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HIGHWAY ACCIDENT REPORT: GRAY SUMMIT, MO: COLLISION INVOLVING TWO SCHOOL BUSES, A BOBTAIL AND A PASSENGER VEHICLE, AUGUST 5, 2010

On December 13, 2011, the NTSB Board will meet to discuss the Highway Accident Report related to the collision involving two school buses, a bobtail, and a passenger vehicle which occurred on August 5, 2010 in Gray Summit, MO.

Webcast

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Synopsis

This is a synopsis from the Safety Board's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. Safety Board staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing.

EXECUTIVE SUMMARY

On Thursday morning, August 5, 2010, in Gray Summit, Missouri, traffic slowed in the approach to an active work zone on eastbound Interstate 44 (I-44), as motor vehicles merged from the closed left lane to the right lane. A 2007 Volvo truck-tractor with no trailer was traveling eastbound in the right lane and had slowed or stopped behind traffic. About 10:11 a.m. central daylight time, a 2007 GMC Sierra extended cab pickup truck merged from the left to the right lane and struck the rear of the Volvo tractor. This collision was the first in a series of three.

A convoy of two school buses from St. James High School, St. James, Missouri, was traveling eastbound in the right lane of I-44, approaching the slowed traffic and the collision ahead. Their destination was the Six Flags St. Louis amusement park in Eureka, Missouri. The lead bus was a 71-passenger school bus, occupied by 23 passengers. Following closely behind the lead bus was a 72-passenger school bus, occupied by 31 passengers. Seconds after the lead bus passed a motorcoach that had pulled over and stopped on the shoulder, it struck the rear of the GMC pickup. This collision "the second in the series" pushed the pickup forward, overturning it onto the back of the Volvo tractor. The front of the lead bus was ramped upward, as it came to rest on top of the GMC pickup and the Volvo tractor. Moments later, the following school bus struck the right rear of the lead bus.

As a result of this accident sequence, the driver of the GMC pickup and one passenger seated in the rear of the lead school bus were killed. A total of 35 passengers from both buses, the 2 bus drivers, and the driver of the Volvo tractor received injuries ranging from minor to serious. Eighteen people were uninjured.

CONCLUSIONS

1. The following were not factors in this accident: (1) weather; (2) driver qualifications or familiarity with the accident location; (3) alcohol or illicit drug use by any of the four drivers; (4) mechanical condition of the Volvo tractor, the GMC pickup, or either of the two school buses; (5) emergency response; or (6) highway design, work-zone signage, or work-zone policies.
2. Had the Volvo tractor, the two school buses, and the motorcoach been required to have video event recorders, the events leading up to this accident could have been more definitively assessed.
3. The use of video event recorder data for managing driver behavior could assist school bus operators in identifying driver performance issues before they lead to accidents.
4. The absence of a timely brake application, the cellular provider records indicating frequent texting while driving, the temporal proximity of the last incoming text message to the collision, and the witness statement regarding the driver's actions indicate that the GMC pickup driver was most likely distracted from the driving task by a text messaging conversation at or near the time of the accident.
5. A combination of enforceable state laws, high visibility enforcement, and supporting communication campaigns can reduce the number of accidents caused by drivers distracted by the use of portable electronic devices.
6. Manufacturers and providers of portable electronic devices known to be frequently used while driving should reduce the potential of these devices to distract drivers by developing features that discourage their use or that limit their nondriving- or nonemergency-related functionality while a vehicle is in operation.
7. The collision between the lead school bus and the GMC pickup was the result of the bus driver's attention being drawn away from the forward roadway by the motorcoach parked on the shoulder.
8. Had the driver of the following school bus maintained the recommended minimum distance from the lead school bus, she would

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- [Presentations](#)

have been able to avoid the accident.

