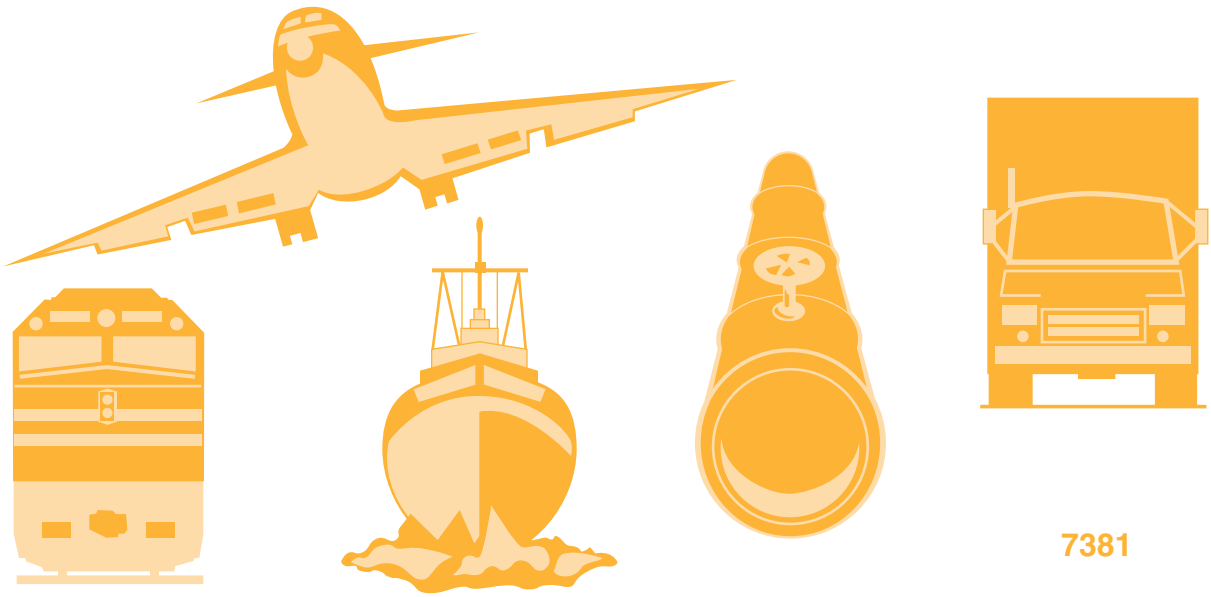
PB2001-916201
NTSB/HAR-01/01

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

HIGHWAY ACCIDENT REPORT

MOTORCOACH RUN-OFF-THE-ROAD ACCIDENT
NEW ORLEANS, LOUISIANA
MAY 9, 1999



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Page 50 has been updated to correct footnote reference number 145 for the Driver Program Unit, Oregon Department of Transportation, electronic-mail correspondence, May 2001.

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New Orleans, Louisiana
May 9, 1999

NTSB/HAR-01/01
PB2001-916201
Notation 7381
Adopted August 28, 2001

National Transportation Safety Board
490 L'Enfant Plaza, S.W.
Washington, D.C. 20594

National Transportation Safety Board. 2001. *Motorcoach Run-off-the-Road Accident, New Orleans, Louisiana, May 9, 1999.* Highway Accident Report NTSB/HAR-01/01. Washington, DC.

Abstract: On May 9, 1999, about 9:00 a.m., a 1997 Motor Coach Industries 55-passenger motorcoach, operated by Custom Bus Charters, Incorporated, was traveling eastbound on Interstate 610 in New Orleans, Louisiana. The bus, carrying 43 passengers, was en route from La Place, Louisiana, to a casino approximately 80 miles away in Bay St. Louis, Mississippi. As the bus approached milepost 1.6, it departed the right side of the highway, crossed the shoulder, and went onto the grassy side slope alongside the shoulder. The bus continued on the side slope, struck the terminal end of a guardrail, traveled through a chain-link fence, vaulted over a paved golf cart path, collided with the far side of a dirt embankment, and then bounced and slid forward upright to its final resting position. Twenty-two passengers were killed, the busdriver and 15 passengers received serious injuries, and 5 passengers received minor injuries.

The following major safety issues were identified in this accident:

- Inadequacy of the medical certification process, including the current Federal regulations.
- Absence of a mechanism for identifying drivers who have tested positive for drugs.
- Lack of Federal regulations or standards regarding passive and active occupant protection systems on large buses sold or operated in the United States.
- Degraded condition of the guardrail posts along the interstate at the accident site.

As a result of this accident investigation, the Safety Board makes recommendations to the Federal Motor Carrier Safety Administration, the American Association of Motor Vehicle Administrators, the National Conference of State Legislatures, the American Association of State Highway and Transportation Officials, and the State of Louisiana Department of Transportation and Development. In addition, the Safety Board is reiterating recommendations from its 1999 bus crashworthiness special investigation report to the National Highway Traffic Safety Administration.

Contents

Acronyms and Abbreviations

AAAM -- Association for the Advancement of Automotive Medicine
AAMVA -- American Association of Motor Vehicle Administrators
AASHTO -- American Association of State Highway and Transportation Officials
AME – aviation medical examiner
ANPRM -- advance notice of proposed rulemaking
BCT -- breakaway cable terminal
C/TPA -- consortium or third party administrator
CDL -- commercial driver's license
CFR -- *Code of Federal Regulations*
CSS -- Consolidated Safety Services
Custom -- Custom Bus Charters, Incorporated
CVSA -- Commercial Vehicle Safety Alliance
DER -- designated employee representative
DMV -- Driver and Motor Vehicle Services Division
DOT -- U.S. Department of Transportation
DOTD -- State of Louisiana Department of Transportation and Development
DVLA -- Driver and Vehicle Licensing Agency
ECM -- electronic control module
EEG -- electroencephalograph
EMS -- emergency medical service
EMT -- emergency medical technician
FAA -- Federal Aviation Administration
FHWA -- Federal Highway Administration
FMCSA -- *Federal Motor Carrier Safety Administration*
FMCSRs -- Federal Motor Carrier Safety Regulations
I-610 -- Interstate 610
MCI -- Motor Coach Industries
MCSAP -- Motor Carrier Safety Assistance Program
MP -- milepost
MRO -- medical review officer
MTMC -- Military Traffic Management Command
NBIS -- *National Bridge Inspection Standards*

NHTSA -- National Highway Traffic Safety Administration
NOFD -- New Orleans Fire Department
NOPD -- New Orleans Police Department
NPRM -- notice of proposed rulemaking
NYDMV -- New York Department of Motor Vehicles
OMC -- Office of Motor Carriers
OMCRS -- Office of Motor Carrier Research and Standards
PCP -- phencyclidine
SAP -- substance abuse professional
SODA -- Statement of Demonstrated Ability
SPE -- Skill Performance Evaluation
TEA-21 -- Transportation Equity Act for the 21st Century
THC -- tetrahydrocannabinol
THC-COOH -- tetrahydrocannabinol carboxylic acid
U.S.C. -- *United States Code*
USFS -- U.S. Department of Agriculture Forest Service Products Laboratory

Executive Summary

On May 9, 1999, about 9:00 a.m., a 1997 Motor Coach Industries 55-passenger motorcoach, operated by Custom Bus Charters, Incorporated, was traveling eastbound on Interstate 610 in New Orleans, Louisiana. The bus, carrying 43 passengers, was en route from La Place, Louisiana, to a casino approximately 80 miles away in Bay St. Louis, Mississippi. As the bus approached milepost 1.6, it departed the right side of the highway, crossed the shoulder, and went onto the grassy side slope alongside the shoulder. The bus continued on the side slope, struck the terminal end of a guardrail, traveled through a chain-link fence, vaulted over a paved golf cart path, collided with the far side of a dirt embankment, and then bounced and slid forward upright to its final resting position. Twenty-two passengers were killed, the busdriver and 15 passengers received serious injuries, and 6 passengers received minor injuries.

The ensuing investigation established that the 46-year-old driver possessed a current commercial driver's license and medical certificate, but suffered from several life-threatening medical conditions of the kidneys and heart. A witness riding in a van behind the bus stated that before the accident, she saw the bus drifting from the left lane to the center lane, then back to the left lane, before finally crossing the center and right lanes and departing the right side of the road. These observations corresponded with the statements of a passenger, who saw the busdriver "slouch down" as if reaching for a soda and then upright himself before slouching down again. The next thing this passenger remembered was waking up in the hospital.

The National Transportation Safety Board determines that the probable cause of this accident was the driver's incapacitation due to his severe medical conditions and the failure of the medical certification process to detect and remove the driver from service. Other factors that may have had a role in the accident were the driver's fatigue and the driver's use of marijuana and a sedating antihistamine.

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Factual Information

Accident Narrative

About 9:00 a.m. on May 9, 1999, a 1997 Motor Coach Industries (MCI), model 102DL3, 55-passenger motorcoach, operated by Custom Bus Charters, Incorporated (Custom), was traveling eastbound on Interstate 610 (I-610) in New Orleans, Louisiana. The bus, carrying 43 passengers, was en route from La Place, Louisiana, to a casino about 80 miles away in Bay St. Louis, Mississippi (figure 1). Visibility was good and the pavement, dry.

Figure 1. Accident area (map by Geographic Data Technology, Inc.).

