NATIONAL TRANSPORTATION SAFETY BOARD
Public Meeting of October 31, 2017
(Information subject to editing)

Motorcoach Collision with Combination Vehicle
Palm Springs, California
October 23, 2016
NTSB/HAR-17/XX

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

The crash occurred on Sunday, October 23, 2016, in dark conditions, about 5:16 a.m. Pacific daylight time, when a motorcoach ran into the rear of a stopped combination vehicle near mile marker 32.5 in the westbound lanes of Interstate 10 (I-10), outside Palm Springs, California.

About 5:07 a.m. (9 minutes before the crash), the California Highway Patrol (CHP) initiated a traffic break for both east- and westbound traffic on I-10 in support of utility work that was being performed about 1.5 miles west of the crash location. (A traffic break is a method of temporary traffic control that is used to slow or stop traffic, most typically to allow for completion of construction activities.) At that time, a 2015 International Prostar truck-tractor in combination with a 2012 Utility semitrailer, operated by Tri-State Collision LLC, was traveling westbound on I-10. The combination vehicle stopped when it reached the traffic queue that had formed as a result of the break. About 5:14 a.m., after a traffic break that lasted about 7 minutes, the CHP released westbound traffic to start moving again. Despite the release, however, the combination vehicle remained stopped in the center-right lane of the four-lane westbound roadway and, according to witnesses, was stationary as westbound traffic resumed normal flow.

About 2 minutes after the traffic break ended, a 1996 Motor Coach Industries International Inc. (MCI) 47-passenger motorcoach, operated by USA Holiday, was traveling at highway speed on westbound I-10 in the lane in which the combination vehicle was stopped. The motorcoach, which was occupied by a 59-year-old driver and 42 passengers, struck the rear of the semitrailer, intruding about 13 feet into the semitrailer and pushing the combination vehicle 71 feet forward before coming to a stop. As a result of the crash, the bus driver and 12 passengers died, and the truck driver and 30 passengers were injured.

The National Transportation Safety Board (NTSB) identified the following safety issues as a result of this accident investigation:

- ***Traffic break policies:*** In its process for approving permits for temporary traffic breaks, the California Department of Transportation did not require that law enforcement use advance warning devices when conducting the breaks. Such devices could have adjusted the bus driver's expectations regarding potential traffic stoppage. Moreover, had additional law enforcement vehicles been used to conduct the break, the officers could have monitored the movement of the westbound traffic after the break ended and possibly realized that the stopped truck did not resume operation; they could then have alerted the driver to rejoin traffic.

- ***Obstructive sleep apnea and diabetes in commercial vehicle drivers:*** The crash evidence indicates that the truck driver fell asleep during the traffic break of about 7 minutes' duration. Although he was severely obese and at a very high risk for obstructive sleep apnea (OSA), the truck driver had not been tested for the condition. Although the Federal Motor Carrier Safety Administration (FMCSA) Medical Review Board has developed guidance for screening for OSA, the FMCSA has not disseminated this guidance to the examiners that it certifies to perform commercial driver's license medical examinations.

  The investigation revealed that the bus driver had untreated diabetes. Although he had a positive glucose urine test during his medical certificate examination, the medical examiner did not diagnose the bus driver's diabetes or refer the driver for further testing. The FMCSA does not provide any guidance to certified medical examiners about what to do when drivers test positive for urine glucose.

- ***Oversight of commercial vehicle drivers and carriers:*** The truck driver had violated hours-of-service regulations for several days prior to the crash. The motor carrier Tri-State Collision did not use its available advanced driver-monitoring system to verify its truck drivers' compliance with hours-of-service regulations, which could have improved overall carrier safety. With respect to motor carrier oversight, because of its ineffective process of approving and monitoring new entrant motor carriers, the FMCSA missed an opportunity to address Tri-State Collision's deficient compliance with safety regulations.

- ***Emergency egress:*** The extent of the bus's intrusion into the semitrailer created limited evacuation space on the bus, which prolonged extrication and evacuation efforts. Had a secondary door been available for use as an emergency exit, the bus evacuation might have been expedited.

- ***Collision avoidance systems:*** Neither vehicle was equipped with crash prevention technology. A collision avoidance system could have alerted the bus driver about the stopped combination vehicle.

Findings

1. None of the following were primary or contributory factors in the crash: (1) driver licensing or experience, (2) driver cell phone distraction or substance impairment, (3) mechanical condition of the truck or the bus, or (4) weather.

