



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 19, 2009

In reply refer to: H-09-18 through -21
H-01-25 (Reiteration)

The Honorable Anne S. Ferro
Administrator
Federal Motor Carrier Safety Administration
1200 New Jersey Avenue, SE
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About 12:45 a.m., central daylight time, on Friday, August 8, 2008, a 2002 56-passenger Motor Coach Industries, Inc., motorcoach, operated by Iguala BusMex, Inc., was northbound on U.S. Highway 75 when it was involved in a single-vehicle, multiple-fatality accident in Sherman, Texas. The chartered motorcoach had departed the Vietnamese Martyrs Catholic Church in Houston, Texas, at approximately 8:30 p.m. on August 7, 2008, with a driver and 55 passengers onboard, en route to the Marian Days Festival in Carthage, Missouri. When the accident occurred, the motorcoach had completed about 309 miles of the approximately 600-mile-long trip.

Before the crash, the motorcoach was traveling in the right lane of the four-lane divided highway. As the motorcoach approached the Post Oak Creek bridge at a speed of about 68 mph, its right steer axle tire failed. The motorcoach departed the roadway on an angle of about 4 degrees to the right, overrode a 7-inch-high, 18-inch-wide concrete curb, and struck the metal bridge railing. After riding against the bridge railing for about 120 feet and displacing approximately 136 feet of railing, the motorcoach went through the bridge railing and off the bridge. It fell about 8 feet and slid approximately 24 feet on its right side before coming to rest on the inclined earthen bridge abutment adjacent to Post Oak Creek. As a result of the accident, 17 motorcoach passengers died; 12 passengers were found to be dead at the crash site, and 5 others later died at area hospitals. In addition, the 52-year-old driver received serious injuries, and 38 passengers received minor-to-serious injuries.¹

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the right steer axle tire, due to an extended period of low-pressure

¹ See *Motorcoach Run-Off-the-Bridge and Rollover, Sherman, Texas, August 8, 2008*, Highway Accident Report NTSB/HAR-09/02 (Washington, DC: National Transportation Safety Board, 2009), which is available on the NTSB website at <http://www.nts.gov/publictn/2009/HAR0902.pdf>.

operation, which resulted in sidewall, belting, and body ply separation within the tire, leading to loss of vehicle control. Contributing to the severity of the accident was the failure of the bridge railing to redirect the motorcoach and prevent it from departing the bridge. The lack of an adequate occupant protection system contributed to the severity of the passenger injuries.

Among the issues the National Transportation Safety Board (NTSB) identified during the investigation were drug and alcohol testing data availability, the need for accurate tire pressure assessment on commercial vehicles, the lack of oversight of the Federal commercial vehicle inspections that are delegated to the states, and the deficiencies in Federal safety oversight of new entrant motor carriers. These issues will be discussed below.

Drug and Alcohol Testing

Toxicological testing performed on samples gathered about 3.75 hours after the accident detected cocaine and its metabolites in the Sherman motorcoach driver's blood and/or urine.² One metabolite, cocaethylene, detected in the urine, is formed only when cocaine and ethanol are simultaneously present. The finding of cocaine and cocaethylene (which both have half-lives less than 90 minutes) in the urine, and the levels of benzoylecgonine in the blood and urine, suggest that the driver had used cocaine and alcohol approximately 5 hours prior to the accident.

At the time of the accident, the driver had been on duty for 6 hours 45 minutes (not including a 1-hour-long work break). He had come on duty at 5:00 p.m. He had driven briefly between 6:30 and 7:00 p.m. to pick up passengers and then had had a 1-hour work break between 7:15 and 8:15 p.m. before beginning to drive again. He drove nearly continuously³ for the 4 hours 30 minutes between 8:15 p.m. and 12:45 a.m., when the accident took place. Therefore, the driver probably used cocaine and alcohol after reporting for work at 5:00 p.m.