As the bus approached milepost (MP) 1.6, it departed the right side of the highway, crossed the shoulder, and went onto the grassy side slope alongside the shoulder. The bus continued on the side slope, struck the terminal end of a guardrail, traveled through a chain-link fence, vaulted over a paved golf cart path, collided with the far side of a dirt embankment, and then bounced and slid forward upright to its final resting position (see figure 2). Twenty-two passengers were killed; the busdriver and 15 passengers received serious injuries, and 6 passengers had minor injuries. The injured were transported to four area hospitals.

Figure 2. Rescue workers attempt to stabilize the bus in its final resting position.

Two witnesses in a van traveling eastbound in the center lane of I-610 told National Transportation Safety Board investigators that before the accident they saw a small green car in the center lane about 300 feet in front of them and a tour bus in the left lane beside the green car. They said that the bus drifted towards the center lane and almost hit the small car but then drifted back to the middle of the left lane. After that, the small car then slowed until it was no longer beside the bus.

At this time, according to one witness in the van, the bus changed lanes without appearing to be drifting, crossed the center lane, and continued off the side of the road. She said that the bus was not out of control, did not have its brakes applied, and did not waiver or swerve in any direction. She said that it continued on a direct path and crashed into the embankment, then "flew through the air several feet and landed against a fence which was on the side of the interstate." She added that she had not seen any vehicle in front of the bus before the lane change. The other witness in the van said that after the bus left the roadway, he pulled over to help. By this time, other vehicles had also stopped to help.

At the time of the accident, New Orleans Police Department (NOPD) unit 303A was on routine patrol traveling westbound on I-610, when the officer driving noticed a red and white bus leaning against the chain-link fence on the eastbound right shoulder. Seeing

that the front end of the bus was heavily damaged, the officer pulled over onto the center emergency strip and notified his dispatcher of the accident at 9:02 a.m.

The NOPD officer and the witness, who had previously pulled over his van, attempted to enter the bus through the left side. The witness stated that they tried first to break the side windows but when they could not, attempted unsuccessfully to enter the bus through other openings. The witness stated that he then moved toward the third or fourth window on the right side of the bus and saw an elderly woman hanging out of a side window with one of her feet trapped in the vehicle. When the witness could not remove the woman through the window, he tried to alleviate the pressure on her trapped foot by supporting her weight. He said that while supporting this passenger, he realized that he was standing on top of a body, which was underneath a large piece of shattered glass. After another rescuer arrived and pulled the body away from the side of the bus, the witness returned to supporting the woman. As he supported her, he peered into the vehicle and saw about four passengers on top of each other near the right side windows.

By 9:10 a.m., fire and emergency medical service (EMS) personnel began arriving. The emergency medical technicians (EMTs) who arrived first at the accident scene told Safety Board investigators that they found 10 people on the ground outside of the bus, including the busdriver. The EMTs said that other victims were still in the bus and that the windows on the left side were still intact. The emergency responders entered the bus by breaking the left-side windows and removed the passengers.

Emergency Response

When the NOPD officer in unit 303A notified his dispatcher of the accident at 9:02 a.m., he requested emergency medical assistance. The NOPD dispatcher then initiated the incident emergency response and dispatched EMS personnel. At the same time, the dispatcher upgraded the incident from a priority one to a priority two incident, indicating that it was a mass casualty event. By 9:03 a.m., two other NOPD units were en route. At 9:04 a.m., the New Orleans Fire Department (NOFD) was notified. At 9:10 a.m., EMS contacted the NOPD dispatcher to request more EMS assistance. The dispatcher notified and dispatched additional NOPD and NOFD units to the accident site. By 11:03 a.m., 19 fatalities had been confirmed. EMS assistance continued to be dispatched until all of the passengers and the driver were removed from the scene.

The NOPD cleared the accident scene at 10:51 p.m. In all, the NOPD dispatched approximately 30 personnel, including police officers, supervisory personnel, and public information officers. The NOFD dispatched 1 district chief; 7 fire captains; 4 equipment operators; 34 firefighters; and 12 fire units, including fire engines, a ladder truck, and a rescue truck to the accident scene. City Park Police officers also assisted with traffic control on the interstate, stabilization of the bus, and scene preservation.

Injuries

Table 1 is based on the injury criteria of the International Civil Aviation Organization, which the Safety Board uses in accident reports for all transportation modes.

Table 1. Injuries.

Injuries*	Driver	Passengers	Total
Fatal	0	22	22
Serious	1	15	16
Minor	0	6	6
None	0	0	0
Total	1	43	44

*Title 49 *Code of Federal Regulations* (CFR) 830.2 defines *fatal injury* as "Any injury which results in death within 30 days of the accident." It defines *serious injury* as an injury that "(1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, or tendon damage; (4) involves any internal organ; or (5) involves second or third degree burns, or any burn affecting more than 5 percent of the body surface."

Busdriver Information

At the time of the accident, the 46-year-old busdriver had a current Louisiana Class B commercial driver's license (CDL)[1] with an expiration date of November 7, 1999. He also had a medical certificate, which was current until August 2000. The driver suffered serious injuries from the crash,[2] but was treated and released. In August 1999, the driver returned to the hospital, where he died of "natural" causes, according to his autopsy report.

[1] A class B CDL allows an individual to drive a single vehicle with a gross vehicle weight rating of 26,001 or more pounds or any such vehicle towing a vehicle not in excess of 10,000 pounds, gross vehicle weight rating (49 *Code of Federal Regulations* [CFR] 383.91(a)(2)).

[2] The driver sustained multiple fractures of his spinal column, a pelvic fracture, and thumb and finger fractures.

The driver was off duty on May 7 and 8, the 2 days before the day of the accident. On the afternoon of May 8, the driver underwent scheduled hemodialysis treatment[3] between 2:55 and 6:35 p.m. According to medical records, he terminated the treatment early against medical advice. However, at 8:45 p.m., he returned to the hospital by ambulance because he was suffering from low blood pressure, dizziness, and nausea.[4] He received one liter of intravenous fluid and was released at 11 p.m. The busdriver's mother, with whom he lived, stated that he arrived home from the hospital about 11:30 p.m. She later heard him wake up about 5:30 a.m. Safety Board investigators were unable to obtain additional details from the busdriver himself because of the seriousness of his injuries and his refusal to be interviewed.

According to the busdriver's log entry for May 9, he conducted a pretrip inspection at 6:30 a.m. and left the bus terminal in Harvey, Louisiana, about 7:00 a.m. He then drove approximately 30 miles to La Place for a scheduled 8:00 a.m. pickup time at the Delchamps Grocery Store parking lot. Custom officials reported that he then drove to Kenner, Louisiana, where he made an unscheduled stop to pick up additional passengers. According to Custom, the unscheduled stop was agreed upon when the charter left La Place. At the time of the accident, the busdriver was en route to his last passenger pickup location, which was in east New Orleans, a short distance from the accident site. The driver was scheduled to arrive at the casino in Bay St. Louis, Mississippi, at 10:30 a.m.

Toxicological Information

Toxicological specimens of the driver's blood and urine were obtained by the Safety Board from Charity Hospital, where the driver was transported for emergency medical treatment after the accident. The specimens were sent to the Civil Aeromedical Institute of the Federal Aviation Administration (FAA), in Oklahoma City, Oklahoma. Postaccident analyses of the busdriver's blood and urine specimens detected the following:

Blood: 8 (ng/ml, ng/g) tetrahydrocannabinol (THC)

48 (ng/ml, ng/g) tetrahydrocannabinol carboxylic acid (inactive metabolite of THC)

17 (ng/ml, ng/g) diphenhydramine

Metoprolol

[3] Hemodialysis describes the removal of certain elements from the blood by virtue of the difference in the rates of their diffusion through a semipermeable membrane, for example, by means of a hemodialysis machine or filter. This treatment is frequently used to treat end-stage kidney disease.

[4] "Acute complications related to the dialysis procedure itself may severely compromise the quality of life in chronic dialysis patients. A mild degree of hypotension (low blood pressure) is normal in dialysis, but severe degrees may be disabling. Muscle cramps, chest or back pain, hypoxemia, fever, nausea, seizures, or cardiac arrhythmias may occur. In addition, mechanical problems related to dialysis machines, cartridges, and water purifiers may occur." *From* "Morbidity and Mortality of Dialysis," Consensus Statement No. 93, National Institutes of Health Consensus Development Conference, Bethesda, Maryland, November 1 through 3, 1993.

Urine: 193 (ng/ml, ng/g) tetrahydrocannabinol carboxylic acid[5]

Phenylpropanolamine

Metoprolol

Medical notes indicated that a 25-milligram oral dose of diphenhydramine had been given to the driver during hemodialysis at 3:30 p.m. on the day before the accident. Diphenhydramine is available over the counter as a sleep aid and is contained in many over-the-counter cold and allergy preparations, often in combination with a decongestant; it is also frequently used to control itching in dialysis patients. Diphenhydramine has both sedating and performance-impairing effects, and studies indicate that individuals may feel fine while on the medication but still be impaired in their driving performance.[6]

Phenylpropanolamine is available over the counter in numerous medications, frequently in combination with an antihistamine. It is often used as a stimulant (similar to caffeine) and can interfere with normal sleep. Recently, phenylpropanolamine has been the subject of Federal Drug Administration action to withdraw it from the market because of a very small but measurable risk of stroke, primarily in women who use it for weight loss.[7]

Metoprolol is a medication used to control blood pressure and other heart-related conditions. Although it is not typically regarded as impairing, it tends to reduce the heart's response to stress. This tendency can increase the possibility of loss of consciousness with dehydration, as it prevents the heart rate from substantially increasing when blood pressure falls. The driver had been prescribed this medication.

