

Semi Team Driver Dies After Being Ejected from Sleeper Berth

Incident Number: 09KY081



Photograph of semi trailer involved in crash. Courtesy of local coroner.

**Kentucky Fatality Assessment and Control Evaluation Program
Kentucky Injury Prevention and Research Center
333 Waller Avenue
Suite 206
Lexington, Kentucky 40504
Phone: 859-323-2981
Fax: 859-257-3909
www.kiprc.uky.edu**



**Kentucky Fatality Assessment and Control Evaluation (FACE) Program
Incident Number: 09KY081
Release Date: May 27, 2010
Subject: Semi Team Driver Dies After Being Ejected from Sleeper Berth**

Summary

In the fall of 2009, a husband-wife semi driver team traveled south on a four-lane interstate. They were driving a semi-tractor trailer loaded with air freight. It was nighttime; the husband was driving, and the wife was in the sleeper berth. There was an unoccupied car parked on the right shoulder. The husband crossed the fog line on the right, sideswiped the car, traveled through a guardrail, and down an embankment toward a road below the interstate. During the trajectory of the semi-tractor trailer, the unit jackknifed; the trailer detached from the semi then struck the semi, and both the husband and wife were ejected. The husband was found on the embankment, and the wife was found under the contents of the semi. A witness to the crash called emergency services. They arrived and transported the husband to the nearest trauma hospital. The coroner was contacted, and upon his arrival to the scene, declared the wife dead at the scene.

To prevent future occurrences of similar incidents, the following recommendations have been made:

Recommendation No. 1: Companies should provide new and refresher truck driver safety training for company drivers that includes driver distraction and defensive driving techniques as they pertain to fatigue.

Recommendation No. 2: Passengers using the sleeper berth in a moving semi should use the restraint system currently provided by the manufacturer.

Recommendation No. 3: Sleeper berth occupant protection systems should be redesigned to provide comfort as well as safety.

Recommendation No. 4: Electronic stability systems should be mandatory equipment on all commercial vehicles.

Recommendation No. 5: Commercial vehicle carriers should implement and enforce a workplace policy that requires drivers to wear seat belts while operating a commercial vehicle.

Recommendation No. 6: A comprehensive motor vehicle safety assessment of Kentucky's interstate system needs to be performed in the area where the collision took place.

Background

A husband/ wife semi truck driver team operated a semi truck manufactured in 2009. They were employed by a company that had approximately 7,500 drivers, and 5,900 tractors. The company is an interstate hauler that transported general freight, motor vehicles, building materials, produce, US mail, chemicals, and other commodities.

Temperatures on the day of the crash ranged from 61 degrees Fahrenheit to 82 degrees Fahrenheit.

Investigation

The Kentucky Fatality Assessment and Control Evaluation program was notified of a motor vehicle crash involving a semi-tractor trailer by the local coroner. A site visit was made, and photographs were taken. The coroner, law enforcement, and a towing company were interviewed.

At approximately 2:20 AM, a husband-wife driving team were traveling south in a conventional type sleeper cab, pulling a 53-foot trailer loaded with air freight. The rig was under the 80,000 pound maximum gross vehicle weight limit. They were in the right lane on a four lane, unlit section of the interstate and it was dark. The roadway was dry and paved with asphalt; weather conditions were clear. The characteristics of the roadway included a curve with a downward grade, and the speed limit was 70 miles per hour. The husband was behind the wheel and his wife was in the sleeper berth.

For an unknown reason, the driver crossed the fog line on the right, and with the right front of the semi, sideswiped an unoccupied car parked on the right shoulder (three feet, eight inches to the right of the fog line), pushing the car approximately 19 feet along the shoulder. The semi-tractor trailer traveled approximately 217 feet, struck a guard rail on the right shoulder, then continued approximately 215 feet down an earthen embankment toward a county road below the interstate. During the trajectory of the semi-tractor trailer down the embankment, the unit jackknifed, causing the trailer to detach from the fifth-wheel and strike the tractor. The top of the cab was ripped open, and both the husband and wife were ejected. At 2:23 AM, a witness to the crash called emergency services. Emergency responders arrived at 2:31 AM and found the husband alive on the embankment approximately 12 feet behind the rear of the trailer, and the wife without vital signs, on the embankment under debris from the crash, approximately 20 feet behind the rear of the trailer. As the husband was transported via helicopter to the nearest trauma hospital, the coroner was contacted, and upon his arrival, declared the wife dead at the scene.

According to the police report, the husband was not wearing his seatbelt at the time of the crash. He survived with multiple broken bones. Toxicology reports for both drivers were negative for drugs (legal or illicit) and alcohol.

Cause of Death

The death certificate states the cause of death was due to multiple blunt force injuries from a motor vehicle collision.

Recommendations and Discussions

Recommendation No. 1: Companies should provide new and refresher truck driver safety training for company drivers that includes driver distraction and defensive driving techniques as they pertain to fatigue.

Company truck drivers should receive, at a minimum, new and refresher driver training semi-annually. This training should include, but not be limited to: 1) defensive driving techniques and highway incident management strategies; 2) education on the causes of jackknives, roll-overs and the prevention of such occurrences; 3) looking eight to ten seconds ahead of the truck and how to deal with obstacles in the roadway (05KY089); 4) determining appropriate speed for driving conditions; 5) wearing safety belts; 6) space management; 7) how to avoid becoming distracted; and 8) recognizing fatigue while driving.

