



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Peter J. Pantuso  
President and Chief Executive Officer  
American Bus Association  
111 K St. NE  
Washington, DC 20002

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The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge the American Bus Association to take action on the safety recommendation being issued in this letter.

On March 3, 2015, the NTSB adopted its safety report on *Commercial Vehicle Onboard Video Systems*.<sup>1</sup> We have investigated many highway accidents where onboard video systems recorded critical crash-related information. This report summarizes the documentation and analysis of onboard video systems from two crashes in particular. We also discuss the benefits of these systems and recommend specific improvements. In addition, we issued a safety alert on commercial vehicle onboard video systems and tips for improving their utility, and developed a drop-in article summarizing safety issues for use by the seven associations receiving this recommendation. The report and the resulting recommendations may be found at our website, [www.nts.gov](http://www.nts.gov), under report number NTSB/SR-15/01.

As a result of this investigation, we issued three new recommendations, including one to the National Highway Traffic Safety Administration; one to 15 manufacturers of onboard video

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<sup>1</sup> See *Commercial Vehicle Onboard Video Systems*, Safety Report NTSB/SR-15/01 (Washington, DC: National Transportation Safety Board, 2015).

systems; and the following recommendation to the American Bus Association, United Motorcoach Association, American Trucking Associations, American Public Transportation Association, National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

H-15-2

Encourage your members to ensure that any onboard video system in their vehicles provides visibility of the driver and of each occupant seating location, visibility forward of the vehicle, optimized frame rate, and low-light recording capability.

Acting Chairman HART and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov).

[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

## COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS

### NTSB INVESTIGATIONS LEAD TO A SAFETY REPORT MAKING RECOMMENDATIONS FOR COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS

School districts and motorcoach operators alike are making increased use of onboard video systems. These video systems provide security and behavior monitoring, in addition to serving as an operational tool for vehicle tracking and diagnostics. Advanced digital systems have evolved from the VHS tape-based systems of the 1990s. The NTSB first recommended the installation of video recording systems in 2010, and now recent crash investigations have prompted a safety report with new recommendations. The *Commercial Vehicle Onboard Video Systems Safety Report*, NTSB/SR-15/01, was released on April 29, 2015.

In Port Saint Lucie, Florida, on March 26, 2012, a school bus was returning students home from school when it was struck by a truck-tractor semitrailer. One child died as a result of the collision, and eight children were seriously injured. The NTSB is always interested in school buses equipped with passenger seat belts—but this school bus was interesting for other reasons as well. It was also equipped with a continuous recording video and audio system that chronicled the entire bus trip, the severe lateral impact, and over 15 minutes after the crash, including the first actions of emergency response personnel.

Although the recording system was installed on this school bus as a behavior monitoring device, it was instrumental in helping investigators understand the circumstances of the crash, the performance and use of the passenger lap belts, the occupant motions during the crash sequence, and the emergency response. In addition, the videos provided unique data for improving biomechanical research and preventing future injuries. The video recordings offered NTSB investigators and pediatric trauma researchers the first ever opportunity to examine trauma data such as duration of loss of consciousness.

The safety report also focuses on an October 6, 2011, nighttime crash involving a motorcoach and two truck-tractor semitrailers on the interstate highway near Kearney, Nebraska. Four occupants of the motorcoach were seriously injured, and two dozen people—including the driver of one of the truck-tractors—received minor injuries. This case was the first NTSB motorcoach crash investigation where all passenger seats were equipped with lap and shoulder belts. The new motorcoach was also equipped with a continuous recording video and audio system that included both interior and forward-looking cameras.

The recording system captured the moments prior to the Kearney motorcoach striking the previously overturned truck-tractor. But, in contrast to the Port St. Lucie school bus crash, potentially useful information was compromised due to poor installation and a lack of low-light recording capability. Even precrash events, such as passenger seat belt use characteristics and driver actions, were not discernable.