Small amounts of THC (the active substance in marijuana) and larger amounts of tetrahydrocannabinol carboxylic acid were detected in the driver's blood collected more than an hour after the accident. Short-term effects of marijuana use include problems with memory and learning; distorted perception; difficulty in thinking and problem-solving; lethargy; loss of coordination; and increased heart rate, anxiety, and panic attacks.[8]

Medical

Although the 46-year-old busdriver had a current medical certificate, which certified him as physically fit to drive a commercial vehicle, he suffered from several

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[5] The quantities listed for tetrahydrocannabinol exceed the reporting levels specified by the U.S. Department of Transportation in 49 CFR 40.87.

[6] J.M. Weiler, J.R. Bloomfield, G.G. Woodworth, A.R. Grant, T.A. Layton, T.L. Brown, D.R. McKenzie, T.W. Baker, and G.S. Watson, "Effects of Fexofenadine, Diphenhydramine, and Alcohol on Driving Performance: A Randomized, Placebo-Controlled Trial in the Iowa Driving Simulator," *Annals of Internal Medicine,* Vol. 132, No. 5 (2000): 354-363.

[7] Information obtained on May 9, 2001, from the Center for Drug Evaluation and Research, Federal Drug Administration, Web site <http://www.fda.gov/cder/drug/infopage/ppa/default.htm>.

[8] Information obtained on May 9, 2001, from the National Institute on Drug Abuse, National Institutes of Health, Web site <http://www.nida.nih.gov/Infofax/marijuana.html>.

serious medical conditions. Two years before the accident, the busdriver was diagnosed with dilated cardiomyopathy.[9] This condition resulted in repeated admissions to the hospital for congestive heart failure.[10] During hospitalizations in December 1998 and January 1999, he experienced several short asymptomatic episodes of ventricular tachycardia.[11] Then, 2 months before the accident, the driver was admitted to the hospital for congestive heart failure and was subsequently placed on intravenous dobutamine[12] therapy three times a week. In addition, the driver was diagnosed with kidney failure in July 1998 and had been scheduled to receive hemodialysis three times a week since December 1998. According to his medical records, during 5 months of dialysis treatment, he ended treatment prematurely on two occasions, and, on at least four occasions, did not keep appointments for scheduled treatment. Hospital and clinic records indicated that doctors and other medical staff were aware of the driver's profession. (For further details, see appendix B.)

A Custom representative stated that the company was aware of the driver's kidney problems and hemodialysis treatments but had no knowledge of his heart condition. They had adjusted the driver's work schedule to accommodate his medical treatments.

As a result of the heart and kidney problems the driver had at the time of the accident, he was scheduled for hemodialysis treatment every Tuesday, Thursday, and Saturday (4 hours each day) and for outpatient intravenous dobutamine therapy every Monday, Wednesday, and Friday (3 hours each day).

Medical Certification

At the time he was hired by Custom in June 1997, the busdriver held a current Louisiana medical certificate, which was due to expire April 20, 1999. In March 1998, while on a trip to Shreveport, Louisiana, the driver contacted the dispatcher and advised that he was unable to complete the trip. He checked himself into a hospital, complaining of severe shortness of breath and sweating while moving luggage. He was transferred to Ochsner Hospital in New Orleans, where he was diagnosed with congestive heart failure. He was admitted to a hospital again in July 1998 for "progressive shortness of breath for 3 to 4 days." Hospital records state, "The patient is on chronic medical therapy for this problem but continues to work. He gets breathless at low levels of activity…." As a result of his inability to complete a trip due to medical reasons and because of subsequent

[9] Dilated cardiomyopathy is a disease of the heart muscle that leads to impaired heart function, enlargement of the heart, and congestive heart failure and is often associated with abnormal heart rhythms. The disease is generally progressive, with death usually occurring within 2 years of the onset of symptoms.

[10] Inability of the heart to keep up with the demands on it and, specifically, the failure of the heart to pump blood with normal efficiency. When this occurs, the heart is unable to provide adequate blood flow to other organs such as the brain, liver, and kidneys. In the 2 years before the accident, the driver was diagnosed with congestive heart failure during five separate hospital admissions.

[11] An abnormal heart rhythm that is rapid, regular, and originates from an area of the ventricle, the lower chamber of the heart. Ventricular tachycardias are life-threatening arrhythmias most commonly associated with heart attacks or the scarring of the heart muscle from a previous heart attack.

[12] Dobutamine is often administered intravenously to patients with severe congestive heart failure to temporarily improve heart function.

hospital admissions, Custom had the driver submit to a medical examination, as is required under Federal regulations.[13]

The busdriver scheduled a commercial driver medical examination on August 19, 1998. In a postaccident interview, the physician who performed the examination informed Safety Board investigators that the driver initially indicated that he had no heart problems. She said that when the driver told her that he was taking warfarin, hydralazine, Lasix (furosemide), metoprolol, and Bumex (bumetanide),[14] she asked again whether he had any heart problems, at which point he said that he had a history of high blood pressure and congestive heart failure.

The physician told Safety Board investigators that she had performed commercial driver examinations before, "but not every day." She stated that she had a page with limited guidance, including the regulations that covered the performance of the examination. She noted the regulatory restrictions regarding "no current clinical diagnosis of myocardial infarction, angina pectoris, coronary insufficiency, thrombosis, or any other cardiovascular disease of a variety known to be accompanied by syncope, dyspnea, collapse, or congestive cardiac failure," but stated that at the time of the examination, the driver exhibited no *current* clinical evidence of congestive heart failure. Therefore, she believed that the regulations did not exclude him from operating a commercial vehicle. The examiner signed the busdriver's medical certificate indicating that he was physically qualified to drive a commercial vehicle.

The examiner informed Safety Board investigators that the driver had a trace amount of albumin in his urine,[15] but that he had related no history of kidney disease. She said she recommended to the driver that he undergo an evaluation with his primary care doctor. The regulations themselves do not specifically address kidney disease, although examiner instructions following 49 *Code of Federal Regulations* (CFR) 391.43(*f*) do state that a urinalysis is required. The instructions that accompany the regulations also state that:

> Acute infections of the genitourinary tract, as defined by local and State public health laws, indications from urinalysis of uncontrolled diabetes, symptomatic albumin-urea in the urine, or other findings indicative of health conditions likely to interfere with the control and safe operation of a commercial motor vehicle, will disqualify an applicant from operating a motor vehicle.

The examiner commented to Safety Board investigators that very little available guidance exists regarding cardiovascular issues for individual physicians, who must

[13] Title 49 CFR 391.45 states that persons must be medically examined and certified as physically qualified to operate a commercial motor vehicle if their ability to perform normal duties has been impaired by a physical or mental injury or disease.

[14] Warfarin is an anticoagulant used to prevent clotting. Hydralazine is an antihypertensive used to treat high blood pressure. Furosemide and bumetanide are diuretics often used to treat congestive heart failure.

[15] The presence of albumin in the urine is a possible sign of kidney disease.

frequently rely upon their own judgment to determine whether a condition is disqualifying.

Employment History

The busdriver's employment records showed the following information:

May 1976–March 1989: The Regional Transit Authority employed the driver as a New Orleans public transit busdriver. He tested positive for marijuana in July 1988. He subsequently enrolled in, and successfully completed, a drug rehabilitation program. He was fired after a second positive drug test (for marijuana) in March 1989.

1988–1997: The driver was employed part-time by Turner's Bus Service as a charter busdriver.

April 1992–July 1996: The driver worked for Westside Bus Service as a public transit busdriver. He was fired because of a positive drug test (for marijuana).

October 1996–April 1997: The driver worked for Hertz Corporation as a shuttle busdriver. He resigned following his third property damage accident.

April 1997: The driver applied to Greyhound Lines, Inc., for a busdriver position. He underwent physical examination and preemployment drug screening and tested positive for cocaine. He was rejected for employment.

June 1997–May 1999: The driver was employed by Custom as a busdriver. He underwent a preemployment drug test and three random drug tests during his tenure with negative results.

When the New Orleans driver applied for the position at Custom, he listed his former positions with Hertz Car Rental and Turner's Bus Service but did not mention the positions held with the Regional Transit Authority and with Westside Bus Service, where he had been fired for testing positive for marijuana. He explained the gaps in his employment record by stating that he was a musician in a brass band during those times. Custom sent authorized requests for information to both Hertz Car Rental and Turner's Bus Service but did not receive a response from either company.

Custom officials told Safety Board investigators that they considered the busdriver a part-time employee. In addition, they stated that he was thought to be a good driver and had not generated any customer complaints.

Violations Record

In 1977, the driver was convicted of drug possession, for which he received a suspended 2-year prison sentence. His motor vehicle record showed that between 1994 and 1998, he had been involved in three property damage accidents while driving a bus. He also had three convictions for traffic violations: a speeding violation in July 1996,

another speeding violation in August 1997 (the second offense was committed while operating a commercial vehicle), and a signs/signals violation in June 1997.

