

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**Virtual Meeting of March 28, 2023**  
**(Information subject to editing)**

***Multivehicle Collision Involving a Milk Tank Combination Vehicle and Stopped Traffic Queue, Phoenix, Arizona, June 9, 2021***

This is a synopsis from the NTSB's report and does not include the Board's rationale for the findings, probable cause, and safety recommendations. NTSB staff is currently making final revisions to the report from which the attached findings 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 to reflect changes adopted during the Board meeting.

**Executive Summary**

**What Happened**

On the evening of June 9, 2021, a truck-tractor in combination with a tank-trailer hauling milk, operated by Arizona Milk Transport (AMT), was traveling eastbound on SR-202 in Phoenix, Arizona, when it crashed into a queue of passenger vehicles that were stopped due to a road closure. The truck driver did not slow down or steer away as he approached the traffic queue at a speed of 62-64 mph. The combination vehicle struck and partially overrode the car at the end of the traffic queue, initiating a series of chain-reaction collisions that involved six other passenger vehicles. Following the initial impacts, the combination vehicle crossed the eastbound travel lanes, struck the concrete median barrier and separated, and the truck-tractor and one passenger vehicle were consumed by fire. Four passenger vehicle occupants died and 11 occupants were injured; the truck driver was uninjured.

**What We Found**

The video footage from the inward-facing camera of the commercial vehicle's driver monitoring system showed the truck driver facing forward for 8 seconds before the crash but showed no visible indication that he was aware that the combination vehicle was rapidly approaching the fully conspicuous traffic queue. Based on this video footage, the truck driver was not distracted by an external source, and toxicology testing showed that he was not impaired. Based on the interview with the truck driver and the examination of his phone and work records, he had about 5.5-6 hours of sleep opportunity on the day of the crash.

AMT operated under a federal agricultural hours-of-service (HOS) exemption, which allows unlimited driving hours within a 150 air-mile radius. AMT's safety culture

was inadequate; the carrier had no fatigue management program that would have reduced the risk of fatigued operation by its drivers. Moreover, the carrier's oversight of its drivers and enforcement of its own policies regarding the maximum daily and weekly on-duty hours was poor, as the crash-involved driver and several other examined drivers regularly violated those policies.

The federal HOS exemption is granted by statute for transportation of livestock and certain perishable commodities, including milk. Because motor carriers that operate under an agricultural HOS exemption are not required to inform the Federal Motor Carrier Safety Administration when using the exemption, the agency does not have a mechanism to identify those carriers or maintain information about their crash rate.

We also found that, as a result of the Arizona Department of Transportation (ADOT) classifying the road closure as a low-priority event as opposed to a high-priority event, dynamic message signs in the area of the crash displayed alternating messages regarding the road closure and dynamic travel time.

In addition, several of the passenger vehicle occupants in the Phoenix crash were not wearing or were improperly restrained by the available lap/shoulder belts, which increased their risk of ejection and exacerbated their injuries.

We determined that the probable cause of this multivehicle crash was the truck driver's failure to respond to the fully conspicuous traffic queue, likely as the result of fatigue. Contributing to the crash was Arizona Milk Transport's (1) poor oversight of its drivers, (2) lack of fatigue management program, and (3) failure to enforce its own policies, such as those regarding on-duty hours—all a consequence of its inadequate safety culture. Contributing to the severity of injuries to several passenger vehicle occupants was their lack of or improper lap/shoulder belt use.

## **What We Recommended**

As a result of this investigation, we recommended that the US Department of Transportation (USDOT) develop and implement a program to determine the prevalence of for-hire motor carriers operating under agricultural HOS exemptions and study their safety performance, and to report the findings and any recommendations to improve safety to Congress. We further recommended that the USDOT require interstate motor carriers operating under an agricultural HOS exemption to implement a fatigue management program or, if necessary, seek congressional authority to do so.

We also recommended that ADOT revise its policies regarding dynamic message signs to classify single-direction road closures as high-priority messages.

Further, we recommended that AMT implement an improved coaching program to improve driving behavior; implement a process to improve adherence to

carrier policies, such as by verifying the accuracy of driver-reported duty hours and cross-referencing other information; and implement a fatigue management program.

