MEETING NOTES

ACS60(5) – Truck & Bus Safety Technology Subcommittee Annual Meeting

January 9, 2023

Agenda:

- Introductions
- Presentations
    - **Longitudinal traffic conflict analysis of autonomous and traditional vehicle platoons in field tests,** *Tanmay Das, Graduate Research Assistant, North Carolina State University*
    - **Key Takeaways from TRB Webinar: "Enabling Automated Truck Inspection for Safety",** *Abby Morgan, Kittelson & Associates, Inc.*
        - Webinar: https://webinar.mytrb.org/Webinars/Details/1630
        - Slides: http://onlinepubs.trb.org/onlinepubs/webinars/221109.pdf
- Updates from subcommittee members
- Work Session: Brainstorming New Technology Research Needs
- Wrap Up

Meeting Notes:

Longitudinal traffic conflict analysis of autonomous and traditional vehicle platoons in field tests

Presenter: Tanmay Das, Doctoral Candidate and Graduate Research Assistant, North Carolina State University

- Studied SAE level 2 adaptive cruise control (ACC) system vehicle response time impact on longitudinal traffic conflicts. Considered exclusive and mixed traffic streams including connected automated vehicles (CAVs), automated vehicles (AVs with no connectivity to other vehicles), connected vehicles (CVs) and traditional human-driven vehicles.
- Slides attached.

Key Takeaways from TRB Webinar: "Enabling Automated Truck Inspection for Safety"

Summary presented by Abby Morgan, Kittelson & Associates, Inc.

- Webinar: https://webinar.mytrb.org/Webinars/Details/1630
- Slides: http://onlinepubs.trb.org/onlinepubs/webinars/221109.pdf
- Issue: Inspection/Weigh stations are complex driving environments. Can electronic enforcement reduce risks and increase efficiency?
- CVSA is developing a new Enhanced CMV Inspection Standard: a no-defect, point-of-origin inspection program for ADS-equipped commercial motor vehicles, as well as an in-transit verification of ADS status.
- CVSA has developed:
    - Enhanced inspection standard and procedure for motor carriers operating ADS vehicles
    - 40-hour CVSA training course and exam for motor carrier personnel who will be conducting the inspections
- 2022 field testing of in-transit verification of ADS status conducted in Texas Triangle.

Other updates:

- *Richard Bishop, Bishop Consulting* – Aurora and Kodiak have announced full highway automation planned for 2024. Gatik currently operating fully automated business-to-business (B2B) operations. New announcements continue to come out.
- *Steve Jessberger (FHWA)* – New data available: FHWA is collecting 0.001/second timestamp vehicle classification and count data, which will enable following distance calculations.
- *Jeff Loftus (FMCSA)* – FMCSA recently acquired a Smart Trailer as a research asset (ethernet connection to trailer can share much more data than before).
- CVSA is working on how to complete in-service inspections of ADS-equipped vehicles, how to safely and effectively pull over an ADS vehicle, and what requirements are needed in a pre-trip inspection to ensure safe ADS operation.

Research Spotlights:

- **New Research:** *Pooled Fund Study Solicitation No. 1572: Improving Traffic Detection Through New Innovative i-LST Technology Demonstration Pilot* – Reidentification of vehicles to get HOS.
- **FMCSA Research:** VTTI is working on FMCSA "ConOps" (Concept of Operations) program documenting operations of automated driving systems (ADS) in mixed fleet scenarios. Studying safety metrics, how to identify ADS vehicles operating safely, and fleet integration guidance.
- **FMCSA Research:** "Automated CMV Inspection Demonstrations and Evaluations" is part of FMCSA's overall Automated CMV Evaluation (ACE) Program (https://www.fmcsa.dot.gov/research-and-analysis/technology/automated-cmv-evaluation-ace-program). The project is led by Nick Kehoe with toXcel and supported by Brenda Lantz with NDSU-UGPTI, Steve Vaughn with the PrePass Safety Alliance, eScience & Technology Solutions, ATRI, JFL Solutions, and EY-Parthenon.
    - The primary goal of the project is to test out / demonstrate six different Operational Scenarios:
        1. Electronic confirmation and communication of ADS health and status on equipped CMVs
        2. Evaluate and test predictive algorithms, analytics, and preventive maintenance data (e.g., fleet management systems, total asset visibility systems) that would provide value to a roadside Inspector for inclusion into their inspection application and electronic screening decision tools
        3. Communication of an enhanced pre-trip inspection status, certification, data elements
        4. React and comply with law enforcement electronic messaging or static signs to "Pull-in or Bypass" an inspection/weigh station
        5. Populate available data elements into a roadside inspection application when prompted or automatically
        6. Reaction to emergency lights and siren (SAE J3216 No Cooperative Automation) to either pull over or move over in compliance with State "Move Over Law"
    - The project began in August 2021. To date, the literature review, requirements, design, and development, as well as a couple of rounds of initial testing of each of the operational scenarios are complete. The final demonstration is scheduled for early February at the VTTI test track. The final project report is scheduled for July 2023.

New Technology Research Needs:

- **Connecting electronic logging device (ELD) data with state DOT truck parking availability data.** Identify ways to link state DOT real-time data on truck parking availability at rest stops with ELD data to alert drivers about parking availability related to their remaining hours of service. Mandatory hours of service (HOS) requirements specify how long commercial drivers can work before taking rest breaks. Truck parking availability is an issue for the safety of drivers and the motoring public. Many states are starting to collect real-time truck parking occupancy data at public rest areas. This information is typically shared with drivers using dynamic message signs in advance of the rest areas. Connecting parking data with ELD data could help drivers learn of overcapacity issues at their estimated rest area. For example, if one hour of driving remains,

and parking at a rest area 60 miles down road is full, drivers could make the informed decision to stop at a closer rest area to ensure they find a safe place to park for a mandatory rest break. What are the opportunities and challenges for also connecting private parking facility data where available?

- **Driver Education on Levels of Automation for Commercial Driver License (CDL) Training**. Develop a training program to teach drivers the capabilities and limitations of each Level of Automation or of specific advanced driver assistance systems (ADAS).
- **Smart Trucks and Dumb Trailers: Understanding the safety of automated tractors and low-tech trailer combination units.** As advanced driver assistance systems and automated driving systems enter the market through new truck tractors, how do these systems perform in the real-world when pulling trailers that do not have new sensor and communication technologies?
- **Trip-Level Safety Data**. As we study truck safety, consider understanding the influence of hours into a trip (or into total hours of service for a shift), rather than studying averages over total miles traveled. Many factors influence safety that might not be constant over all miles or throughout a shift.
- **Safe Transitions Between ADS and Human Driving Responsibility for Level 3 Automation**. How do you safely reengage a driver in a SAE Level 3 vehicle? Overcoming driver distraction or fatigue from inattentiveness.