2. The emergency response to the crash was timely and appropriate.

3. Based on the evidence that the truck driver did not move his vehicle for more than 2 minutes after the traffic break ended and his reported belief that the break had lasted about four times its actual length, he was most likely asleep at the time of the crash, due to fatigue that, given his extremely high level of obesity, probably resulted from undiagnosed and untreated moderate-to-severe obstructive sleep apnea.

4. Although the bus driver did not have an expectation of a traffic stoppage and looming was his only perceptual cue of vehicle movement, the truck was conspicuous, and the bus driver had sufficient time to observe it, determine that it was stopped, and take appropriate action to avoid the crash.

5. The minimal action the bus driver took to avoid the collision and the 4 hours or less of sleep he obtained in the day and a half before the crash indicate that he was fatigued at the time of the crash, most likely as a result of acute sleep loss.

6. Additional traffic management countermeasures, such as advance warning devices and an additional law enforcement vehicle with activated emergency lights at the end of the traffic queue, could have alerted the bus driver about the traffic break, possibly increasing his vigilance sufficiently to enable him to detect the stopped truck in time to prevent the crash.

7. An expanded traffic management policy, such as one including the use of an additional law enforcement vehicle to conduct the rolling roadblock, could have provided greater opportunity for law enforcement to recognize that the truck had remained stopped in its lane after traffic was released, and to respond accordingly.

8. Even though traffic breaks and rolling roadblocks are commonly used across the country, many states that use these methods of traffic control lack standard policies specifying how they should be implemented safely.

9. States that use rolling roadblocks would benefit from transportation management policies that include procedures for alerting drivers to upcoming roadblocks and for monitoring the formation and dispersal of traffic queues; procedures such as the use of advance warning devices and additional law enforcement vehicles can reduce the risks associated with sudden traffic breaks.

10. Although it has authoritative and useful guidance available on screening commercial drivers for obstructive sleep apnea (OSA), the Federal Motor Carrier Safety Administration has not publicized, distributed, or recommended this guidance to medical examiners; as a

result, identification and effective treatment of drivers at high risk for OSA is unlikely to improve.

11. Given the high risk for obstructive sleep apnea (OSA) among commercial drivers, the currently mandated screening method is inadequate, and its continued use increases the possibility that commercial drivers with undiagnosed OSA will obtain commercial driver's license medical certification.

12. Postcrash test results indicate that the bus driver had undiagnosed diabetes with significantly elevated average blood sugar in the several weeks before the crash.

13. The medical examiner's failure to effectively pursue the bus driver's positive urine glucose result during his last commercial driver's license exam was a missed opportunity to diagnose and treat the driver's diabetes.

14. The available information is insufficient to determine whether the bus driver had blurred vision due to his undiagnosed and poorly controlled diabetes or the extent to which it might have contributed to the crash.

15. Because certified medical examiners without experience in diagnosing or treating diabetes cannot rely on their clinical expertise to interpret urine dip test results, they would benefit from readily accessible and appropriate guidance from the Federal Motor Carrier Safety Administration.

16. By not using the available data from its driver-monitoring systems, Tri-State Collision LLC did not adequately oversee its drivers' compliance with hours-of-service regulations.

17. By not conducting a compliance review of the carrier Tri-State Collision LLC after its failed new entrant safety audit or during the 3-year-long period during which it had an alert in its Behavior Analysis and Safety Improvement Category of hours-of-service compliance, the Federal Motor Carrier Safety Administration missed an opportunity to help the carrier improve its compliance with safety regulations or to remove its operating authority because of safety deficiencies.

18. Although emergency services responded quickly to the crash, the loss of the bus's loading door as a means of egress, the limited evacuation space inside the bus, and the difficulties in egressing through the emergency windows resulted in a protracted evacuation process.

19. The complicated and prolonged process of extricating bus occupants may have contributed to the injury severity of at least one fatally injured and one seriously injured bus passenger.

20. Having a secondary door for use as an emergency exit on the bus would have considerably expedited the evacuation process and potentially improved the medical outcome for at least two passengers.

21. The installation of collision avoidance system technology in all highway vehicles could prevent the occurrence of rear-end crashes similar to this crash.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the Palm Springs, California, crash was (1) the California Department of Transportation's inadequate transportation management plan for the traffic break, which resulted in a hazardous traffic situation in which law enforcement did not detect the combination vehicle's lack of movement after the traffic break ended and the bus driver did not receive any advance warning of potential traffic stoppage ahead; (2) the truck driver's not moving his combination vehicle after the traffic break ended, most likely due to his falling asleep as a result of his undiagnosed moderate-to-severe obstructive sleep apnea; and (3) the bus driver's lack of action to avoid the crash due to his not perceiving the combination vehicle as stopped, as a result of his fatigue and the fact that he did not expect to encounter stopped traffic.

