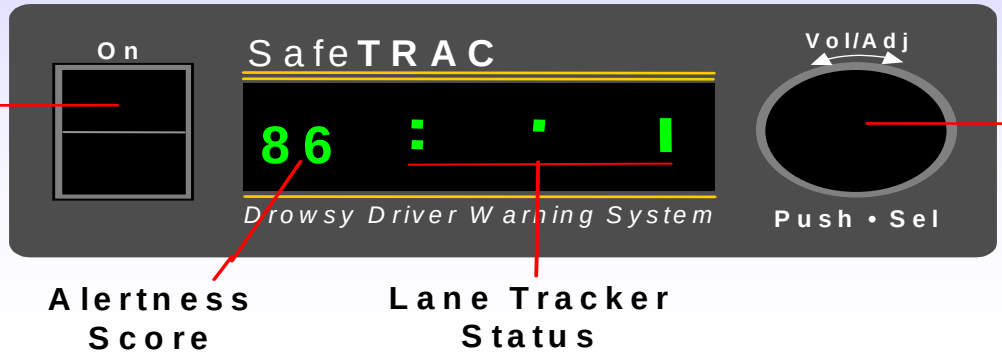
- McKenzie Tank Lines
  - Hazardous materials haulers operating out of multiple Gulf Coast States
  - Drivers assigned to specific trucks
  - Destinations varied daily

Mack Intelligent Vehicle Initiative

Under FOT Conditions, the Lane Departure Warning System reduces crashes

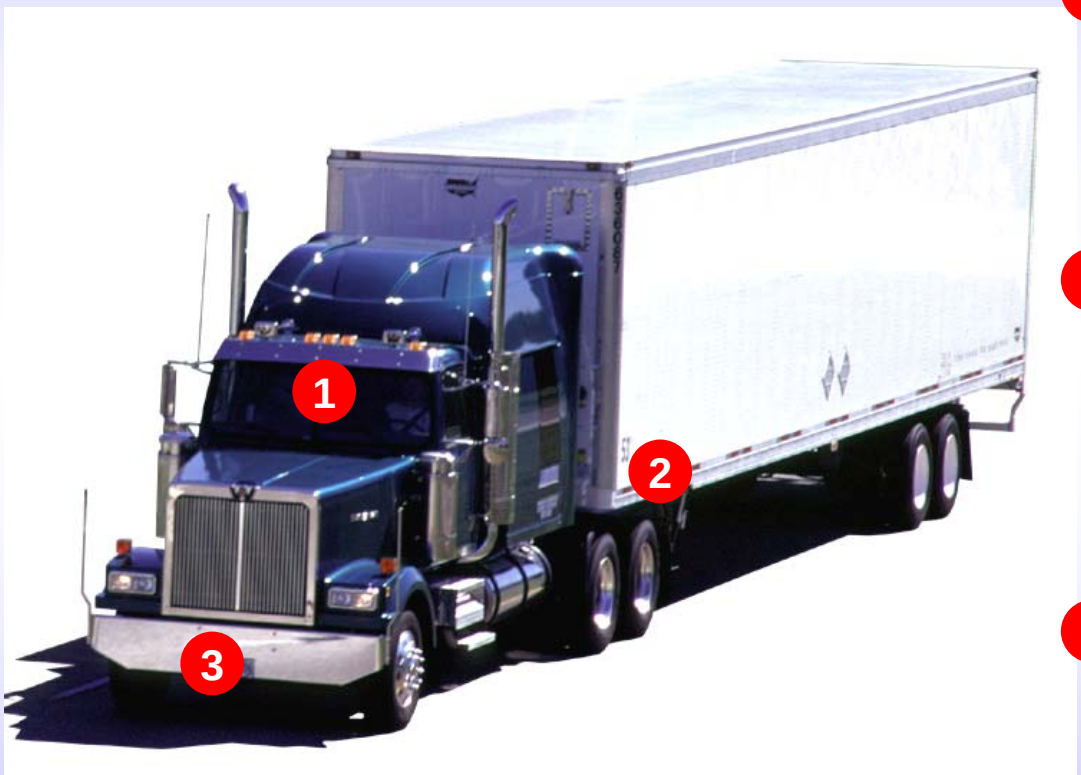
- 21% to 23% reduction in single vehicle roadway departure crashes
- 17% to 24% reduction in rollover crashes
- Improves safety-related driving behavior by decreasing unintended lane excursions
- Economically justified for tractor-tanker applications

