



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 7, 2012

In reply refer to: H-11-47

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The National Transportation Safety Board (NTSB) is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge you to take action on the safety recommendation in this letter. The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

The recommendation addresses the need to develop technology features that disable the functions of portable electronic devices within reach of the driver when a vehicle is in motion. This recommendation is derived from the NTSB's investigation of a multivehicle collision that occurred near Gray Summit, Missouri, on August 5, 2010, as traffic slowed in the approach to an active work zone on eastbound Interstate 44 (I-44), and 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.

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.¹ As a result of this investigation, the NTSB has issued 13 safety recommendations, 1 of which is addressed to CTIA–The Wireless Association and the Consumer Electronics Association. This recommendation is consistent with the evidence we found and the analysis we performed. Information supporting this recommendation is discussed below. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

The NTSB determined 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.

There is evidence that the driver of the GMC pickup may have been distracted immediately before the initial collision. Records from the cellular telephone provider indicate that from 9:58–10:09 a.m., the driver received 5 text messages and sent 6—for a total of 11 messages. Because the records do not document transmission times to the second, the final incoming message could have arrived at any time between 10:09:00–10:09:59 a.m. This pattern of communication strongly suggests that the driver was in an active text messaging conversation; because the final exchange was an incoming text, it can be assumed that it was the driver's turn to reply.

A witness traveling near the GMC pickup reported that the driver appeared to lean to the right before the pickup struck the rear of the Volvo tractor. The witness stated that he did not see brake lights illuminate, which is consistent with data from the pickup's sensing and diagnostic module, indicating that the brakes were not applied in the last second prior to impact. The driver of the pickup might have been engaged in reading an incoming text, typing an outgoing text, or leaning to the right to retrieve his cell phone. The NTSB concluded that 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.

¹ For additional information, see *Multivehicle Collision, Interstate 44 Eastbound, Gray Summit, Missouri, August 5, 2010*, Highway Accident Report NTSB/HAR-11/03 (Washington, DC: National Transportation Safety Board, 2011), which is available on the NTSB website at <<http://www.nts.gov/>>.

The National Highway Traffic Safety Administration (NHTSA) estimates that in the year 2009, nearly 5,500 people died and 450,000 people were injured in distraction-related accidents.² The findings from analysis of police-reported crashes indicate that 11 percent of crashes involve some form of distraction. NHTSA's "100-car study" found that 23 percent of recorded crashes can be attributed to driver distraction.³ Texting while driving is one distraction that has consistently been found to impair driving performance. A study of commercial driver distraction conducted by the Virginia Tech Transportation Institute (VTTI) found that drivers were 23 times more likely to experience a safety-critical event when they were involved in texting.⁴ In one simulator study, drivers engaged in text messaging had slower reaction times (35 percent slower) and poor lateral vehicle control.⁵ Another simulator study found that sending and receiving text messages led to poorer performance on safety-critical driving measures, including lateral position maintenance, detection of road signs, and time with eyes off the road.⁶ A fourth study reported that texting drivers in a simulator responded more slowly to the onset of brake lights and demonstrated forward and lateral control impairments. In addition, text-messaging drivers were involved in more simulated crashes.⁷ A Texas Transportation Institute study found that drivers responded more slowly when either reading or writing text messages.⁸

In addition to texting devices, the use of other forms of portable electronic devices⁹ (such as music players and gaming units, cell phones, and computer tablets) has been found to result in visual, auditory, manual, and cognitive distractions—which have been shown to increase the likelihood of an accident. A VTTI study found that, among light vehicle drivers, the use of handheld wireless devices was the most common type of distraction and resulted in the most near crashes.¹⁰ A safety-critical event was 6.7 times more likely when a driver was reaching for or using an electronic device, such as a cell phone.¹¹ A VTTI study of commercial drivers found that a safety-critical event was 163 times more likely if a driver was texting, e-mailing, or

² See <http://distraction.gov/stats_and_facts/index.html>, accessed October 26, 2011.

³ S. Klauer and others, *The Impact of Driver Inattention on Near-Crash/Crash Risk, An Analysis Using the 100-Car Naturalistic Driving Study Data*, Report No. DOT-HS-810-594 (Washington, DC: National Highway Traffic Safety Administration, 2006).

⁴ R. Olson and others, *Driver Distraction in Commercial Vehicle Operations*, Report No. FMCSA-RRR-09-042 (Washington, DC: Federal Motor Carrier Safety Administration, 2009).