The extended period of driving prior to the accident makes it unlikely that the driver was impaired by the effects of cocaine itself. But it is certainly possible that the driver was experiencing aftereffects from use of the drug (primarily resulting in depression and fatigue). Aftereffects from ethanol use have been shown to impair certain aspects of simulator performance in pilots for as long as 14 hours after intoxication.⁴ Therefore, the possibility that aftereffects from alcohol or cocaine use or both may have impaired the driver cannot be ruled out. The NTSB concluded that the driver used cocaine and alcohol either during or shortly before starting the trip, and he may have been impaired by aftereffects from either or both drugs.

Postaccident interview statements by the driver describing the accident sequence events indicated that he was alert and responsive to developments. He was aware of his driving tasks--for example, he reported that he felt the vibration of the motorcoach when the tire failed, he said he let off the accelerator, and he said he heard an explosion.

² Title 49 *Code of Federal Regulations* 382.303 requires that postaccident testing be conducted as soon as practicable.

³ The driver said that he stopped at a convenience store about 10 minutes after beginning driving at 8:15 p.m., to buy gum and an energy drink.

⁴ J.A. Yesavage and V.O. Leirer, "Hangover Effects on Aircraft Pilots 14 Hours After Alcohol Ingestion: A Preliminary Report," *American Journal of Psychiatry*, vol. 143, no. 12, (1986), pp. 1546-1550.

Tire marks on the roadway indicate that the driver had approximately 4.3 seconds before the blowout, as the internal structure of the tire continued to fail. The driver may have been aware of vibration or changes in handling characteristics and was trying to understand what was happening. Once the blowout occurred, the driver reacted quickly, braking in 1.1 seconds. But approximately 1.9 seconds after he applied the brakes, the motorcoach struck and mounted the curb and then the bridge railing. Therefore, the NTSB concluded that fatigue was not a factor in the accident and, based on event timing in the accident reconstruction analysis, even a well-rested, completely alert driver could not have reacted in time to affect the accident sequence.

According to the driver, he had almost 25 years of experience driving commercial vehicles. Investigators were able to verify that the driver had been employed by two existing companies, Greyhound Lines, Inc., and Carrington Tours, during the 1990s, and NTSB subpoenaed records from those companies. Other motor carriers listed on the driver's application for employment could not be contacted because of mergers, acquisitions, or changes in ownership. Cessation of operations by motor carriers is fairly common within the industry, making inquiry into the long-term driving experience of a prospective driver difficult. The driver told investigators that he had been terminated by Greyhound for failure to report for a medical examination. However, records subpoenaed from Greyhound revealed that the driver was terminated on March 21, 1995, after he tested positive for cocaine in Greyhound's federally mandated random drug testing program.

Title 49 *Code of Federal Regulations* (CFR) 382.401(b)(1) requires that a motor carrier maintain copies of positive drug test results for a minimum of 5 years. Prospective employers are required by 49 CFR 382.413 to contact each applicant's previous employer to determine whether, in the preceding 2 years, the applicant had failed an alcohol or controlled substance test, had refused to be tested, or had successfully completed return-to-duty requirements after having tested positive for alcohol or a controlled substance. However, release of these records is limited. Title 49 CFR 382.405(f) states that "Records shall be made available to a subsequent employer upon receipt of a written request from a driver. Disclosure by the subsequent employer is permitted only as expressly authorized by the terms of the driver's request." A driver is not obligated to report the positive drug test result to a prospective employer; however, a driver's authorized release of his records as an application requirement provides prospective employers with a viable mechanism for obtaining access to drug test results.

The NTSB previously addressed driver drug testing in its investigation of a May 9, 1999, motorcoach crash in New Orleans, Louisiana, which killed 22 passengers.⁵ The motorcoach driver tested positive for tetrahydrocannabinol (THC, the psychoactive substance in marijuana). The driver had been terminated by at least two previous employers on the basis of positive results in random drug testing. When the New Orleans driver applied for the position with the accident carrier, he omitted mention of these two past employers who had terminated him for drug use. He explained the gaps in employment by stating that he had been working as a musician during those periods. Although his employer at the time of the accident had made reference checks with two former employers listed on the driver's application, neither responded.