Vehicle Information

MCI of Pembina, North Dakota, manufactured the 55-passenger motorcoach in November 1996. Its overall length was 45 feet 6.25 inches, and its unladed[16] weight was about 35,250 pounds. Its center of gravity was 39 inches above the ground.[17] The motorcoach's Detroit Diesel Series 60, 6-cylinder, 400-horsepower diesel engine was equipped with a DDEC III (Detroit Diesel, electronic control module, commonly referred to as an electronic control module [ECM]).[18] This ECM did not contain active data pages that would have given a history of preaccident events (for example, speed, rpm, and braking). The motorcoach was equipped with an Allison model B500R automatic transmission with an integral "vane type" retarder. The motorcoach had a steering axle, a dual-wheel drive axle, and a self-steering auxiliary weight-bearing axle, commonly referred to as a tag axle.[19] All of the wheels were equipped with air brakes.

After the accident, the motorcoach was towed to the city impound lot. Safety Board investigators began inspecting the vehicle the day after the accident and performed a followup inspection on the self-steering tag axle on June 10, 1999.

Data from the ECM revealed that two fault codes were recorded, one involving high engine coolant temperature and the other, high fuel temperature. The data indicated that both of these faults occurred at least 1,000 hours before the accident. The data also indicated that the engine had a governed speed of 75 mph and had traveled 194,337 miles.

Investigators also removed the electronic control unit from the automatic transmission of the vehicle and examined it. The data extracted did not reveal any fault codes.[20] The master switch for the transmission retarder was found in the "off" position.[21]

The coach was equipped with an air brake system that provided braking to all three axles and a Bendix DD3 emergency and parking brake system that operated only on the drive axle. The steering and drive axles had standard clamp-type foundation brakes (S-cam) with brake drums, and the tag axle had disc brakes. All of the brake shoes on the steering and drive axle were about 3/4 inches thick. The disc brake pads on the tag axle had been replaced with new pads 4 days before the accident.

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[16] Weight with no passengers or cargo.

[17] As estimated by Motor Coach Industries staff.

[18] The ECM's primary function is to control fuel flow to the engine to provide maximum fuel economy and to meet Government emission standards.

[19] A tag axle is a load-bearing, nondrive axle, located to the rear of a vehicle's drive axle.

[20] A fault code indicates a past or current defect in the transmission system.

[21] A transmission retarder provides auxiliary braking forces to a vehicle and is activated when a driver releases his or her foot from the accelerator.

Due to extensive damage to air lines and valves, including the foot valve, the braking system could not be checked by supplying air to the external port and utilizing the foot valve (brake pedal). Therefore, the air chambers were plumbed directly into an external regulated air supply to obtain push rod measurements. All but one push rod measurement was within the maximum stroked allowed.[22] One push rod was 1/8 inch over the maximum stroke allowed; based upon push rod travel, it was calculated that the brakes could still produce at least 90 percent of the forces that would be generated by a brake in good adjustment.[23]

The motorcoach was equipped with a TRW (Ross) hydraulically assisted power steering system with an integral steering gear box.[24] A field examination of the steering system found that the steering wheel was deformed and the steering column displaced rearward. All of the linkages were still in place, but with some deformation. The axle stops were in place and undamaged. The steering gearbox and steering pump were removed and bench-tested at the manufacturer's site; no defects were discovered.

All six of the motorcoach tires were Bridgestone or Firestone radials, size 315/80R22.5, with highway tread. None of the tires were flat, with air pressure ranging from 84 to 100 psi. The inside of the left-front tire had a fresh cut, about 2 inches long; no other defects were noted. The tire tread depths were 5/32 inches or more. Federal regulations require that vehicles be placed out of service when the tire tread depth is less than 4/32 inches on the front wheels and less than 2/32 inches on the other wheels.[25]

Highway Information

I-610 at the accident site has a speed limit of 60 mph, with three eastbound lanes and three westbound lanes, divided by a 32-inch-tall concrete median barrier. All lanes are 12 feet wide, with a 9-foot-wide inside shoulder, a 10-foot-wide outside shoulder, and a 30-foot-wide grassy side slope. Four-inch-wide and 10-foot-long broken retroflective painted white lines, spaced at 25-foot intervals, separate the travel lanes in each direction. A 6-inch-wide painted solid yellow edge line delineates the inside shoulder, and a 6-inch-wide retroflective painted solid white edge line delineates the outside shoulder.

An overpass (bridge) near MP 1.6 accommodates a golf cart path under I-610. The overpass was situated on a 200-foot-long vertical curve with a 1.3-percent grade. The bus left the roadway approximately 180 feet west of the overpass, near the beginning of the transition to the vertical curve.

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[22] Commercial Vehicle Safety Alliance, *North American Standard Out-of-Service Criteria* (Bethesda, Maryland: CVSA, 2001).

[23] R.B. Heusser, *Heavy Truck Deceleration Rates as a Function of Brake Adjustment*, Society of Automotive Engineers technical report 910126, 1991.

[24] The term *integral* refers to the rotary control valve, hydraulic cylinder, and mechanical gears being located inside the gearbox housing, as opposed to being mounted in three separate locations.

[25] Title 49 CFR 393.75 (b) and (c).

Gouge marks could be seen on the embankment on the far side of the golf cart path. A set of compressed grass tire marks was found on the grassy side slope. The angle of departure of the tire marks was between 6 and 7 degrees. At the time of the accident, the roadway and side slope were dry. (See figure 3.)

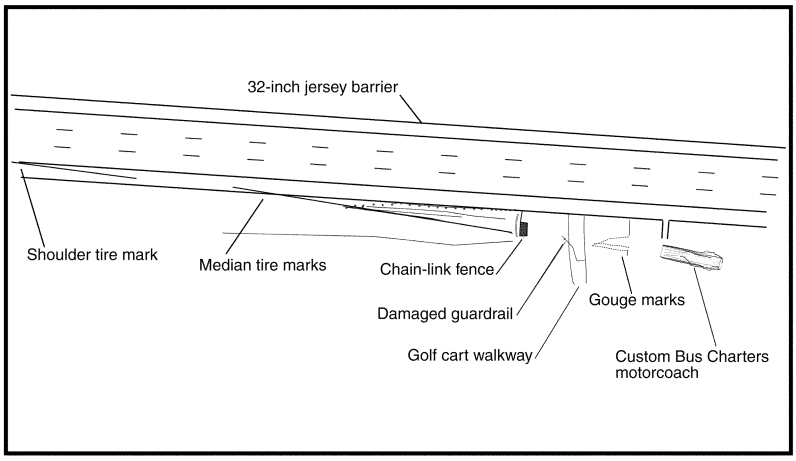

Figure 3. Departure angle of the bus, based on the 6- to 7-degree tire marks located on the grassy side slope of the roadway.

Roadside Barriers

A blocked-out W-beam (strong post) guardrail (barrier) system was attached to the bridge rail on the right side of the roadway. The W-beam guardrail, which is considered a component of the highway bridge, is the most common type of barrier system in use today, according to the American Association of State Highway and Transportation Officials (AASHTO). Crash tests have shown that this system can redirect vehicles in the 1,760- to 4,400-pound range.[26] During testing, it has also redirected a 4,620-pound van, traveling at 57 mph and impacting at a 21-degree angle. This barrier system is not designed to restrict encroachment for heavier vehicles or vehicles with a higher center of gravity, such as motorcoaches and heavy trucks.[27]

The guardrail system at the accident site was upgraded during a highway restoration project on I-610 in 1989. The system consisted of galvanized steel W-beam guardrail elements, supported by 6-foot-long wooden posts, 26-inch-long timber spacers, and a breakaway cable terminal (BCT) end assembly. The guardrail was approximately 27 inches high, with wooden posts spaced 6.25 feet apart. The end treatments of the guardrail were designed to prevent a passenger vehicle from becoming impaled on the guardrail, and the BCT ends were designed to fail at impact. The BCT had two endposts that were

[26] Vehicles are commonly tested using a speed of 60 mph and an approach angle of 25 degrees. (American Association of State Highway and Traffic Officials, *Roadside Design Guide* [Washington, DC: 1996] 5-10).

[27] In tests to establish upper performance limits, this barrier system failed in a van and a school bus test (approach angles of 25 degrees) due to the rolling of the respective vehicles (*Roadside Design Guide*, 5-10).

attached to galvanized steel footings and designed to shear off when hit by a small truck or automobile, with the cable attached to the rail and footing designed to slow down the vehicle. The wooden posts were pretreated with preservatives before installation. According to the AASHTO *Roadside Design Guide*,[28] preservative-treated wooden posts, such as the ones used at the accident site, require almost no maintenance, except for an occasional cleaning and treatment.

During the collision sequence, the bus collided with the guardrail near the BCT, fractured 11 wooden posts, and damaged a 33-foot-long section of W-beam guardrail. (See figure 4.)

Figure 4. Fractured wooden posts at accident site.

During the investigation, Safety Board investigators found that some of the wooden posts were infested with termites. Due to the extensive collision damage to the posts, the exact number of posts with termite damage could not be determined. Portions of posts, with and without termite damage, were sent to the U.S. Department of Agriculture Forest Service Products Laboratory (USFS) for evaluation. According to the USFS report, two of the four samples had considerable termite damage, with a clear indication of feeding galleries, excrement, and soil. The USFS report noted that material suffering such

[28] *Roadside Design Guide,* 5-17.

severe attack from termites would have had considerably lower mechanical properties, including shear strength. It stated that a "large portion of the original woody material has been removed reducing the post's ability to resist impact loads."

Safety Board investigators then conducted 16 random inspections of guardrail systems constructed with wooden posts along the interstate system near New Orleans. Evidence of insect damage was observed at 3 of the 16 locations (19 percent) inspected. Several of the wooden posts at the three sites exhibited termite damage.

