

Driver of a Semi-Tractor Pulling Twin Trailers Fatally Injured in Single Vehicle Crash

Incident Number: 08KY029



Picture of semi involved in fire from a single motor vehicle crash. One of the trailers pulled by the semi can be seen in the background.

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Kentucky Fatality Assessment and Control Evaluation (FACE) Program

Incident Number: 08KY029

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Subject: Driver of a Semi-Tractor Pulling Twin Trailers Fatally Injured in Single Vehicle Crash

Summary

In the spring of 2008, a 40-year-old tractor-trailer driver died after his vehicle left the interstate highway, crashed, and was engulfed in flames. The tractor drifted over the fog line and rumble strip onto the right shoulder, began to skid and left the highway. The tractor slid through the grass beside the roadway, struck a concrete culvert, sideswiped a small tree and then hit a large tree head-on. The tractor and trailers then skidded back down the embankment toward the highway where the entire unit came to rest. The tractor and lead trailer overturned onto the driver's side. The second (rear) trailer uncoupled from the first trailer but remained upright and attached by safety chains. Emergency medical services were contacted. Upon arrival, EMS found the entire unit engulfed in flames. The coroner was contacted, and upon his arrival, declared the driver dead at the scene.

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

Recommendation No. 1: Commercial tractor-trailer drivers should be trained to recognize signs of fatigue and when to seek appropriate rest areas.

Recommendation No. 2: Companies should provide new and refresher commercial driver safety training for company drivers addressing driver distraction and including defensive driving techniques.

Recommendation No. 3: Vehicle stabilizer and sensory systems should be mandatory equipment on all commercial vehicles.

Recommendation No. 4: Log books and other important driver records should be stored in a fireproof container in the cab.

Background

The company the driver was employed by had been in business for seventy-five years and had approximately 6,200 employees of which 5,600 were drivers. They owned approximately 5,600 power units and 10,000 trailers, and hauled dry goods, food items, and miscellaneous less-than-truckload (LTL) type freight.

According to the company, the decedent had been employed by the company for six years and had been actively driving for seventeen years. He held a commercial driver's license for

eighteen years. The driver traveled a fixed route of 500 miles which took eight hours and he worked approximately 40 hours a week. He operated the same tractor (day cab) each trip and began his route at 9:30 P.M. every evening. The driver received safety training upon being hired and received continuing safety education provided by the company. He was not involved in loading or unloading cargo either for his truck runs or on days off.

Temperatures for the day the incident occurred ranged from 70 ° Fahrenheit to 84 ° Fahrenheit.

Investigation

The Kentucky Fatality Assessment and Control Evaluation Program was notified of an occupational fatality involving a tractor-trailer driver. Interviewed for this report were the company which employed the driver, Kentucky State Police, and local coroner.

At 9:30 P.M. the tractor driver, whose job entailed transferring trailers between two warehouses, began the 500 mile route pulling twin trailers from the origin warehouse dock. The tractor was classified day-cab, weighed approximately 15,500 pounds, 18 feet 9 inches in length and was equipped with a speed governor which regulated maximum speed to sixty-three miles per hour and anti-lock brakes, but not a stabilizer system. The first leg of the driver's route was approximately 250 miles south of his start. Upon arriving at the second warehouse he dropped off two trailers, then after connecting two awaiting trailers he departed north to the warehouse from which he originated. Each trailer weighed 7,900 pounds empty and each was twenty-eight feet long and was equipped with an automatic braking system (ABS). The freight on the first trailer weighed 19,073 pounds and was placarded "flammable". The freight on the second trailer weighed 17,246 pounds. The total weight of the semi and trailers was approximately 67,500 pounds and the total length was seventy-four feet nine inches. The trailers contained a variety of LTL dry goods: butane lighters, aerosol spray paint, motor oil, zero turn lawn mowers, oil and air filters, and hot tubs. The driver was expected to arrive back at the warehouse approximately eight and one half hours later at 6:00 A.M. the following morning.

Upon leaving the warehouse with the two trailers, the driver headed north. At approximately, 4:00 A.M., the driver was in the right-hand lane of a four lane interstate highway. The posted speed limit was 70 miles per hour. The roadway was straight and level. It was dark and the highway was unlit. Weather conditions were clear and the asphalt was dry.