Assistware SafeTRAC LDWS



- Video Image Interpretation
  - Lane position
  - Road curvature
  - Lane boundary type
  - Time to Lane Crossing
- Lane Departure Warning
  - Audible tone issued

IVI Field Operational Testing



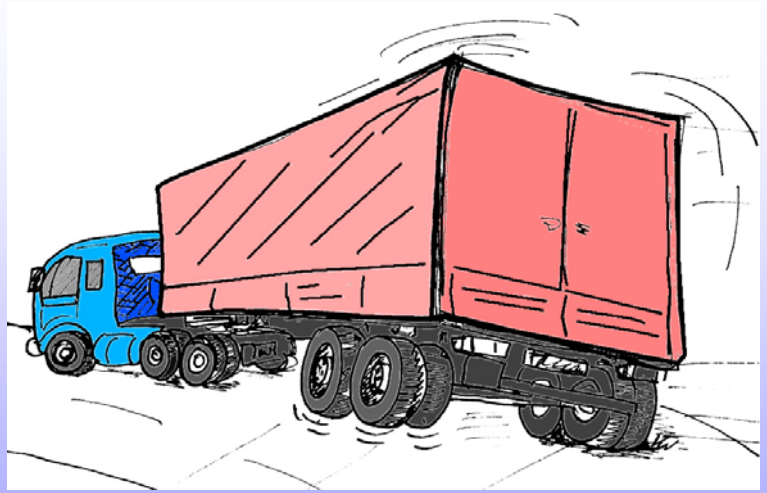
1. Lane Departure Warning Systems
2. Roll Stability Systems and Electronic Stability Systems
3. Collision Warning Systems with Adaptive Cruise Control

Top Purchasing Factors

- System accuracy and reliability
- System effectiveness
- Cost, including installation, maintenance, and driver training
- Availability of vendor or OEM technical support

Top Purchasing Factors

- System availability from OEMs in new equipment
- Protection of recorded vehicle data
- Ability to monitor driver behavior via on-board data



A Tall Order . . .

Deployment Planning

- Develop plans to facilitate the deployment of technology by the industry
  - Establish partnership opportunities with stakeholders
  - Support decision-making with additional information
  - Develop voluntary requirements
  - Compute industry costs and benefits
  - Assess technology adoption

Voluntary Requirements

- Relay a better understanding of how technology functions
  - Concept of operations
  - Operational functionality
  - System features
- Requirements walkthrough
  - System suppliers and OEMs

- Expert panel requirements review
  - Representatives from insurance companies, carriers, academia, and industry associations

Industry Collaboration

- Technology Maintenance Council (TMC)
  - Self-supporting unit of the American Trucking Associations (ATA)
  - Address the operations and technology needs of the trucking industry
  - Provide technical information for specifications and maintenance of commercial vehicles and equipment
- Working with FMCSA to provide industry information and perspectives about on-board safety systems
- Developing recommended practices for on-board safety systems

Costs and Benefits

- Industry demographics
- Crash types and costs
  - Damages: vehicle, cargo, personal, and infrastructure
- Costs
  - Technology, installation, maintenance, and training
- Benefits
  - Direct benefits: savings accrued through crash avoidance
  - Indirect benefits: savings accrued through other means, such as improved customer goodwill and employee morale
- Net present value

What's Next?

Integrated Vehicle-Based Safety Systems

- Integrate systems to optimize the effectiveness of new driver safety systems
- Address rear-end collisions, run-off road crashes, and lane change/merge collisions, which account for about 63% of all heavy vehicle crashes
- Conduct human factors research
  - Determine the best types of in-cab environments
  - Minimize driver distraction and workload

Thank you for your attention!

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