The State of Louisiana Department of Transportation and Development (DOTD) replaced 11 wooden posts and spacers, the 33-foot-long section of W-beam guardrail, and the BCT end assembly damaged by the bus. Since the postaccident repairs to the guardrail system, DOTD has replaced five additional (nearby or adjacent) wooden posts that were not damaged in the accident but showed signs of insect infestation and reduced impact resistance.

Guardrail Inspection Programs

Federal. As noted previously, the guardrails involved in this accident were a component of a bridge overpass. The Federal Highway Administration (FHWA) *National Bridge Inspection Standards* (NBIS) constitute the Federal standards for bridge structures and guardrail designs. The States use FHWA standards for their bridge inspection programs but set their own maintenance policies. Federal standards do not address the inspection of guardrails apart from the bridge structures. Further, Federal standards do not address the inspection of guardrail posts (wooden or metal) or the effects of insect infestation or corrosion on a guardrail system.

Louisiana Department of Transportation and Development. According to DOTD,[29] the State's inspection program follows the guidelines and specifications of the NBIS. DOTD also uses supplemental guidelines for bridge inspections based on the Federal standards.[30]

DOTD inspects its bridges and associated components, such as any attached superstructures and substructures, including guardrails, as a unit. These bridge structures are inspected for structural integrity as well as for major safety defects. DOTD does not specifically inspect the guardrail wooden posts and spacer blocks for termite or insect infestation. The guardrails are inspected during the bridge inspection, as required by the Federal standards, and are noted in the bridge inspection report. Normally, the bridge structures are inspected every 2 years, or every year if they have any critical safety features.

DOTD has inspected the bridge at the accident site every 2 years. The DOTD *National Bridge Inspection Report* for 1995 indicated Very Good Condition—no problem

[29] Robert Wegener, Jr., District Maintenance Engineer, DOTD.

[30] Texas, Arkansas, Mississippi, Alabama, and Florida also use supplemental guidelines based on the NBIS.

noted; and for 1997, Good Condition—some minor problems. No further guardrail system explanation was cited. The DOTD bridge inspection reports do not refer to insect damage to the wooden posts.

Motor Carrier Information

Custom was an interstate, for-hire, carrier of passengers providing service within the continental United States and Canada, operating under the authority of the U.S. Department of Transportation (DOT). The company began operations in 1990 as a limousine service for the New Orleans area. In 1992, it began charter operations. Custom operated terminals in Harvey, Baton Rouge, and Lafayette, Louisiana, and Council Bluffs, Iowa. At the time of the accident, the company employed 147 workers, including 57 full-time drivers and 36 part-time drivers, as well as office and maintenance personnel. The average age of a Custom driver was 50 years. Custom ceased operations on July 1, 1999, for reasons stemming from this accident.[31]

At the time of the accident, Custom had 45 motorcoaches, 16 shuttle buses, and four 15-passenger vans. The motorcoaches were leased from Financial Services, Inc., of Norwalk, Connecticut; the average age of the fleet was 2 years. Custom officials reported that their business was 80 percent charter service. Custom also ran a shuttle service to and from the New Orleans airport and downtown area. Custom operations recorded 3.2 million miles traveled from May 1998 to May 1999.

Motor Carrier Oversight

Custom's safety director had previously been a company busdriver. His duties included inspecting the logbooks of both local and long-distance drivers. He also conducted new-hire training and in-service training every 6 months for company drivers. Training topics have included driving a motorcoach, drug and alcohol testing, highway driving hazards, pretrip vehicle inspections, and hours-of-service regulations.[32] The safety director was a State-certified third-party tester[33] for CDL training. He said that he used five of Custom's most experienced drivers to administer road tests to other drivers.

Custom started its random drug testing program in 1996, in compliance with the *Federal Motor Carrier Safety Regulations* (FMCSRs), 49 CFR 382. Custom contracted with MRO Associates to conduct the company's preemployment and random drug tests and to provide the services of a medical review officer (MRO) to analyze the test results.

Company drivers were selected for random testing through a computer-generated program in the MRO's office. The MRO notified Custom's director of operations to advise a driver to report for testing within 3 hours, and the director, in turn, completed a slip to be

[31] Kenneth Begovitch, former owner of Customer Bus Charters, Inc.

[32] Terrell Walker, Safety Director, Custom Bus Charters, Inc.

[33] Entity authorized by the State to administer skills tests to commercial drivers.

given to that driver. Failing to report within the required 3 hours was considered a refusal and resulted in the driver being terminated. If a driver were operating a charter trip when his name came up on the random list, he or she would be given the slip upon returning from the trip to report for the test. According to Custom, drivers had no advance warning of a test. Custom officials reported a "no tolerance" policy on positive drug test results, noting that the company terminates drivers who test positive.

According to summary reports from the MRO's office, 1 test out of the 100 administered in 1998 was positive. No refusal determinations[34] occurred. Two tests out of the 106 administered in 1997 were positive, with both positive results coming from preemployment drug tests. Again, no refusal determinations occurred.

Federal Oversight

During its operations, Custom received three FHWA Office of Motor Carriers (OMC)[35] compliance reviews.[36] These occurred on February 12, 1996; June 1, 1998; and March 19, 1999. (See appendix C for information on Federal motor carrier ratings procedures.)

Custom requested the February 1996 review because it needed a satisfactory rating to pursue a contract with the Military Traffic Management Command (MTMC) to transport military personnel. The subsequent review resulted in a "satisfactory" rating, although deficiencies were found in driver recordkeeping, hours of service, and the company's drug and alcohol testing program.

On July 10, 1996, Consolidated Safety Services (CSS), the civilian contract provider for the MTMC, conducted its own compliance review of Custom. The CSS review rated Custom "unsatisfactory," based on deficiencies in driver recordkeeping, hours of service, and the company's drug and alcohol testing program. (The Federal Motor Carrier Safety Administration [FMCSA] was aware of the CSS review's findings.)

During the June 1998 compliance review, inspectors found that one of Custom's drivers had falsified his medical examiner's examination date on the medical form. Several logbook and hours-of-service violations were also noted in the review, resulting in a "conditional" rating.

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[34] According to 49 CFR 382.107, there are nine circumstances in which a driver is considered to have refused to submit to a drug test. Included among these are the submission of a specimen verified to be substituted or adulterated and the failure to undergo a medical examination or evaluation as directed by the MRO as part of the verification process.

[35] The 1999 Motor Carrier Safety Act separated the OMC from the FHWA and created a new administration called the Federal Motor Carrier Safety Administration (FMCSA). The FMCSA now handles compliance reviews and all other highway commercial transportation safety functions.

[36] Title 49 CFR Part 385.3 defines "compliance review" as an on-site examination of motor carrier operations, such as drivers' hours of service, maintenance and inspection, driver qualification, CDL requirements, financial responsibility, accidents, hazardous materials, and other safety and transportation records, to determine whether a motor carrier meets the safety fitness standard.

The March 1999 compliance review, which also resulted in a conditional rating, was conducted as an enforcement followup to the 1998 review. This review found that Custom operated a motorcoach that did not comply with local laws, ordinances, and regulations, a critical element in the rating process.[37] Another critical element noted in the review was Custom's high accident rate based on the number of miles traveled during the past year. In June 1999, the Custom safety director petitioned the FHWA to reconsider the rating from the March compliance review. The petition asserted that during the compliance review, the mileage generated by the shuttle service was omitted in calculating the accident rate for the company. The increase from 1.8 million miles traveled to the correct figure of 3.2 million miles traveled lowered Custom's accident rate from 2.710 to 0.647 per million miles traveled. This rate was below the national average of 1.6 per million miles for motor carriers. With this modified accident rate, the FHWA changed Custom's overall rating from conditional to satisfactory.

Survival Aspects

Passenger Compartment Safety Features

The safety features of the accident bus are described in table 2.

Table 2. Passenger Compartment Safety Features.

Component	Dimensions	Feature
Side windows (16) Driver side-8; passenger side-8	34 inches high, 52 inches wide, separated by 5.5-inch sidewall; bottom ledge 28.5 inches from floor	All designated as emergency exit windows
Front windshield (2 panes)	44.5-inch-wide panes: left-side glazing—42.5 inches high, right-side glazing—47 inches high	Each with own visor, separated by 1.5 inches of metal frame
Front window (1)	14.5 inches high, 90.5 inches wide	Positioned 2 inches above windshield
Emergency exit hatches (2)	29 inches long, 20 inches wide	On roof
Driver seat (1)	—	Three-point belt
Passenger seats (55)	—	No seat belts

Vehicle Damage

The motorcoach body sustained massive frontal crush deformation within the driver, stairwell, and forward passenger areas, compromised by front axle upward intrusion into the floorboard. (See figures 5 and 6.) The dashboard instrument panel, steering wheel, and driver's seat and partition had been crushed downward and rearward.

[37] Custom was cited for operating a bus without a current State inspection sticker.

The forward passenger compartment floorboard had been deformed upward toward the interior roof in the first three rows. The first four left- and right-side window frames sustained damage, and the glazing[38] was missing or shattered in most.