To broaden industry awareness of this crash, its findings, and the risk of fatigue when operating beyond traditional HOS, we recommended that the International Dairy Food Association, the National Conference for Interstate Milk Shipments, and the International Milk Haulers Association inform their members about this crash and encourage motor carriers to establish a fatigue management program. We further recommended that the Commercial Vehicle Safety Alliance, in its promotion of the North American Fatigue Management Program, develop an outreach program focusing on motor carriers that operate under an agricultural HOS exemption.

We also reiterated several safety recommendations pertaining to implementing collision avoidance technologies and increasing the use of seat belts. First, we reiterated Safety Recommendation H-15-5 to the National Highway Traffic Safety Administration (NHTSA) to develop performance standards for forward collision avoidance systems in commercial vehicles. Also to NHTSA, we reiterated Safety Recommendations H-13-30 and -31 to develop performance standards and mandate connected vehicle technology on all new vehicles. Furthermore, we reiterated Safety Recommendation H-22-1 to the USDOT to develop a plan for nationwide deployment of connected vehicle technology, and Safety Recommendation H-22-6 to the Federal Communications Commission to protect communication between connected vehicle devices from harmful interference. We also changed the status of Safety Recommendations H-22-1 and -6 from Open–Await Response to Open–Unacceptable Response.

Finally, we reiterated Safety Recommendation H-15-42 to Arizona, the District of Columbia, and 37 other states to enact legislation that provides for primary enforcement of seat belt use law in all vehicles and all seating positions equipped with a restraint system.

## **Findings**

1. None of the following were factors in the crash: (1) the licensing or driving experience of the truck driver; (2) cell phone use, use of alcohol or other drugs, or medical conditions of the truck driver; (3) the mechanical condition of the combination vehicle or the passenger vehicles; and (4) highway design.
2. The emergency response was timely and adequate.
3. The truck driver's lack of avoidance response—evident in the vehicle data and video from the fleet management system—to the bright and conspicuous tail and brake lights of the vehicles in the traffic queue ahead was likely the result of fatigue.

4. Although Arizona Milk Transport equipped its vehicles with a fleet management and driving monitoring system, the carrier's implementation of the system—which includes coaching of drivers—was ineffective in improving the driving behavior of its drivers and in reducing violations of carrier safety policies.
5. Arizona Milk Transport's lack of oversight to ensure adherence to company policies allowed the crash-involved driver and other drivers to operate well beyond the carrier-allowable hours of operation.
6. By not having a fatigue management program and by not incorporating considerations for fatigue in its policies and monitoring mechanisms, Arizona Milk Transport failed to mitigate the risk of fatigue for its drivers who frequently operated beyond maximum hours-of-service limits for non-exempt carriers.
7. Drivers operating under an agricultural exemption, which allows them to operate beyond traditional hours-of-service limits, would be at greater risk of fatigued operation.
8. Motor carriers can considerably reduce fatigue-related crash risk and improve safety by implementing a fatigue management program.
9. Due to the limited oversight and lack of monitoring of motor carriers operating under an agricultural hours-of-service (HOS) exemption, the extent to which these motor carriers operate beyond traditional HOS limits—which can increase the risk of fatigued operation by drivers—is unclear.
10. By including a transportation safety component in the oversight of milk and dairy production and transportation, milk cooperatives and dairy-processing plants can mitigate the risk of fatigued driving.
11. The Commercial Vehicle Safety Alliance, as the operator of the North American Fatigue Management Program, can directly influence all motor carriers in reducing the risk of drivers operating while fatigued, including those that operate under an agricultural hours-of-service exemption.
12. Although the Arizona Department of Transportation Traffic Operations Center classification of the road closure message as low priority deemphasized the safety risk of the ongoing traffic incident, it is unlikely that the low-priority message level affected the truck driver's failure to notice the fully conspicuous traffic queue.
13. The use of lap/shoulder belts by the passenger vehicle occupants would have reduced serious and fatal injuries and the risk of ejection.

