DOT Motorcoach Safety Action Plan November 16, 2009

- August 2007 – NHTSA’s Approach to Motorcoach Safety
  - Priority items – seat belts, roof strength, emergency egress and fires
- April 30, 2009 -- Secretary LaHood directs development of Motorcoach Safety Action Plan
- Goals:
  - Identify actions addressing outstanding safety problems
    - Comprehensive look across agencies
    - Consider NTSB recommendations
  - Develop aggressive and integrated multi-agency implementation schedule
    - Outline additional steps to improve motorcoach safety
- Agencies: FMCSA, NHTSA, FHWA, PHMSA, FTA
DOT Motorcoach Safety Action Plan

• Based on a two-pronged approach:
  • Address the root causes of crashes
    • Driver fatigue, distraction, health, and risky behavior
    • Vehicle maintenance
    • Operator Oversight
    • Crash avoidance measures
  • Address the root causes of fatalities and injuries
    • Vehicle rollover
    • Occupant ejection
• Other issues:
  • Fire Safety, Emergency Egress, Event Data Recorders
Priority Action Items in DOT Plan

- **FMCSA**
  - Initiate rulemaking to require electronic on-board recording devices on all motorcoaches
  - Initiate rulemaking to prohibit use of cellular phones and other devices by motorcoach drivers
  - Enhance oversight of carriers and other unsafe motorcoach companies
  - Establish minimum knowledge requirements for people applying for authority to transport passengers

- **NHTSA**
  - Assess the safety benefits of stability control on motorcoaches
  - Initiate rulemaking for the installation of seat belts
  - Evaluate and develop roof crush performance requirements
NHTSA’s Motorcoach Safety Priorities

• Priority Strategies
  1. Seat Belts
  2. Stability Control Systems
  3. Rollover Structural Integrity
  4. Emergency Evacuation
  5. Fire Safety
  6. Glazing and Window Retention
  7. Event Data Recorders (EDRs)
  8. Tires and Crash Avoidance Systems
Seat Belts on Motorcoaches

- NPRM published on August 18, 2010.
- Objective: Reduce occupant ejections and mitigate injury during motorcoach crash events
- NPRM proposes definition of motorcoach as a bus with the following characteristics
  - Gross vehicle weight rating of 26,000 pounds or greater,
  - 16 or more designated seating positions,
  - At least 2 rows of passenger seats that are forward facing
  - Is not a school bus or an urban transit bus
NPRM for Seat Belts on Motorcoaches

- Proposes requiring lap/shoulder belts at all seating positions in NEW motorcoaches
- Proposes requiring motorcoach seat belt assembly anchorages to meet strength performance requirements of FMVSS No. 210
  - specifies that anchorages withstand a force of 3,000 lbs applied simultaneously to the lap and shoulder belts
- Lead time of 3 years
- More than 130 comments received on NPRM

NEXT ACTION:
- Final Rule in 2012
Stability Control Systems for Heavy and Light Vehicles

- Motorcoaches, Trucks
  - High CG
  - Generally roll unstable
  - Roll Stability Control
  - Yaw (Directional) Stability Control
    - Limit over/under steer

- Light Vehicles (FMVSS No. 126)
  - Low CG
  - Yaw unstable
  - Yaw (Directional) Stability Control
    - limit over/under steer
  - Roll Stability Control (Not Required)
Stability Control for Motorcoaches

- **Objective:** To reduce rollovers and enhance the stability of commercial vehicles – heavy trucks and motorcoaches.
- **Test track research on stability control for motorcoaches**
  - Evaluated different steering maneuvers
  - Examined roll stability and yaw stability
  - Identified equipment requirements
  - Developed performance test maneuvers
  - Identified performance metrics
- **NEXT ACTION – NPRM in 2012**
Rollover Structural Integrity Tests

- School bus procedure – FMVSS No. 220
  - Uniform load applied on roof = 1.5 UVW
  - All emergency exits should be operable during and after the test
  - Roof crush measured – should not exceed 130 mm

- European procedure - ECE R.66
  - Motorcoach is tipped over on its side from a 800 mm raised platform.
  - Requirement – survival space during and after test is unharmed
NHTSA Research Test Results

- Tested two 40 ft. motorcoach models (1991 Prevost and 1992 MCI models) to the requirements in FMVSS No. 220 and ECE R.66 and a 45 ft model (2000 MCI 102EL3).
- Older bus models failed to meet the FMVSS No. 220 and ECE R.66 requirements
- In addition:
  - The roof emergency exits opened during the test on all three buses
  - Luggage rack inboard hangers in the 1991 MCI bus broke during impact
  - Emergency exit windows of the Provost bus unlatched during impact
  - Seats on non-struck side of the Prevost bus detached from their anchorages
  - Windows on the opposite side broke free of its mounting in the 2000 MCI
- ➢ NEXT ACTION: NPRM in 2012
Emergency Evacuation Research
{Egress, signage, illumination}

- Identify studies from other modes/countries
  - Determine applicability to motorcoaches
- Conduct human evacuation studies & simulations
  - Various emergency exit scenarios
- Examine minimum strength requirement to open emergency exits
  - Consideration for young & elderly occupants
- Examine illumination and signage effects on egress rates
- Completed assessment in 2010
  - Report in NHTSA-2007-28793-0024
Emergency Egress Research Results

- Emergency egress rates from a motorcoach:
  - Front and side door - Fast and safe means of egress
  - Wheelchair door, roof exit – Moderate egress rates – some ergonomic issues
  - Window exit – Low rate of egress, with potential for injury.

- Ergonomics of operating and using emergency exit windows:
  - Current allowable exit operating force limit too high

- Emergency signage and markings:
  - Motorcoach signage are small/insufficient compared to school bus signage

- Emergency lighting and illumination
  - Reduction in occupant egress rates with diminishing lighting conditions

- NEXT ACTION: Evaluating new requirements/costs
Fire Safety Research

- National Institute of Standards & Technology (NIST)
  - Completed in 2011 – Examined the propagation of wheel well fires and evaluated fire hardening materials to mitigate fire propagation into the passenger compartment.
  - Report in NHTSA-2007-28793-0026

- NEXT ACTION – Follow-up research to:
  - Develop candidate test procedures and performance requirements for exterior motorcoach material and fire detection systems.
  - Evaluate fire suppression systems
Glazing and Window Retention

- NHTSA and Transport Canada’s joint research in 2006 identified:
  - Effectiveness of advanced glazing in preventing ejections depends on the structural integrity of the bus
- Since the motorcoach rollover structural integrity NPRM is expected in 2012, the agency resumed research on glazing and window retention.

  Status of research:
  - Completed test procedure evaluation based on the Transport Canada approach using a motorcoach section
  - Feasibility test on multiple motorcoach glazing designs to establish performance requirements is underway
EDRs, Tires, and Crash Avoidance Systems

- **EDRs:**
  - Agency decision on installation and performance characteristics of heavy vehicle EDRs on motorcoaches is expected in 2012.

- **Tires:**
  - September 2010 - Issued NPRM to upgrade performance requirements for tires used on commercial vehicles which included a more stringent endurance test and a new high speed test.
  - Follow-up research and final rule development is underway.

- **Crash Avoidance:**
  - Completed testing to characterize forward collision warning (FCW) and collision mitigation braking (CMB) systems for motorcoaches.
  - Agency will initiate research to characterize lane departure warning systems.
  - Development of objective test procedures and performance requirements is underway.
Thank you for your attention!

Questions?