⁵ N. Reed and R. Robbins, *The Effect of Text Messaging On Driver Behavior: A Simulator Study* (Berkshire, UK: Transport Research Laboratory, 2008).

⁶ S. Hosking, K. Young, and M. Regan, "The Effects of Text Messaging on Young Novice Driver Performance," *Distacted Driving* (Sidney, NSW: Australasian College of Road Safety, 2007), pp. 155–187.

⁷ F. Drews and others, "Text Messaging During Simulated Driving," *Human Factors*, vol. 51, no. 2 (2009).

⁸ J. Cooper, C. Yager, and S. Chrysler, *An Investigation of the Effects of Reading and Writing Text-Based Messages While Driving*, Report No. 476660-00024-1 (College Station, Texas: Texas Transportation Institute, August 2011).

⁹ This use includes, but is not limited to, dialing, answering, e-mailing, accessing the Internet, and viewing, reaching, locating, and operating portable electronic devices.

¹⁰ T. Dingus and others, *The 100-Car Naturalistic Driving Study, Phase II: Results of the 100-Car Field Experiment* (Washington, DC: National Highway Traffic Safety Administration, 2006).

¹¹ FMCSA-RRR-09-042.

accessing the Internet.¹² This research also found that portable music players can divert a driver's attention from the driving task for prolonged periods.

Manufacturers of portable electronic devices play a vital role in promoting the safe use of their products. Although a majority of people are aware of the risks associated with cell phones and driving, almost three-fourths of cell phone owners report using their phones while driving.¹³ It is possible that this disconnect may be due to a common driver misperception: that you are a safer driver than others and better able to safely multitask. It is also possible that drivers gravitate to portable electronic devices in times of low driving workload—a temptation that could quickly increase the risk of experiencing a critical event. Some cellular providers have begun offering mobile phone applications that disable texting and block nonemergency calls when a vehicle is in motion;¹⁴ and third-party devices are currently available that allow motorists to voluntarily disable nonemergency calls on their cell phones while driving.¹⁵

The NTSB maintains that for those devices designed for use while driving or that are frequently used while driving—such as cell phones and computer tablets—manufacturers and providers of these devices should be sensitive to the distractions that this equipment could cause and disable features that do not provide an emergency or driving-related benefit when the vehicle is in motion. The NTSB concluded that 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.

Therefore, as a result of its investigation of the Gray Summit accident, the National Transportation Safety Board makes the following safety recommendation to CTIA—The Wireless Association and the Consumer Electronics Association:

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-11-47)

The NTSB also issued new safety recommendations to the National Highway Traffic Safety Administration, the 50 states and the District of Columbia, the state of Missouri, the Missouri Department of Elementary and Secondary Education, and the National Association of State Directors of Pupil Transportation Services, the National Association for Pupil Transportation, and the National School Transportation Association. The NTSB reiterated

¹² J. Hickman, R. Hanowski, and J. Bocanegra, *Distraction in Commercial Trucks and Buses: Assessing Prevalence and Risk in Conjunction With Crashes and Near Crashes*, Report No. FMCSA-RRR-10-049 (Washington, DC: Federal Motor Carrier Safety Administration, 2010).

¹³ “Large Majority of Drivers Who Own Cell Phones Use Them While Driving Even Though They Know This Is Dangerous,” *The Harris Poll #58* (New York City, New York: Harris Interactive, June 8, 2009).

¹⁴ T-Mobile offers “DriveSmart Plus” for a monthly fee of \$4.99, and Sprint offers “Sprint Drive First” for a monthly fee of \$2.00.

¹⁵ N. Lerner and others, *An Exploration of Vehicle-Based Monitoring of Novice Teen Drivers: Final Report*, Report No. DOT-HS-811-333 (Washington, DC: National Highway Traffic Safety Administration, 2010).

previously issued recommendations to the Federal Motor Carrier Safety Administration, the National Highway Traffic Safety Administration, and the American Association of Motor Vehicle Administrators.

In response to the recommendation in this letter, please refer to Safety Recommendation H-11-47. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, ROSEKIND, and WEENER concurred in this recommendation. Chairman Hersman, Vice Chairman Hart, and Member Sumwalt each filed concurring statements, which are appended to the accident report.

[Original Signed]

By: Deborah A.P. Hersman
Chairman