Emergency responders removed seats 9 and 10, 13 through 18, 21 and 22, and 25 and 26 to extricate surviving and deceased passengers. (See figure 7 for seat layout.[39]) Seats 1, 2, 7, and 8 sustained partial separation of the vertical mounting leg of the "T" pedestal at the horizontal base that was attached to the seat track due to vehicle crush formation and intrusion. Some, but not all, seats rearward of the third row sustained varying degrees of frame damage. Seatbacks of these seats were deflected forward at different angles due to the accident sequence and to emergency responder activity during rescue operations.

Figure 5. Body damage to bus, which had been moved from its resting position when this photograph was taken (photograph by the New Orleans Police Department).

Passenger Statements

One passenger told Safety Board investigators that she had been sitting on the right side of the bus in seat 12 when the accident occurred. She stated that she did not notice any sudden lane changes and that she did not observe other vehicles in the path of the bus before or after it left the roadway. She said that she recalled seeing the busdriver "slouch down," and added, "I thought he was reaching for a coke. He came back up then went down again. Next thing I remember is waking up in Charity Hospital."

[38] Describes glass or other transparent materials used for windows.

[39] Due to a lack of responses to a questionnaire mailed out to survivors of the crash and to the high number of passenger fatalities, a passenger seating chart could not be generated for this accident.

Figure 6. Driver's side view of the damaged bus (photograph by the New Orleans Police Department).

A second passenger reported that she was seated in the middle section of the bus in an aisle seat at the time the accident occurred. This passenger recalled that the ride was "nice and peaceful"; she did not recollect any maneuvering of the bus before the accident. She stated that she was thrown forward and landed on top of another passenger in the aisle and that she next awoke in the hospital.

Another passenger stated that she was seated in the rear section of the bus in seat 48, facing rearward, when the accident occurred. She did not recall the bus making any maneuvers before the accident. For a time after the accident, she did not recall anything, but then awoke, still in her seat, and found emergency responders helping the injured. She stated that the emergency responders were "there right away."

Accident Reconstruction and Simulation

As part of the Safety Board's investigation, simulations were conducted to determine the estimated speed of the bus before leaving the roadway, its speed before impact with the breakaway cable guardrail, its vault speed over the golf cart pathway, and energy calculations for the crush of the accident bus on the upward sloping embankment. To crosscheck these calculations and to determine the occupant kinematics, the accident was simulated using a Human Vehicle Environment[40] system.

The speed of the bus before it left the roadway was estimated using the vault distance, the energy to break the guardrail posts, and witness accounts. Based on the bus trajectory over the golf cart pathway and the marks on the opposite side embankment, the bus's speed before takeoff was calculated at 58 mph. Before the vault, the bus impacted

[40] Developed by the Engineering Dynamics Corporation.

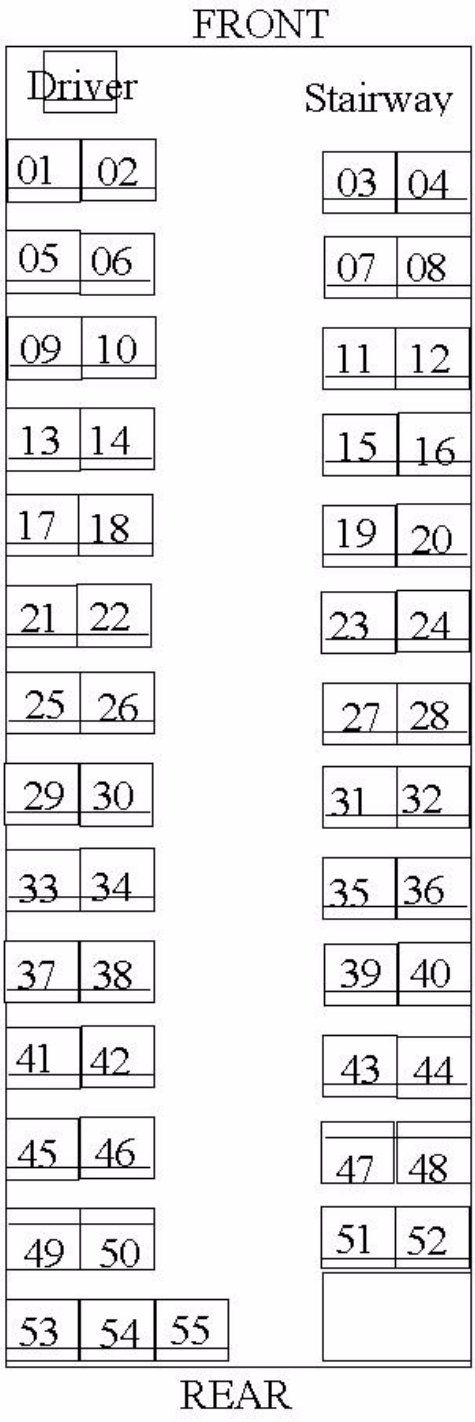

Figure 7. Seat layout.

and fractured 11 guardrail posts. Based on the energy dissipated by deforming the guardrail, fracturing the posts,[41] and deforming the front of the bus, the bus speed before hitting the guardrail was calculated at between 58.6 and 61.9 mph. This range corresponds with statements made by the witness following the bus, that it was traveling approximately 60 mph before drifting off the roadway.

The simulation study indicated that the bus underwent an 18-mph change in velocity during the initial 100 milliseconds of the impact with the opposite side embankment. Figure 8 illustrates a time history of the bus's first and second impacts with the embankment and its slide to a final rest position. The simulation showed that upon initial impact of the bus with the embankment, simulated passengers located in the front and rear of the bus were propelled forward with roughly the same amount of force (longitudinal acceleration). However, the vertical accelerations experienced by passengers in the front and rear were different. (See figure 9.) Upon initial impact, passengers at the front of the bus were forced downward into the seat cushion, while those at the back of the bus were lifted from the seat. The passengers placed in the center of the bus were not as affected by the vertical accelerations. These acceleration differences help to explain the greater severity of the injuries and the displacement of the occupants in the front of the bus.

During the second impact, when the back of the bus hit the embankment, longitudinal accelerations were low, but vertical accelerations again increased in the opposite direction for front and rear passengers. Here, simulated occupants at the back of the bus were forced downward while those at the front of the bus were elevated above the seats. The upward acceleration of the simulated occupants at the front of the bus, relative to the bus reference frame, appeared to be critical in facilitating ejection out of the front of the bus as the bus continued to decelerate during the slide to final rest.

[41] This simulation assumed undecayed wooden posts.

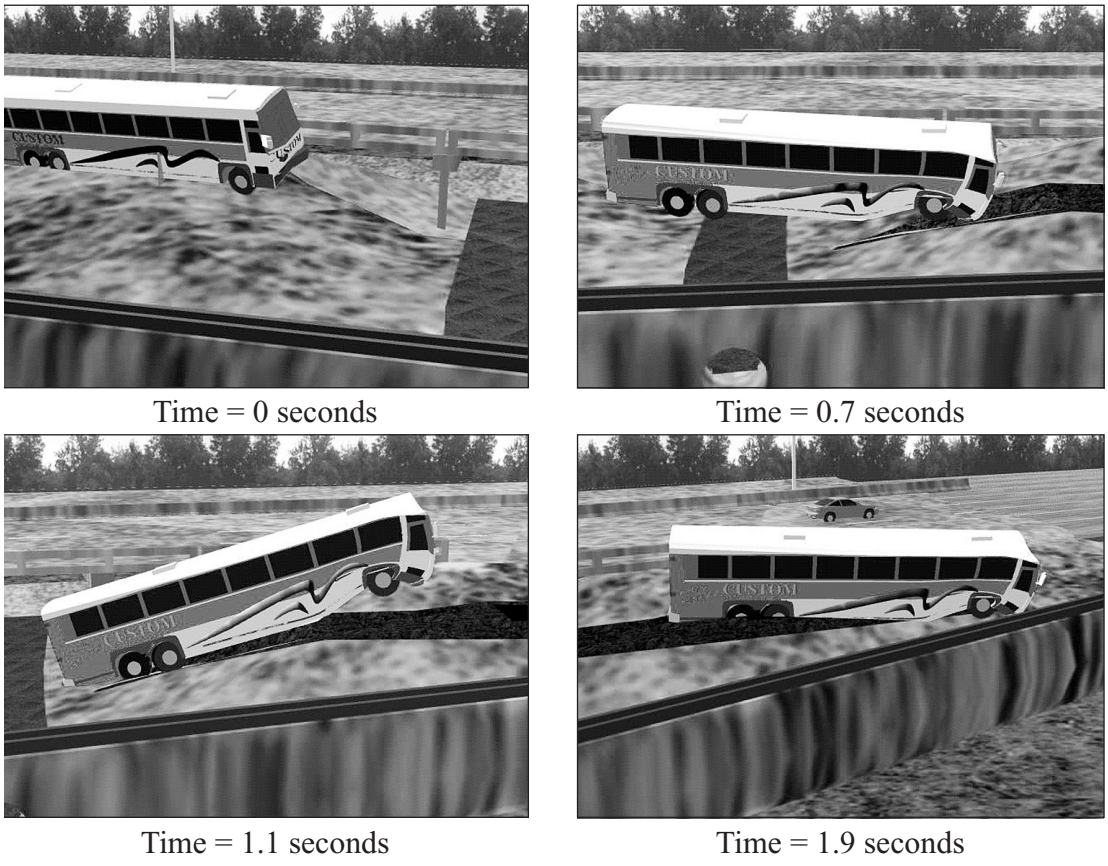

Figure 8. Simulation of primary and secondary bus impacts with the embankment.