⁵ *Motorcoach Run-Off-The-Road, New Orleans, Louisiana, May 9, 1999*, Highway Accident Report NTSB/HAR-01/01 (Washington, DC: National Transportation Safety Board, 2001).

The NTSB concluded that the results of tests for controlled substances performed under the U.S. Department of Transportation (DOT) testing guidelines, even when positive, are often not available to prospective employers, making it difficult for them to make well-informed hiring decisions. The NTSB issued Safety Recommendation H-01-25 as a result of the New Orleans investigation, recommending that the Federal Motor Carrier Safety Administration (FMCSA) take the following action:

Develop a system that records all positive drug and alcohol test results and refusal determinations that are conducted under the U.S. Department of Transportation testing requirements, require prospective employers to query the system before making a hiring decision, and require certifying authorities to query the system before making a certification decision. (H-01-25)

As a result of the NTSB's recommendation, in 2004, the FMCSA completed a study of the feasibility and merits of requiring medical review officers and employers to report positive test results to state commercial driver's license (CDL) licensing agencies. The study found that it was feasible to establish a national database of positive drug test results and that it should be operated by the Federal government to ensure consistency and uniformity. The FMCSA is developing rulemaking to establish a National Drug and Alcohol Test Results Database, which would allow Federal and state governments to identify drivers who have refused a DOT drug or alcohol test or have tested positive for drug(s) and/or alcohol under the established DOT drug and alcohol testing regulations. Areas of consideration for the rulemaking include the following: (1) requiring Medical Review Officers to submit confirmed positive controlled substances test results to the FMCSA, including follow-up tests stemming from an initial positive test; (2) having motor carriers submit information on refusals-to-test, positive alcohol test results, and annual summaries of their controlled substances and alcohol testing programs each year; and (3) requiring all laboratories to submit annual reports to the FMCSA.⁶

Safety Recommendation H-01-25 is currently classified "Open—Unacceptable Response" because of the FMCSA's slow response time. The recommendation to develop a database of positive drug and alcohol test results and to establish requirements for use of the system is now 8 years old. Although the FMCSA has increased its enforcement action against commercial motor vehicle drivers who have tested positive for controlled substances and failed to comply with the return-to-duty requirements before performing a DOT safety-sensitive function, and also against motor carriers that use or have used a driver to perform safety-sensitive functions if the motor carrier was aware or should have known that the driver did not comply with return-to-duty requirements, these actions will be the result of investigations and will, therefore, affect only a small percentage of the driver and carrier populations.

The NTSB concluded that if motor carriers cannot check the controlled substance testing backgrounds of prospective employees, they cannot make well-informed decisions when attempting to hire safe drivers. Consequently, the NTSB is reiterating Safety Recommendation H-01-25 to the FMCSA, and the recommendation remains classified "Open—Unacceptable Response."

⁶ This information appears in a letter from the FMCSA dated June 5, 2009.

The state of Texas maintains records on the positive results of controlled substance tests for commercial drivers. In seeking such information concerning the accident driver, the NTSB found it necessary to serve a subpoena upon the Texas Department of Public Safety (TxDPS). (The database contained no records for the driver.)

Information concerning the toxicological and medical condition of vehicle operators is vital to successful accident investigation. The NTSB concluded that the difficulty in obtaining state records in connection with the controlled substance test results for the driver of the accident motorcoach in this case highlights the NTSB's need for investigative access to a national database of positive drug test results. Therefore, in addition to the reiteration of Safety Recommendation H-01-25, the NTSB recommends that the FMCSA establish a regulatory requirement within 49 CFR 382.405 that provides the NTSB, in the exercise of its statutory authority, access to all positive drug and alcohol test results and refusal determinations that are conducted under the DOT testing requirements.