14. The use of a lap/shoulder belt without an appropriate child safety restraint system contributed to the injuries of the child occupant.
15. The speed differential in this crash was well outside the parameters of the National Highway Traffic Safety Administration's research test protocols for forward collision avoidance systems in heavy vehicles.
16. Had the truck-tractor and at least one of the vehicles in the traffic queue been equipped with vehicle-to-everything capabilities, the truck driver would have been alerted of the stopped traffic queue well in advance to take necessary action to prevent the crash from occurring or at least mitigate its severity.

## **Probable Cause**

The National Transportation Safety Board determines that the probable cause of the Phoenix, Arizona, multivehicle crash was the truck driver's failure to respond to the fully conspicuous traffic queue, likely as the result of fatigue. Contributing to the crash was Arizona Milk Transport's (1) poor oversight of its drivers, (2) lack of fatigue management program, and (3) failure to enforce its own policies, such as those regarding on-duty hours—all a consequence of its inadequate safety culture. Contributing to the severity of injuries to several passenger vehicle occupants was their lack of or improper lap/shoulder belt use.

## **Recommendations**

### **New Recommendations**

#### **To the US Department of Transportation:**

1. Develop and implement a program to determine the prevalence of for-hire motor carriers operating under an agricultural hours-of-service exemption and study their safety performance, including but not limited to (1) fatigue-related crashes, (2) risk of fatigued operation, and (3) adherence to fatigue management principles. Report the findings and any recommendations to improve safety to Congress, as expected in the National Highway System Designation Act, and make them publicly available. (H-23-X)
2. Require interstate motor carriers operating under an agricultural hours-of-service exemption to implement a fatigue management program or, if necessary, seek authority from Congress to do so. (H-23-X)

#### **To the Arizona Department of Transportation:**

3. Revise your dynamic message sign operational policies to classify single-direction road closures as high-priority messages. (H-23-X)

**To Arizona Milk Transport:**

4. Implement an improved coaching program as part of your fleet management and driving monitoring system that would improve driving behavior and reduce instances of violations of carrier safety policies. (H-23-X)
5. Implement a process to improve adherence to carrier policies and regularly verify the accuracy of drivers' reported hours of operation, such as by reviewing the drivers' records of duty status and cross-referencing other available information. (H-23-X)
6. Develop and implement a fatigue management program based on the North American Fatigue Management Program. (H-23-X)

**To the Commercial Vehicle Safety Alliance:**

7. As part of your promotion of the North American Fatigue Management Program, develop a dedicated outreach plan that focuses on motor carriers that operate under an agricultural hours-of-service exemption. (H-23-X)

**To the International Dairy Food Association and the National Conference for Interstate Milk Shipments:**

8. Inform your members of the circumstances of this crash and encourage those members that contract with motor carriers to request that the carriers implement a fatigue management program based on the North American Fatigue Management Program. (H-23-X)

**To the International Milk Haulers Association:**

9. Inform your members of the circumstances of this crash and encourage them to implement a fatigue management program based on the North American Fatigue Management Program. (H-23-X)

**Reiterated Recommendations**

**To the National Highway Traffic Safety Administration:**

Complete, as soon as possible, the development and application of performance standards and protocols for the assessment of forward collision avoidance systems in commercial vehicles. (H-15-5)

Develop minimum performance standards for connected vehicle technology for all highway vehicles. (H-13-30)

Once minimum performance standards for connected vehicle technology are developed, require this technology to be installed on all newly manufactured highway vehicles. (H-13-31)

**To the states of Alabama, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wyoming, and to the District of Columbia:**

Enact legislation that provides for primary enforcement of a mandatory seat belt use law for all vehicle seating positions equipped with a passenger restraint system. (H-15-42)

### **Reiterated and Classified Recommendations**

#### **To the US Department of Transportation:**

Implement a plan for nationwide connected vehicle technology deployment that (1) resolves issues related to interference from unlicensed devices, such as those that use wi-fi; (2) ensures sufficient spectrum necessary for advanced connected vehicle applications; and (3) defines communication protocols to be used in future connected vehicle deployment. (H-22-1)

This recommendation's classification is changed from Open–Await Response to Open–Unacceptable Response.

#### **To the Federal Communications Commission:**

Implement appropriate safeguards to protect vehicle-to-everything communications from harmful interference from unlicensed devices, such as those that use wi-fi. (H-22-6)

This recommendation's classification is changed from Open–Await Response to Open–Unacceptable Response.