9. The GMC pickup driver was fatigued at the time of the accident due to cumulative sleep debt and acute sleep loss, which could have resulted in impaired cognitive processing or other performance decrements.
10. The medical condition of the Volvo tractor driver did not cause or contribute to the accident.
11. The state of Missouri had no effective oversight of the operations of Copeland Bus Services.Â
12. The *Missouri Motor Vehicle Inspection Regulations* "School Bus Inspection" section does not adequately delineate the bus systems to be included in an inspection.
13. The state's current inspection procedures do not allow for the identification of all school bus brake defects included in the *Missouri Motor Vehicle Inspection Regulations*.
14. The MVIâ€²2 vehicle inspection form is insufficient because it does not effectively prompt state inspectors to evaluate all of the safety-critical items listed in the *Missouri Motor Vehicle Inspection Regulations*.
15. Both the Missouri State Highway Patrol and a state inspection facility conducted inadequate vehicle inspections of buses operated by Copeland Bus Services.
16. Forward collision warning systems on the two accident busesâ€”and possibly on the GMC pickupâ€”could have prevented the accident or at least mitigated its severity.
17. The situation of a single occupant having to manually hold open the emergency exit window could delay school bus evacuation.
18. Components of emergency exit windows, such as protruding latch plates, could cause delays or injuries during school bus evacuation.
19. The lack of school bus evacuation briefings prior to activity trips may hinder evacuation and pose a risk for all students.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the initial Gray Summit collision was distraction, likely due to a text messaging conversation being conducted by the GMC pickup driver, which resulted in his failure to notice and react to a Volvo tractor that had slowed or stopped in response to a queue that had developed in a work zone. The second collision, between the lead school bus and the GMC pickup, was the result of the bus driver's inattention to the forward roadway, due to excessive focus on a motorcoach parked on the shoulder of the road. The final collision was due to the driver of the following school bus not maintaining the recommended minimum distance from the lead school bus in the seconds preceding the accident. Contributing to the severity of the accident was the lack of forward collision warning systems on the two school buses.

RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board makes the following recommendations.

NEW RECOMMENDATIONS

To the National Highway Traffic Safety Administration:

1. Modify Federal Motor Vehicle Safety Standard 217 to require that all emergency exits on school buses be easily opened and remain open during an emergency evacuation. (H-11-XX)
2. Modify Federal Motor Vehicle Safety Standard 217 or the corresponding laboratory test procedure to eliminate the potential for objects such as latch plates to protrude into the emergency exit window opening space even when that protrusion still allows the exit window to meet the opening size requirements. (H-11-XX)
3. To cover the interim period until Federal Motor Vehicle Safety Standard 217 is modified as specified in Safety Recommendations 1 and 2 above, provide the states with guidance on how to minimize potential evacuation delays that could be caused by protruding latch mechanisms on emergency exit windows and by exit windows that require additional manual assistance to remain open during egress. (H-11-XX)

To the 50 states and the District of Columbia:

1. (1) Ban the nonemergency use of portable electronic devices (other than those designed to support the driving task) for all drivers; (2) use the National Highway Traffic Safety Administration model of high visibility enforcement to support these bans; and (3) implement targeted communication campaigns to inform motorists of the new law and enforcement, and to warn them of the dangers associated with the nonemergency use of portable electronic devices while driving. (H-11-XX)

To the state of Missouri (addressed to the Governor):

1. Revise state regulations to require a periodic safety review of motor carrier operations for those carriers involved in pupil transportation. (H-11-XX)
2. Modify the *Missouri Motor Vehicle Inspection Regulations* so that all inspection areas and procedures that apply to school buses are contained within the "School Bus Inspection" section. (H-11-XX)
3. Modify your school bus inspection procedures so that all brake defects specified in the *Missouri Motor Vehicle Inspection Regulations* can be identified during biannual inspections. (H-11-XX)
4. Revise your MVIâ€²2 vehicle inspection form so that it lists all items to be inspected, as required by the *Missouri Motor Vehicle Inspection Regulations*; and include on the form a means of succinctly describing whether each of those items passes inspection. (H-11-XX)
5. Audit your vehicle inspection program to ensure that inspections conform to requirements of the *Missouri Motor Vehicle Inspection Regulations*. (H-11-XX)
6. Revise your bus evacuation regulations to require that pupils traveling to an activity or on a field trip in a school bus or a school-chartered bus be instructed in safe riding practices and on the location and operation of emergency exits prior to starting the trip. (H-11-XX)