Tire Pressure Assessment

Title 49 CFR 392.7 requires commercial drivers to examine the tires of their motor vehicles at the beginning of each trip. The driver of the accident motorcoach reported that he checked the tires, looking for protrusions, wear and tear, and discoloration, and that he kicked the tires prior to departing on the accident trip. According to the regulations, drivers are permitted to visually inspect the tires to determine if they are properly inflated; use of a tire gauge is not mandated. However, it is difficult, if not impossible, to visually determine whether a tire is inflated to the proper pressure.⁷ Tires designed to give a smooth ride may always look underinflated, while tires with stiff sidewalls can look properly inflated even at pressures substantially lower than those recommended. The American Association of Motor Vehicle Administrators (AAMVA) model CDL manual recommends that a driver use a tire gauge to check tire inflation; however, it also states that use of a mallet to check inflation is permissible.

Postaccident inspection of the motorcoach indicated that several of the vehicle's tires did not meet recommended inflation levels. Compared to the recommended tire pressures on the vehicle specification plate, the left steer axle tire pressure was 2 psi below the recommended 120 psi. The pressures of three of the tires on the drive axle were above the recommended 90 psi, by values of 6 psi, 4 psi, and 3 psi.⁸ The pressures of the two tires on the tag axle were 31 psi and 32 psi below the recommended 120 psi.

As demonstrated by the Sherman accident, underinflation of tires can lead to safety issues such as overloading and tire failures. It is possible that the right steer axle tire that failed, leading to the accident, was underinflated before the trip began. It is also possible that had the pressure in the motorcoach's tires been checked with a tire gauge before the accident trip began, the underinflated tires would have been detected, because a gauge would have given a specific pressure number. The FMCSA regulations and AAMVA guidelines that permit drivers to measure tire pressure by either visually inspecting the tire or "thumping" it with a mallet are not adequate

⁷ S. Singh, K. Kingsley, and C. Chen, *Tire Pressure Maintenance—A Statistical Investigation*, DOT HS 811 086 (Washington, DC: National Highway Traffic Safety Administration, April 2009).

⁸ The drive axle had four tires, but the right outer tire on the drive axle was found deboned as a result of the accident.

to identify an underinflated tire. Therefore, the NTSB concluded that because underinflated tires can lead to tire failure and because the currently approved methods of visual inspection or “thumping” tires with a mallet are inaccurate, a tire pressure gauge should be used to accurately assess tire pressure. Consequently, the NTSB recommends that the FMCSA require that tire pressure be checked with a tire pressure gauge during pretrip inspections, vehicle inspections, and roadside inspections of motor vehicles. The NTSB is also recommending that the AAMVA revise the model CDL manual to stipulate that tire pressure be checked with a tire pressure gauge during pretrip inspections, vehicle inspections, and roadside inspections of motor vehicles.

Oversight of Commercial Vehicle Inspections

The FMCSA has certified the state of Texas vehicle inspection program as an “equivalent inspection program.” As such, it satisfies the annual commercial motor vehicle inspection requirements of appendix G to subpart B of the *Federal Motor Carrier Safety Regulations* through the use of privately owned and operated garages and repair facilities designated by the state as authorized inspection facilities.

The Sherman accident motorcoach was inspected 8 days before the accident; the July 31, 2008, inspection was conducted at 5-Minute Inspections, located in Houston, Texas. The available records from that inspection show omissions and errors that concern the NTSB: specifically, no odometer reading or Texas Department of Transportation (TxDOT) number was entered, and the recorded date of the insurance expiration was incorrect. NTSB investigators visiting the facility noted that it did not have a service pit or a commercial vehicle lift capable of lifting a motorcoach. Without such equipment, it would be very difficult to conduct a thorough inspection of a motorcoach.