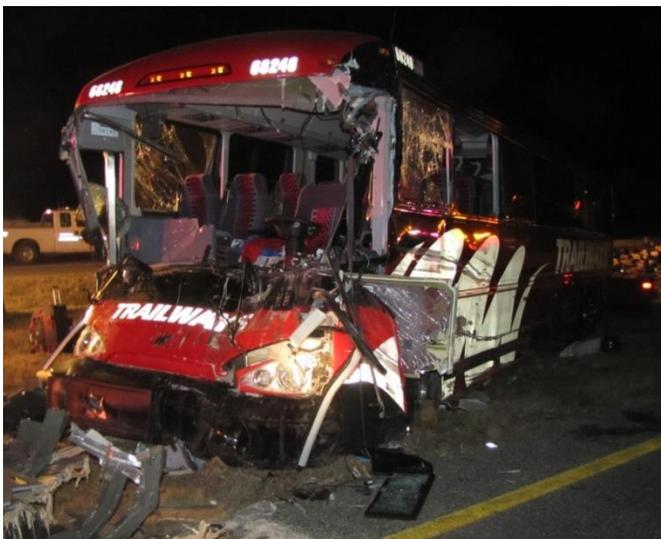
This new NTSB report highlights lessons learned from these onboard video systems and a problem with current applications of the technology. Specifically, the systems do not always capture important information. Issues identified were improper or poorly positioned cameras; the lack of a forward-looking camera (capturing a view out the front windshield); lack of visibility of all seating positions, including the driver; no low-light recording capability; low frame rates; and improper system installation or maintenance.

Because commercial vehicle onboard recording systems come in various configurations and can be used for varied purposes, a common set of specifications is neither feasible or practical. However, there are some things that school districts and bus operators can do. The report recommendations strive to ensure that future installations of onboard video systems address these common issues and maximize the many system benefits.

Additional information about the two discussed crashes and several additional crash investigations, along with details on onboard video systems, can be found in the safety report (NTSB/SR-15/01, available on the NTSB website, [www.nts.gov](http://www.nts.gov)). A safety alert providing tips for improving the utility of onboard videos is also available at [www.nts.gov/safety/safety-alerts](http://www.nts.gov/safety/safety-alerts).



Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Victor S. Parra  
President and Chief Executive Officer  
United Motorcoach Association  
113 S. West St.  
Alexandria, VA 22314

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On March 3, 2015, the NTSB adopted its safety report on *Commercial Vehicle Onboard Video Systems*.<sup>1</sup> We have investigated many highway accidents where onboard video systems recorded critical crash-related information. This report summarizes the documentation and analysis of onboard video systems from two crashes in particular. We also discuss the benefits of these systems and recommend specific improvements. In addition, we issued a safety alert on commercial vehicle onboard video systems and tips for improving their utility, and developed a drop-in article summarizing safety issues for use by the seven associations receiving this recommendation. The report and the resulting recommendations may be found at our website, [www.nts.gov](http://www.nts.gov), under report number NTSB/SR-15/01.

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H-15-2

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Acting Chairman HART and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov).

[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

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Although the recording system was installed on this school bus as a behavior monitoring device, it was instrumental in helping investigators understand the circumstances of the crash, the performance and use of the passenger lap belts, the occupant motions during the crash sequence, and the emergency response. In addition, the videos provided unique data for improving biomechanical research and preventing future injuries. The video recordings offered NTSB investigators and pediatric trauma researchers the first ever opportunity to examine trauma data such as duration of loss of consciousness.

The safety report also focuses on an October 6, 2011, nighttime crash involving a motorcoach and two truck-tractor semitrailers on the interstate highway near Kearney, Nebraska. Four occupants of the motorcoach were seriously injured, and two dozen people—including the driver of one of the truck-tractors—received minor injuries. This case was the first NTSB motorcoach crash investigation where all passenger seats were equipped with lap and shoulder belts. The new motorcoach was also equipped with a continuous recording video and audio system that included both interior and forward-looking cameras.