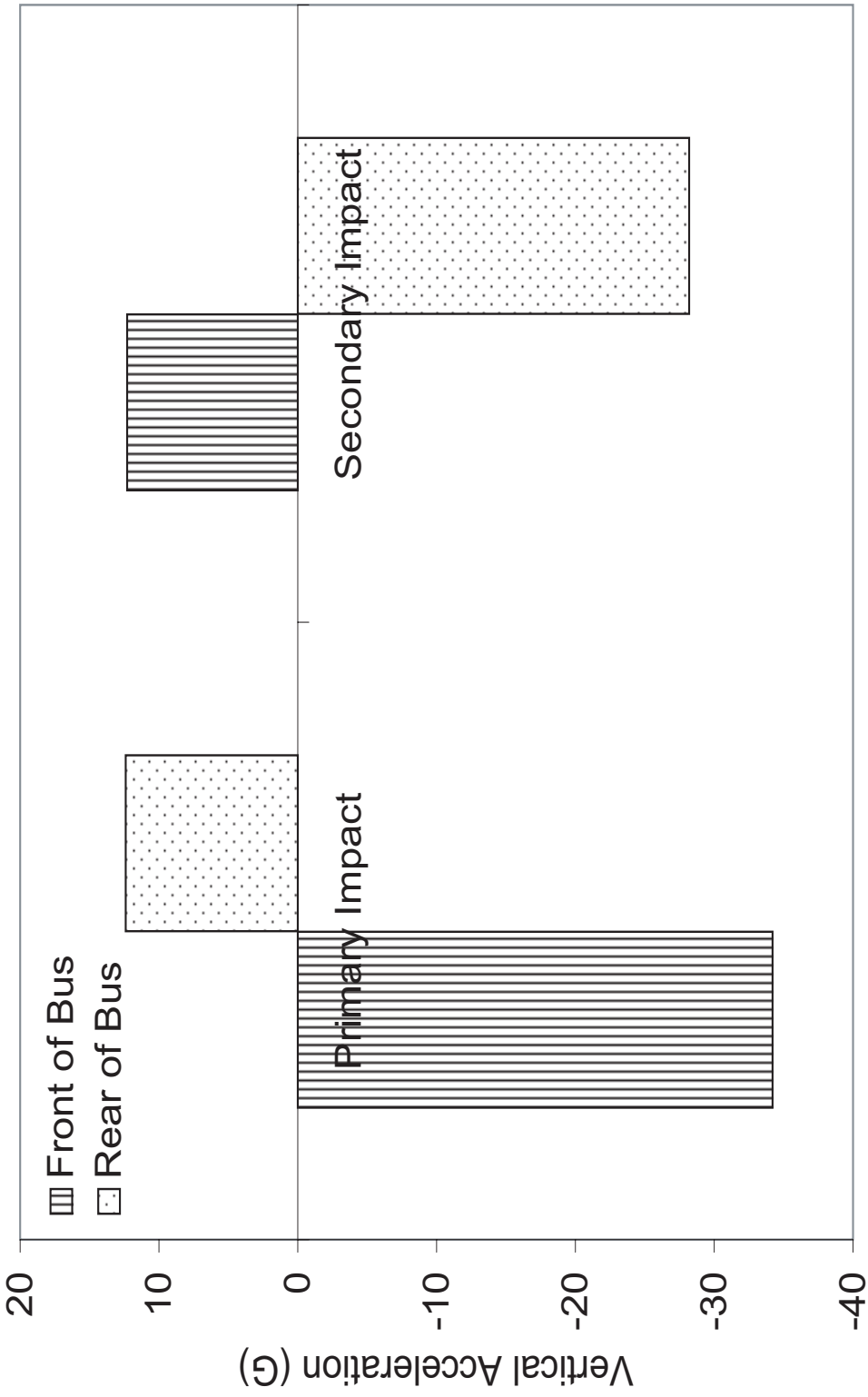

Figure 9. Longitudinal and vertical accelerations at front and rear of bus.

Other Information

According to medical records obtained by Safety Board investigators, the New Orleans driver had a severe cardiac condition and end-stage renal failure. In addition, he had been released from two jobs and was rejected by another potential employer for positive drug tests. Because of the circumstances leading to this accident, the Safety Board focused its investigation and part of a subsequent public hearing on two specific areas: the medical certification of commercial drivers and drug testing procedures used for commercial vehicle operations. This section describes the current medical certification process for interstate commercial drivers, including pertinent Federal regulations, and discusses actions taken by the Safety Board, FHWA, and the FMCSA to improve the process. Following that discussion is a description of drug testing procedures and of Safety Board and Federal actions to improve drug testing.

Medical Certification

Medical certification, which qualifies an individual as being fit to drive a commercial vehicle, became a Federal requirement under the Motor Carrier Act of 1935. The first physical qualification standards were established in 1939 and required that drivers be in good physical and mental health and have good eyesight, adequate hearing, and no addiction to narcotic drugs or alcohol. These qualifications have been modified and expanded three times since then, with the most recent major modification occurring in 1970.[42]

The Driver and Carrier Operations Division of the FMCSA has medical oversight over approximately 400,000 interstate carriers and 9 million commercial drivers. It does not have regulatory authority over the health care professionals who conduct the commercial driver examinations. In 1999, the division had a fiscal year budget of slightly over 1 million dollars.[43] The division employs three registered nurses (two full-time and one part-time) and a transportation specialist at FMCSA headquarters. Three full-time health and welfare specialists are being hired to assist with the vision exemption program and in the development of driver qualification regulations. In addition, each of four field service centers has a medical programs specialist who conducts skill performance evaluations for limb-impaired drivers.[44]

[42] FMCSA, *Physical Qualification of Drivers; Medical Examination; Certificate* (final rule), 65 *Federal Register* (FR) 59363, October 5, 2000.

[43] Sandra Zyworkarte, R.N., M.P.H., FMCSA, testimony, National Transportation Safety Board public hearing, Effectiveness of Commercial Driver Oversight Programs, New Orleans, Louisiana, January 20 through 21, 2000.

Medical certification is a requirement for all U.S. *interstate* commercial vehicle drivers who drive a vehicle that:

- Has a gross vehicle weight rating or gross combination weight rating, or gross vehicle weight, or a gross combination weight of 10,001 pounds or more, whichever is greater; or
- Is designed or used to transport more than 8 passengers (including the driver) for compensation;[45] or
- Is designed or used to transport more than 15 passengers, including the driver, and is not used to transport passengers for compensation; or
- Is used to transport material found by the Secretary of Transportation to be hazardous under 49 *United States Code* (U.S.C.) 5103 and transported in a quantity requiring placarding as prescribed by the Secretary under 49 CFR, subtitle B, chapter I, subchapter C.[46]

Intrastate drivers are subject to the physical qualification regulations of their home States. All of the States have adopted regulations based on the Federal requirements, although many grant exemptions for certain medical circumstances. Procedures not specifically covered in the Federal regulations vary from State to State (appendix D).[47]

Interstate commercial drivers are required to certify that they meet the medical requirements in 49 CFR 391.41. To drive a commercial vehicle, drivers must also obtain a CDL. The Federal regulations governing the CDL generally apply to both intrastate and interstate commercial drivers (49 CFR 383).[48]

The Federal regulations pertaining to the physical fitness qualifications required for a medical certificate are contained in 49 CFR 391.41, which states:

> A person shall not drive a commercial motor vehicle unless he/she is physically qualified to do so and, except as provided in 391.67, [49] has on his/her person the original, or a photographic copy, of a medical examiner's certificate that he/she is physically qualified to drive a commercial motor vehicle.

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[44] According to Walter McVay, medical programs specialist for the FMCSA Eastern Service Center, medical programs specialists must attend a 3- to 5-day training program on the qualification standards for limb-impaired drivers. In addition, they are given guidelines to assist them in evaluating the performance of drivers with specific types of impairments.

[45] Title 49 CFR 390.3 exempts drivers of vehicles that transport less than 16 passengers (including the driver) from obtaining medical certification.

[46] Title 49 CFR 390.5.

[47] Association for the Advancement of Automotive Medicine and Federal Highway Administration, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*, PB97-194393INZ (Springfield, Virginia: National Technical Information Service [NTIS], 1997).

[48] In general, a CDL is required when driving a vehicle that is: (1) over 26,000 pounds, (2) designed to transport 16 or more occupants, including the driver, or (3) used to transport hazardous materials.

[49] Title 49 CFR 391.67 exempts farm vehicle drivers of articulated commercial motor vehicles.

Medical Examiner

All interstate commercial vehicle drivers must be examined at least every 2 years in accordance with 49 CFR 391.43, and certified by an examiner to operate a commercial vehicle. Before 1992, only medical doctors and doctors of osteopathy were allowed to perform examinations.[50] In 1992, the regulations were modified to allow certain State licensed, certified, and/or registered health care professionals to perform examinations, including medical doctors, osteopaths, physician assistants, advanced practice nurses, and chiropractors.[51] The laws of each State determine which of these types of health care professionals may perform commercial driver examinations. The FHWA hoped that by expanding the pool of examiners, it would lower the cost of the examination and give drivers greater flexibility in arranging for the exam.[52] Federal regulations state that examiners must know the specific physical and mental demands associated with operating a commercial vehicle and be proficient in the medical protocols necessary to adequately perform an examination.[53] There are no Federal training and certification programs to ensure that examiners are familiar with the regulations. In addition, no registry exists for commercial vehicle driver examiners.