RECOMMENDATIONS

New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations:

To the Federal Highway Administration:

1. Advise state department of transportation officials about the circumstances of this crash; distribute to them exemplar state and American Traffic Safety Services Association guidance on the safe implementation of traffic breaks; and urge each state to adopt a policy for conducting traffic breaks that includes procedures similar to those used in other temporary traffic control operations, such as (1) providing drivers with advance notice of slowed or stopped traffic, and (2) monitoring the formation and dispersal of traffic queues. In addition, the implementation of the policy should be documented in every encroachment permit involving a traffic break in the state.

2. During your next regular process review with each state department of transportation, ask about the state's policy for conducting traffic breaks and, if necessary, urge the state to adopt a policy that includes procedures similar to those used in other temporary traffic control operations, such as (1) providing drivers with advance notice of slowed or stopped traffic, and (2) monitoring the formation and dispersal of traffic queues. In addition, the implementation of the policy should be documented in every encroachment permit involving a traffic break in the state.

3. Develop recommended guidance for traffic break operations based on exemplar state and American Traffic Safety Services Association guidance on the safe implementation of traffic breaks, and include your recommended guidance in the next edition of the *Manual on Uniform Traffic Control Devices for Streets and Highways*.

To the Federal Motor Carrier Safety Administration:

4. Make the 2016 Medical Review Board/Motor Carrier Safety Advisory Committee recommendations on screening for obstructive sleep apnea (OSA) easily accessible to certified medical examiners, and instruct the examiners to use the recommendations as guidance when evaluating commercial drivers for OSA risk.

5. Provide clear and readily searchable guidance for certified medical examiners to use when evaluating commercial drivers who are not known to have diabetes but have glucose in their urine.

To Tri-State Collision LLC:

6. Use data from all available driver-monitoring systems to improve your oversight of your drivers' compliance with safety regulations.

To the American Trucking Associations, Owner-Operator Independent Drivers Association, and Commercial Vehicle Safety Alliance:

7. Advise your members of the circumstances of the Palm Springs, California, crash, and encourage them to use data from all available driver-monitoring systems to provide the best possible oversight of drivers' compliance with safety regulations.

To the International Association of Chiefs of Police and the National Sheriffs' Association:

8. Inform your members of the circumstances of the Palm Springs, California, crash and about countermeasures that can be used to improve the safety of temporary road closures.

Previously Issued Recommendations Reiterated in This Report

The National Transportation Safety Board also reiterates the following safety recommendations:

To the Federal Motor Carrier Safety Administration:

Develop and disseminate guidance for commercial drivers, employers, and physicians regarding the identification and treatment of individuals at high risk of

obstructive sleep apnea (OSA), emphasizing that drivers who have OSA that is effectively treated are routinely approved for continued medical certification. (H-09-16)

Require a full compliance review of new entrants that fail their safety audits, fail their corrective action plans, or are issued expedited action letters. (H-14-27)

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)

Require new motorcoach and bus designs to include a secondary door for use as an additional emergency exit. (H-15-13)

To Daimler Trucks North America LLC, Fuji Heavy Industries USA Inc., Hino Motors Manufacturing USA Inc., Motor Coach Industries International Inc, Navistar Inc., PACCAR Inc., Van Hool NV, and Volvo Group North America LLC.:

Install forward collision avoidance systems that include, at a minimum, a forward collision warning component, as standard equipment on all new vehicles. (H-15-8) Once the National Highway Traffic Safety Administration publishes performance standards for autonomous emergency braking, install systems meeting those standards on all new vehicles. (H-15-9)

Previously Issued Recommendations Reiterated and Reclassified in This Report

The National Transportation Safety Board also reiterates and reclassifies the following safety recommendation:

To the Federal Motor Carrier Safety Administration:

Implement a program to identify commercial drivers at high risk for obstructive sleep apnea and require that those drivers provide evidence through the medical certification process of having been appropriately evaluated and, if treatment is needed, effectively treated for that disorder before being granted unrestricted medical certification. (H-09-15)

Safety Recommendation H-09-15 is classified “Open—Unacceptable Response.”