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Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Bill Graves  
President and Chief Executive Officer  
American Trucking Associations  
950 N. Glebe Rd., Suite 210  
Arlington, VA 22203

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On March 3, 2015, the NTSB adopted its safety report on *Commercial Vehicle Onboard Video Systems*.<sup>1</sup> We have investigated many highway accidents where onboard video systems recorded critical crash-related information. This report summarizes the documentation and analysis of onboard video systems from two crashes in particular. We also discuss the benefits of these systems and recommend specific improvements. In addition, we issued a safety alert on commercial vehicle onboard video systems and tips for improving their utility, and developed a drop-in article summarizing safety issues for use by the seven associations receiving this recommendation. The report and the resulting recommendations may be found at our website, [www.nts.gov](http://www.nts.gov), under report number NTSB/SR-15/01.

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systems; and the following recommendation to the American Bus Association, United Motorcoach Association, American Trucking Associations, American Public Transportation Association, National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

H-15-2

Encourage your members to ensure that any onboard video system in their vehicles provides visibility of the driver and of each occupant seating location, visibility forward of the vehicle, optimized frame rate, and low-light recording capability.

Acting Chairman HART and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov).

[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

cc:  
Sean McNally

## **COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS**

### **NTSB INVESTIGATIONS LEAD TO A SAFETY REPORT MAKING RECOMMENDATIONS FOR COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS**

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In Port Saint Lucie, Florida, on March 26, 2012, a school bus was returning students home from school when it was struck by a truck-tractor semitrailer. One child died as a result of the collision, and eight children were seriously injured. The NTSB is always interested in school buses equipped with passenger seat belts—but this school bus was interesting for other reasons as well. It was also equipped with a continuous recording video and audio system that chronicled the entire bus trip, the severe lateral impact, and over 15 minutes after the crash, including the first actions of emergency response personnel.

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Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Michael P. Melaniphy  
President and Chief Executive Officer  
American Public Transportation Association  
1666 K St. NW, Suite 1100  
Washington, DC 20006

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As a result of this investigation, we issued three new recommendations, including one to the National Highway Traffic Safety Administration; one to 15 manufacturers of onboard video systems; and the following recommendation to the American Bus Association, United Motorcoach Association, American Trucking Associations, American Public Transportation Association, National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

H-15-2

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Acting Chairman HART and Members SUMWALT and WEENER concurred in this recommendation.

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[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

## COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS

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Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Michael J. Martin  
Executive Director  
National Association for Pupil Transportation  
1840 Western Ave.  
Albany, NY 12203

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Because commercial vehicle onboard recording systems come in various configurations and can be used for varied purposes, a common set of specifications is neither feasible or practical. However, there are some things that school districts and bus operators can do. The report recommendations strive to ensure that future installations of onboard video systems address these common issues and maximize the many system benefits.

Additional information about the two discussed crashes and several additional crash investigations, along with details on onboard video systems, can be found in the safety report (NTSB/SR-15/01, available on the NTSB website, [www.nts.gov](http://www.nts.gov)). A safety alert providing tips for improving the utility of onboard videos is also available at [www.nts.gov/safety/safety-alerts](http://www.nts.gov/safety/safety-alerts).



Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Mr. Charlie Hood  
Executive Director  
National Association of State Directors  
of Pupil Transportation Services  
8205 Bristol Ct.  
Tallahassee, FL 32311

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The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge the National Association of State Directors of Pupil Transportation Services to take action on the safety recommendation being issued in this letter.

On March 3, 2015, the NTSB adopted its safety report on *Commercial Vehicle Onboard Video Systems*.<sup>1</sup> We have investigated many highway accidents where onboard video systems recorded critical crash-related information. This report summarizes the documentation and analysis of onboard video systems from two crashes in particular. We also discuss the benefits of these systems and recommend specific improvements. In addition, we issued a safety alert on commercial vehicle onboard video systems and tips for improving their utility, and developed a drop-in article summarizing safety issues for use by the seven associations receiving this recommendation. The report and the resulting recommendations may be found at our website, [www.nts.gov](http://www.nts.gov), under report number NTSB/SR-15/01.