To the Missouri Department of Elementary and Secondary Education:

1. Incorporate into school bus driver training the risk of driver inattention, the need for proper scanning behavior, and the necessity of keeping a safe following distance. (H-11-XX)

To CTIAâ€‘The Wireless Association and the Consumer Electronics Association:

1. Encourage the development of technology features that disable the functions of portable electronic devices within reach of the driver when a vehicle is in motion; these technology features should include the ability to permit emergency use of the device while the vehicle is in motion and have the capability of identifying occupant seating position so as not to interfere with use of the device by passengers. (H-11-XX)

To the National Association of State Directors of Pupil Transportation Services, the National Association for Pupil Transportation, and the National School Transportation Association:

1. Inform your members of the circumstances and events that contributed to the Gray Summit accident; discuss solutions for the driver, pretrip evacuation briefings, and vehicle, inspection, and technological issues presented in the report; and urge the implementation of these solutions among your members. (H-11-XX)

PREVIOUSLY ISSUED RECOMMENDATIONS REITERATED AND RECLASSIFIED IN THIS REPORT

As a result of its investigation, the National Transportation Safety Board reiterates and reclassifies the following safety recommendations:

To the Federal Motor Carrier Safety Administration:

- Require all heavy commercial vehicles to be equipped with video event recorders that capture data in connection with the driver and the outside environment and roadway in the event of a crash or sudden deceleration event. The device should create recordings that are easily accessible for review when conducting efficiency testing and systemwide performance-monitoring programs. (H-10-10)
- Require motor carriers to review and use video event recorder information in conjunction with other performance data to verify that driver actions are in accordance with company and regulatory rules and procedures essential to safety. (H-10-11)

Safety Recommendations H-10-10 and -11 are classified "Openâ€‘Unacceptable Response" in section 2.3, "Video Event Recorders," of this report.

To the National Highway Traffic Safety Administration:

- Complete rulemaking on adaptive cruise control and collision warning system performance standards for new passenger cars. At a minimum, these standards should address obstacle detection distance, timing of alerts, and human factors guidelines, such as the mode and type of warning. (H-01-8)
- Determine whether equipping commercial vehicles with collision warning systems with active braking and electronic stability control systems will reduce commercial vehicle accidents. If these technologies are determined to be effective in reducing accidents, require their use on commercial vehicles. (H-08-15)

Safety Recommendations H-01-8 and H-08-15 are classified "Openâ€‘Unacceptable Response" in section 2.6.2, "Forward Collision Avoidance Systems," of this report.

PREVIOUSLY ISSUED RECOMMENDATIONS REITERATED IN THIS REPORT

The National Transportation Safety Board reiterates the following previously issued recommendations.

To the Federal Motor Carrier Safety Administration:

- Develop a comprehensive medical oversight program for interstate commercial drivers that contains the following program elements: the review process prevents, or identifies and corrects, the inappropriate issuance of medical certification. (H-01-21)
- Develop a comprehensive medical oversight program for interstate commercial drivers that contains the following program elements: mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, health care providers, and employers are aware of these mechanisms. (H-01-24)

To the National Highway Traffic Safety Administration:

- Complete rulemaking on adaptive cruise control and collision warning system performance standards for new commercial vehicles. At a minimum, these standards should address obstacle detection distance, timing of alerts, and human factors guidelines, such as the mode and type of warning. (H-01-6)
- After promulgating performance standards for collision warning systems for commercial vehicles, require that all new commercial vehicles be equipped with a collision warning system. (H-01-7)

To the American Association of Motor Vehicle Administrators:

- Urge your member states to develop a comprehensive medical oversight program for intrastate commercial drivers that contains the following program elements: Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers; a tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed; medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate; individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations; the review process prevents, or identifies and corrects, the inappropriate issuance of medical certification; enforcement authorities can identify invalid medical certification during safety inspections and routine stops; enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place; mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, health care providers, and employers are aware of these mechanisms. (H-01-26)

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