Besides distraction, fatigue is one of the main difficulties drivers combat. Drivers should be educated to recognize when they are becoming fatigued while driving. According to an article, “Driver Fatigue: The Dangers of Driving Sleepy”, signs of driver fatigue include daydreaming, straying out of the lane, excessive yawning, feeling impatient and/or stiff, heavy eyes, and reacting slowly. The hours between 10:00 PM and 6:00 AM are at higher risk for driver fatigue. Methods to avoid driver fatigue include being well rested, getting enough sleep, taking breaks every two hours where the driver may take a nap, eating a snack, avoiding consumption of alcohol, having a driving plan, and staying hydrated.

Every driver should have a route plan that incorporates appropriate rest areas to give the driver access to meals, a quiet place to nap, and to be able to stretch. The plan should also provide information on roadside assistance if needed.

Recommendation No. 2: Passengers using the sleeper berth in a moving semi should use the restraint system currently provided by the manufacturer.

It is unknown if the restraints for the sleeper berth were used at the time of this incident, or because of the severity of the crash, if a restraint system would have prevented the occupant from being ejected from the semi. Federal Motor Carrier Safety Administration standard number 393.76, pertaining to sleeper berths, states that semi tractors manufactured on/ after July 1, 1971 that are equipped with a sleeper berth must have an occupant restraint system. Currently, no standard requires the occupant of the sleeper berth to use the occupant restraint system. However, companies should require occupants of a sleeper berth to use the restraints while the tractor is in motion to prevent the occupant from being ejected during a crash.

Recommendation No. 3: Sleeper berth occupant protection systems should be redesigned to provide comfort as well as safety.

As stated in KY FACE report 07KY091, a needs assessment survey should be performed on long-haul semi truck drivers who utilize sleeper berths. Currently, manufacturers use a webbing design to restrain sleeper berth occupants. However, for various reasons, occupants do not like utilizing the restraint system. Possible solutions to restrain occupants in sleeper berths might include the fabrication of a privacy curtain/restraint system in the sleeper berth, installing an air bag above the mattress that would deploy toward the occupant upon certain conditions, or the use of heavy foam within the sleeper berth to insulate from noise and protect the sleeping occupant.

An alternative to the current restraint system may be a vest worn by the occupant that would inflate during a crash. Similar vests are worn by equestrians and motorcycle riders and are worn under clothing and inflate when an incident such as a horseback rider coming out of the saddle or a motorcycle crash occurs. According to a manufacturer, the vest is designed to absorb the impact of the crash, support the trunk and spine, and helps prevent whiplash. Perhaps a similar device could be designed for sleeper berth occupants that would be comfortable to wear while sleeping and provide protection in case of a crash.

Recommendation No. 4: Electronic stability systems should be mandatory equipment on all commercial vehicles.

The Federal Motor Carrier Safety Administration's Code of Federal Regulations, 393.55 requires commercial vehicles manufactured after 1999 to be equipped with automatic braking systems (ABS). The semi-tractor trailer involved in this incident was equipped with an ABS, but not a stabilizer system. When the ABS is applied by the driver prior to striking or making an avoidance maneuver, the ABS prevents the semi-tractor trailer from jackknifing. If the ABS is not activated quickly enough, the stabilizer system can sense incorrect vehicle movement. Independent of driver input or action, the stabilizer system will override the driver, deploy, and prevent the semi-tractor trailer from a jackknifing or rolling-over.

Another system available for trucks is a sensory system which uses forward sensing radar to inform the driver that he/she is too close to the vehicle in front of them. Two indicators, a light on the dash board and an audio signal, will alert the driver of close proximity to the vehicle in front and will automatically slow the truck down thus expanding the driver's reaction time.

Recommendation No. 5: Commercial vehicle carriers should implement and enforce a workplace policy that requires drivers to wear seat belts while operating a commercial vehicle.

Kentucky and Federal laws both require commercial drivers to wear seat belts when operating a commercial vehicle. Kentucky Revised Statute 189.125(6) requires drivers and all passengers to be restrained by properly adjusted and fastened seatbelts. 49 Code of Federal Regulations §392.16-Use of seat belts, states that a commercial vehicle is equipped with a seatbelt, and the driver must properly restrain himself/herself with the seatbelt. To help employers develop and institute a seatbelt training program, the Federal Motor Carrier Safety Administration developed the "Commercial Vehicle Safety Belt Program". A manual, "Increasing Safety Belt Use in Your Company" is available to help companies develop a seatbelt usage program and is available at <http://www.fmcsa.dot.gov/safety-security/safety-belt/increasing-safetybelt-usage-manual.htm>.

Recommendation No. 6: A comprehensive motor vehicle safety assessment of Kentucky's interstate system needs to be performed in the area where the collision took place.

From January 1, 2009 through December 31, 2009 on the two- to three- mile stretch of interstate where the collision described in this report occurred, there were 17 collisions involving commercial vehicles and three fatalities resulted. This particular stretch of interstate is rural, hilly, curvy, and the speed limit is 70 miles per hour. The State of Kentucky should consider performing a comprehensive motor vehicle safety assessment of this stretch of highway including assessment of roadway curve design, roadway grade, signage including possible warning signage, median and roadside barriers, as well as other highway attributes.

Keywords

Inflatable vest
Seat belt
Sleeper berth

References

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- 4) Federal Motor Carrier Safety Administration Standard 49 Code of Federal Regulations, 393.76 Sleeper berths
- 5) Federal Motor Carrier Safety Administration Standard 49 Code of Federal Regulations, 393.55 anti-lock brake systems
- 6) Kentucky Revised Statute 189.125(6) Seat belts
- 7) Federal Motor Carrier Safety Administration Standard 49 Code of Federal Regulations, §392.16-Use of seat belts
- 8) <http://www.fmcsa.dot.gov/safety-security/safety-belt/increasing-safetybelt-usage-manual.htm>.

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Photo of wreckage on embankment. Courtesy of coroner.