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<sup>1</sup> See *Commercial Vehicle Onboard Video Systems*, Safety Report NTSB/SR-15/01 (Washington, DC: National Transportation Safety Board, 2015).

As a result of this investigation, we issued three new recommendations, including one to the National Highway Traffic Safety Administration; one to 15 manufacturers of onboard video systems; and the following recommendation to the American Bus Association, United Motorcoach Association, American Trucking Associations, American Public Transportation Association, National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

H-15-2

Encourage your members to ensure that any onboard video system in their vehicles provides visibility of the driver and of each occupant seating location, visibility forward of the vehicle, optimized frame rate, and low-light recording capability.

Acting Chairman HART and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov).

[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

## COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS

### NTSB INVESTIGATIONS LEAD TO A SAFETY REPORT MAKING RECOMMENDATIONS FOR COMMERCIAL VEHICLE ONBOARD VIDEO SYSTEMS

School districts and motorcoach operators alike are making increased use of onboard video systems. These video systems provide security and behavior monitoring, in addition to serving as an operational tool for vehicle tracking and diagnostics. Advanced digital systems have evolved from the VHS tape-based systems of the 1990s. The NTSB first recommended the installation of video recording systems in 2010, and now recent crash investigations have prompted a safety report with new recommendations. The *Commercial Vehicle Onboard Video Systems Safety Report*, NTSB/SR-15/01, was released on April 29, 2015.

In Port Saint Lucie, Florida, on March 26, 2012, a school bus was returning students home from school when it was struck by a truck-tractor semitrailer. One child died as a result of the collision, and eight children were seriously injured. The NTSB is always interested in school buses equipped with passenger seat belts—but this school bus was interesting for other reasons as well. It was also equipped with a continuous recording video and audio system that chronicled the entire bus trip, the severe lateral impact, and over 15 minutes after the crash, including the first actions of emergency response personnel.

Although the recording system was installed on this school bus as a behavior monitoring device, it was instrumental in helping investigators understand the circumstances of the crash, the performance and use of the passenger lap belts, the occupant motions during the crash sequence, and the emergency response. In addition, the videos provided unique data for improving biomechanical research and preventing future injuries. The video recordings offered NTSB investigators and pediatric trauma researchers the first ever opportunity to examine trauma data such as duration of loss of consciousness.

The safety report also focuses on an October 6, 2011, nighttime crash involving a motorcoach and two truck-tractor semitrailers on the interstate highway near Kearney, Nebraska. Four occupants of the motorcoach were seriously injured, and two dozen people—including the driver of one of the truck-tractors—received minor injuries. This case was the first NTSB motorcoach crash investigation where all passenger seats were equipped with lap and shoulder belts. The new motorcoach was also equipped with a continuous recording video and audio system that included both interior and forward-looking cameras.

The recording system captured the moments prior to the Kearney motorcoach striking the previously overturned truck-tractor. But, in contrast to the Port St. Lucie school bus crash, potentially useful information was compromised due to poor installation and a lack of low-light recording capability. Even precrash events, such as passenger seat belt use characteristics and driver actions, were not discernable.

This new NTSB report highlights lessons learned from these onboard video systems and a problem with current applications of the technology. Specifically, the systems do not always capture important information. Issues identified were improper or poorly positioned cameras; the lack of a forward-looking camera (capturing a view out the front windshield); lack of visibility of all seating positions, including the driver; no low-light recording capability; low frame rates; and improper system installation or maintenance.

Because commercial vehicle onboard recording systems come in various configurations and can be used for varied purposes, a common set of specifications is neither feasible or practical. However, there are some things that school districts and bus operators can do. The report recommendations strive to ensure that future installations of onboard video systems address these common issues and maximize the many system benefits.

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Port St. Lucie school bus, postcrash.



Kearney motorcoach, postcrash.



# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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**Date:** April 29, 2015

**In reply refer to:** H-15-2

Ms. Ronna Weber  
Executive Director  
National School Transportation Association  
122 South Royal St.  
Alexandria, VA 22314

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H-15-2

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[Original Signed]

By: Christopher A. Hart,  
Chairman

Enclosure

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