Although investigators cannot be sure of the condition of the motorcoach when the inspection took place, the motor carrier purchased four new Ling Long tires for the motorcoach on July 29, just 2 days before the annual inspection. It seems likely that they were installed for the purpose of the inspection and that any tire rotation would have been done when the new tires were mounted, prior to the inspection. Thus, it appears that the retread tire was probably on the right steer axle when the inspection took place and that it was not identified as a retread during the inspection. Federal regulations prohibit the use of a retreaded tire on the steer axle of a motorcoach, and a thorough inspection should have detected this problem. The serious underinflation of the tag axle tires and the undersized wheel assemblies on the tag axle also indicate that tire pressure measurements probably were not conducted during the inspection. Moreover, postaccident examination of the left axle brake drum and shoes found significant grease contamination with considerable buildup and caking, a condition that most likely had been in effect for much longer than 8 days but that was not identified during the inspection.

The 5-Minute Inspections station inspected and passed another motorcoach owned by the accident motor carrier in early August 2008. The day after it was certified by 5-Minute Inspections, that motorcoach underwent a Motor Carrier Safety Assistance Program (MCSAP)-sponsored inspection conducted by the Missouri Highway Patrol and was placed out of service due to numerous violations. Vehicle violations found during the MCSAP inspection that should have been identified during the annual inspection included the following items: an out-of-adjustment brake on the right steer axle and general poor condition of the left steer axle

brake, general poor condition of the right tag axle brake, and a missing or defective automatic brake adjuster.

In March 2009, at the request of NTSB staff, the TxDPS Houston Regional Office visited the 5-Minute Inspections station and interviewed the inspector who had inspected the Sherman accident motorcoach. The TxDPS took no corrective action against 5-Minute Inspections.

The NTSB concluded that the commercial vehicle inspections conducted by the 5-Minute Inspections station failed to identify safety deficiencies, and the TxDPS review of the station did not identify any problems with its processes; therefore, at least in this instance, the state of Texas vehicle inspection program for commercial motor vehicles did not provide adequate oversight of the private garages it authorizes to conduct safety inspections. The NTSB is concerned that other states may have similar problems with oversight of their inspection programs. The NTSB recommends that the FMCSA require those states that allow private garages to conduct FMCSA inspections of commercial motor vehicles to have a quality assurance and oversight program that evaluates the effectiveness and thoroughness of those inspections.

Oversight of New Entrant Motor Carriers

Iguala BusMex, the motor carrier operating the Sherman accident motorcoach, applied for authority to operate as a new entrant interstate passenger carrier on July 27, 2008,⁹ about a month after the motor carrier Angel Tours, Inc.,¹⁰ lost its authority to operate due to an unsatisfactory compliance review rating and its failure to submit a corrective action plan in a timely manner. The FMCSA issued a U.S. Department of Transportation number (USDOT number) to Iguala BusMex but advised the carrier that its authority to operate was pending because it did not fulfill the FMCSA's requirement to prove financial responsibility; that is, it did not prove that it had proper insurance coverage. Consequently, at the time of the accident, Iguala BusMex's operating authority was pending. However, because it had a valid USDOT number, the motor carrier was able to complete the required Texas vehicle inspection, which enabled it to obtain a Texas Commercial Vehicle Inspection Certificate sticker.

In December 2008, the FMCSA published a final rule raising the standards of compliance for new entrant motor carriers.¹¹ The rule requires that any carrier that attempts to register as a new entrant and evade an enforcement action or an out-of-service order is subject to revocation of its new entrant registration and/or civil penalties.

The NTSB is aware that the FMCSA has taken several steps since this accident to improve new entrant registration processes to increase its ability to identify a carrier, such as Iguala BusMex, that is attempting to evade FMCSA enforcement actions by becoming a reincarnated carrier. The FMCSA's New Applicant Screening Program uses data to identify newly registered carriers that may have a history of enforcement problems. The screening

⁹ Records indicate that prior to making that application, Iguala BusMex improperly conducted operational trips in June 2008.