The driver drifted over the fog line, rumble strip, and onto the emergency shoulder. Skid marks indicate that when the tractor hit the rumble strip the driver engaged the brakes, which locked-up. With the brakes locked-up, the tractor and trailers skidded fifty-six feet on the paved shoulder then left the shoulder and continued to slide sixty-four feet in the grass before striking a concrete culvert. After hitting the culvert, the unit continued to travel up a steep earthen embankment for eighty-eight feet and swiped a small tree with the right-side of the tractor. Continuing up the embankment the tractor hit another tree head-on. At this point the truck and trailers skidded down the embankment where they came to rest approximately 130 feet from contact with the first tree. The tractor and lead trailer overturned on the driver's side while the rear trailer uncoupled from the first trailer but remained upright and attached by safety chains. During the crash, both trailers caught fire and were completely engulfed. Some of the trailers'

contents were scattered across the highway, shoulder, and embankment alongside the roadway. At 4:09A.M., a tractor trailer driver traveling north at the same location did not see the crash occur but came upon the burning tractor trailer and called Emergency Medical Services (EMS). EMS arrived at the scene at 4:21A.M., discovered the driver in the truck cab and contacted the coroner. The coroner arrived and pronounced the driver dead at the scene. An autopsy of the driver was conducted to confirm identification. There were no witnesses to the crash.

A company representative stated that the driver stopped prior to the crash to rest/eat but it is unknown for how long as the log books were consumed in the fire. There were no known mechanical problems with either the truck or trailers. According to the police report, the driver either fell asleep, or became distracted while driving. Interstate traffic was routed from the south bound exit and was reopened after cleanup at 2:00 P.M. the same day.

Cause of Death

According to the death certificate, the cause of death was due to blunt impacts of head and torso with multiple fractures and hemothorax.

Recommendations and Discussions

Recommendation No. 1: Semi tractor-trailer drivers should be trained to recognize signs of fatigue and when to seek appropriate rest areas.

Fatigue is one of the main occupational hazards commercial drivers face. Commercial drivers should be educated to recognize signs of fatigue 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. 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. Companies should assist drivers in fighting fatigue by establishing policies requiring drivers to stop every 100 miles driven or every two hours driven for a rest break. When hauling hazardous materials, company policy should require rest breaks more frequently. Also to help fight fatigue, companies should consider varying drivers’ routes to keep drivers from becoming inured to routine.

Every driver should have a route plan that incorporates appropriate rest areas to give the driver access to meals, a safe quiet place to nap, and to be able to stretch or walk to stimulate circulation. In case a driver becomes fatigued while driving, companies should provide drivers with maps with designated rest areas for semi truck drivers along the route. The plan should also provide information on roadside assistance if needed.

Recommendation No. 2: Companies should provide new and refresher commercial driver safety training for company drivers addressing driver distraction and including defensive driving techniques.

Company truck drivers should receive new and refresher commercial driver training semi-annually. This training should include defensive driving techniques and highway incident management strategies. Training should also include education on the prevention of jackknife, roll-overs and the causes of such occurrences. According to two truck driver training schools, defensive driving techniques should include looking eight to ten seconds ahead of the truck and how to deal with obstacles in the roadway (05KY089). Training should also include aids to help drivers stay focused on driving and not become distracted. Companies should provide refresher training for all drivers every six months to address driving habits including appropriate speed for driving conditions, wearing safety belts, space management, and how to avoid becoming distracted while driving and fatigue.

Recommendation No. 3: Vehicle stabilizer and sensory systems should be mandatory equipment on all commercial vehicles.

To reduce roll-overs, jackknives, fishtails, and other dangerous vehicle maneuvers, fleet owners and owner-operators should consider equipping all semi tractor-trailers with vehicle stabilizer and sensory systems. 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 had been manufactured in 2003 and was equipped with an ABS, but not a stabilizer system. When ABS is applied by the driver prior to striking or making an avoidance maneuver, the electronic stability program when coupled with ABS helps prevent the semi-tractor trailer from jackknifing. If the ABS is not activated quickly enough, the electronic stability program can sense incorrect vehicle movement. Independent of driver input or action, the electronic stability program will override the driver, engage, and prevent the semi-tractor trailer from jackknifing or rolling-over.

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

Recommendation No. 4: Log books and other important driver records should be stored in a fireproof container in the cab.

Semi-tractor trailer drivers are required to have a log book in their possession while operating a semi. If hauling hazardous materials, the Federal Motor Carrier Safety Administration's Code of Federal Regulations, Subpart A, 177.816(e)(2)(i) Shipping papers, requires the driver to keep the shipping documents within reach of the driver's door. These documents should be kept safe in case of emergencies such as fire or damage. A fire-proof document storage container should be attached to the cab floor or door to contain the driver's log and other important documents.

Keywords

Fire
Driver distraction

Driver fatigue
Vehicle stabilizer and sensory systems

References

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Acknowledgements

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Photograph of: culvert struck by tractor pulling two trailers, and the two trees struck by the tractor. This photograph taken by KY FACE personnel and is the property of KY FACE.



Photograph taken of trailers consumed in fire due to crash. Photograph taken by KY FACE personnel.



Photograph of trailers consumed in fire and crash. Photograph taken by KY FACE personnel.



Photograph of the two trailers involved in crash. Semi involved is on the flatbed. This photograph taken by KY FACE personnel and is the property of KY FACE.