¹⁰ Angel Tours received interstate operating authority in 1994 but was placed out of service for interstate transportation on June 23, 2008. The owner then applied for operating authority under the name Iguala BusMex, Inc. Business transactions were comingled between the two companies.

¹¹ *Federal Register*, vol. 73, no. 242 (December 16, 2008), pp. 76472–76497.

process seeks matches between new registrants and information provided by previously registered motor carriers.

The NTSB notes that the FMCSA is developing verification procedures intended to ensure that unfit operators do not receive operating authority; however, these measures were not in place at the time of the accident. Therefore, the NTSB concluded that at the time Iguala BusMex applied as a new entrant motor carrier, the FMCSA processes were inadequate to identify the carrier as a company that evaded enforcement action.

The NTSB has reviewed information provided by the FMCSA concerning its new entrant screening program.¹² The FMCSA material described how information about carriers is used to develop a score for a “suspect” carrier, but it provides no description of a performance evaluation process designed to indicate whether the program is effectively preventing carriers with a history of evading safety requirements from continuing to operate. A recent Government Accountability Office report on reincarnated carriers¹³ also makes no assessment of the new entrant screening program. Information available to the FMCSA, in the form of safety audits, compliance reviews, and roadside inspection results, could be used to identify unfit operators that were not targeted by the New Applicant Screening Program. This information could then be used to evaluate any limitations or shortcomings in the program’s ability to identify unfit carriers. The NTSB concluded that until the New Applicant Screening Program of the FMCSA contains a performance evaluation component capable of showing the program’s effectiveness in identifying carriers with a history of enforcement evasion and preventing them from operating, the screening program’s value cannot be accurately assessed. Therefore, the NTSB recommends that the FMCSA develop an evaluation component to determine the effectiveness of its New Applicant Screening Program.

As a result of the investigation, the NTSB makes the following recommendations to the Federal Motor Carrier Safety Administration:

Establish a regulatory requirement within 49 *Code of Federal Regulations* 382.405 that provides the National Transportation Safety Board, in the exercise of its statutory authority, access to all positive drug and alcohol test results and refusal determinations that are conducted under the U.S. Department of Transportation testing requirements. (H-09-18)

Require that tire pressure be checked with a tire pressure gauge during pretrip inspections, vehicle inspections, and roadside inspections of motor vehicles. (H-09-19)

Require those states that allow private garages to conduct Federal Motor Carrier Safety Administration inspections of commercial motor vehicles to have a quality assurance and oversight program that evaluates the effectiveness and thoroughness of those inspections. (H-09-20)

¹² *Summary of Methodology for New Applicant Screening*, FMCSA, June 16, 2009.

¹³ *Reincarnating Commercial Vehicle Companies Pose Safety Threat to Motoring Public; Federal Safety Agency Has Initiated Efforts to Prevent Future Occurrences*, GAO-09-924 (U.S. Government Accountability Office, July 28, 2009).

Develop an evaluation component to determine the effectiveness of your New Applicant Screening Program. (H-09-21)

Further, the NTSB reiterates Safety Recommendation H-01-25 to the Federal Motor Carrier Safety Administration:

Develop a system that records all positive drug and alcohol test results and refusal determinations that are conducted under the U.S. Department of Transportation testing requirements, require prospective employers to query the system before making a hiring decision, and require certifying authorities to query the system before making a certification decision. (H-01-25)

The NTSB also issued safety recommendations to the Federal Highway Administration, the National Highway Traffic Safety Administration (NHTSA), the American Association of State Highway and Transportation Officials, the American Association of Motor Vehicle Administrators, and Motor Coach Industries, Inc. The NTSB also reiterated previous recommendations to NHTSA.

In response to the recommendations in this letter, please refer to Safety Recommendations H-09-18 through -21 and Safety Recommendation H-01-25. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Member SUMWALT concurred in these recommendations.

[Original Signed]

By: Deborah A.P. Hersman
Chairman