Instructions for performing and recording physical examinations accompany the regulations. (See appendix E for 49 CFR 391.43(f) instructions and appendix F for 49 CFR 391.41 medical advisory criteria.)[54] The FMCSA distributes free medical advisory criteria upon request, and since 1997, has maintained a Web site containing medical advisory criteria. In addition, the FMCSA posts medical waiver and seminar reports on its Web site, with topics ranging from vision exemptions to cardiac disease.

Examination Form

The content and general format of the examination form used by the New Orleans examiner is specified in 49 CFR 391.43(f). An official form does not exist, but States, carriers, and other parties may produce their own version of the form as long as it contains the information specified in the Federal regulations. This information has three components: (1) health history (which is completed by the applicant), (2) the physical evaluation section, and (3) the medical certificate, which must be completed if the driver passes the physical. There are no instructions for an examiner who finds a driver unqualified to operate a commercial vehicle.

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[50] *Qualification of Drivers: Medical Examination*, 57 FR 33276, July 28, 1992.

[51] Title 49 CFR 390.5.

[52] N. Hartenbaum, *The DOT Medical Examination: A Guide to Commercial Drivers' Medical Certification* (Beverly Farms, Massachusetts: OEM Press, 1997).

[53] Title 49 CFR 391.43(c)(1).

[54] Text portion of advisory reproduced on March 26, 2001, from the Web site of the FMCSA <http://www.fmcsa.dot.gov/rulesregs/fmcsr/medical.htm>.

The medical examination instructions that regularly[55] accompany the medical examination form include 13 basic requirements covering physical conditions such as loss of limbs, impairment of limbs, cardiovascular impairments (for example, myocardial infarction, angina pectoris, coronary insufficiency, thrombosis, high blood pressure), muscular impairment (including epilepsy), diabetes, eyesight and hearing problems, and use of controlled substance. A medical certificate is not to be granted to those with epilepsy, insulin-treated diabetes, poor hearing, or poor vision, as defined in the regulations. Other physical conditions may prevent an individual from obtaining a medical certificate, and Federal regulations make it the medical examiner's responsibility to ensure that only qualified drivers obtain the certificate.

In October 2000, the FMCSA published the final rule for a new 8-page examination form. The final rule provided for the changes to the content and format of the examination form without substantially changing the Federal regulations.[56] The new form will be discussed in detail in later sections.

Medical Examination Process

If an examiner believes that an applicant is physically qualified to drive a commercial motor vehicle in accordance with 49 CFR 391.41, the examiner signs and completes the medical certificate and furnishes a copy to the applicant and employer. The medical certificate indicates that the completed examination form will be kept on file in the examiner's office. The examiner may certify an applicant for less than 2 years if the applicant's condition warrants further scrutiny. The examiner or driver is not required to inform the motor carrier, local or Federal governments, or any other party if the driver fails the physical examination. Although no requirement exists for the examination form to be reviewed or tracked by a State or Federal authority, a number of States do so, including Louisiana (see appendix D).

Alternative Qualifications, Exemptions, and Waivers

An individual who has a loss or impairment of a limb that would not otherwise prevent him or her from operating a commercial vehicle may still qualify to do so under the Alternative Physical Qualification Standard for the Loss or Impairment of Limbs.[57] The individual must apply for a Skill Performance Evaluation (SPE) certificate from a State Director of the FMCSA. The SPE (formerly the Limb Waiver Program) was designed to allow persons with the loss of a hand, foot, or limb to meet fitness qualifications through the use of prosthetic devices or equipment modifications. Since there are no medical aids equivalent to the original body limb, certain risks are still present, and thus restrictions may be included on individual SPE certificates when a State Director of the FMSCA determines they are necessary to be consistent with safety and

[55] Title 49 CFR 391.43(f) states that "The medical examination shall be performed, and its results shall be recorded, substantially in accordance with the following instructions and examination form…." However, it does not require that the instructions provided accompany the examination form itself.

[56] 65 FR 59363, October 5, 2000.

[57] Title 49 CFR 391.49.

public interest. If the driver is found otherwise medically qualified, the examining physician must include the statement "medically unqualified unless accompanied by a SPE certificate" on the driver's medical certificate.[58]

Under 49 CFR 381.300, a carrier or a driver may apply for an exemption from certain FMCSRs. An exemption is defined as temporary regulatory relief from one or more FMCSRs given to a person or class of persons subject to the regulations or persons who intend to engage in an activity that would make them subject to the regulations. An exemption from the commercial driver fitness regulations provides the person or class of persons with relief from the regulations for up to 2 years and may be renewed. The FMCSA is only considering exemptions from the visual requirements at this time.

A waiver is temporary relief from one or more FMCSRs given to a person subject to the regulations or given to a person who intends to engage in an activity subject to the regulations.[59] A waiver provides the person with relief from the regulations for up to 3 months. It is intended for unique, nonemergency events and is not a source of relief from driver physical qualification requirements.[60]

Resolving Medical Evaluation Conflicts

Motor carriers often contract with an examiner to conduct commercial driver physical examinations. When a carrier's examiner and a driver's physician disagree regarding the driver's fitness to operate a commercial vehicle, 49 CFR 391.47 provides a method for resolving the conflict.

The driver and the carrier must obtain the opinion of an impartial medical specialist in the field in which the medical conflict arose. The specialist's opinion is submitted to the FMCSA Office of Motor Carrier Research and Standards (OMCRS), along with medical records supporting the specialist's opinion, medical records and statements of the carrier's and driver's examiners, proof of the disagreement between the carrier and the driver, and other supporting documentation. The OMCRS director will determine the driver's fitness. The driver is considered disqualified until the time a decision is made, or until the director orders otherwise.

Enforcement

As part of the Motor Carrier Safety Assistance Program (MCSAP),[61] safety inspectors may check whether a driver possesses a current medical certificate, whether the

[58] Text portion of advisory reproduced on March 26, 2001, from the Web site of the FMCSA <http://www.fmcsa.dot.gov/rulesregs/fmcsr/medical.htm>.

[59] Title 49 CFR 381.200.

[60] Sandra Zywokarte, FMCSA, telephone interview, May 2001.

[61] The MCSAP is a Federal grant program that provides financial assistance to States to reduce the number and severity of accidents and hazardous materials incidents involving commercial motor vehicles (CMV). The goal of the MCSAP is to reduce CMV-involved accidents, fatalities, and injuries through consistent, uniform, and effective CMV safety programs. States accomplish aspects of this goal through inspections of carrier terminals and of commercial vehicles.

driver has an SPE certificate or the proper exemption, and whether the carrier has included a current copy of a driver's medical certificate in the driver's file. Among other violations, drivers can be cited during the inspection for any of these five regulatory violations involving medical examination certificate or form. These are listed below:

- 391.41(a) - no medical certificate in driver's possession,
- 391.43(e) – missing exemption on a medical certificate,
- 391.43(g) - improper medical examiner's certificate,
- 391.45(b) - expired medical examiner's certificate, and
- 391.49(j) - no valid SPE certificate in the driver's possession.

According to the Commercial Vehicle Safety Alliance (CVSA) *North American Standard Out-of-Service Criteria*,[62] a driver can be placed out of service if she or he does not have the proper SPE certificate or exemption or is not wearing corrective lenses or a hearing aid as required by his or her medical certificate. The States have also enacted laws that give them the power to disqualify drivers who do not meet the level of fitness described in the State or Federal regulations (appendix G).[63]

The Federal regulations contained in 49 CFR 390.35 prohibit making fraudulent or intentionally false statements on any application, certificate, report, or record required by the FMCSRs, to include the commercial driver medical examination form. The penalty for falsifying the medical examination form consists of civil fines.[64] The FMCSA has performed 169 enforcement actions in the past 10 years on drivers and carriers who have falsified medical records, with fines totaling $92,761. Of those enforcement actions, 142 were conducted by the FMCSA against drivers and 27 against carriers. The FMCSA does not compile data on whether any of the enforcement actions against drivers also led to disqualifications.[65]

Louisiana State Medical Qualification Regulations

Intrastate drivers in Louisiana are subject to the same fitness regulations as interstate drivers. In addition, since 1996, Louisiana has required individuals who were renewing or obtaining their commercial driver's license to submit their most recently completed medical examination form to the State licensing agency. A trained staff[66] reviews every examination form submitted for omissions, inconsistencies, and violations of the Federal fitness regulations. Approved forms are scanned into a computerized imaging system and filed as part of the driver's records, where they can be accessed and reviewed by the licensing agency staff as needed. If the licensing agency needs

[62] *North American Standard Out-of-Service Criteria*, 2001.

[63] *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*.

[64] Title 49 CFR 386, subpart B.

[65] Sue Halladay, Transportation Specialist, FMCSA, April 2001.

[66] According to the Louisiana CDL help desk supervisor, staff complete an informal 3- to 5-day course on the CDL and commercial driver medical certification process and are mentored for up to a year.

clarification regarding an examination form, the licensing agency contacts the examiner who conducted the examination.

The State has had a medical advisory board since 1968, consisting of 18 members from fields such as cardiology, internal medicine, neurology, ophthalmology, and psychiatry. The medical advisory board convenes every 3 months. It advises the licensing agency on medical and visual standards and also reviews individual cases, such as conflicts between the licensing administration and a driver regarding the driver's physical fitness.

Louisiana does not require commercial driver examiners to report drivers that they believe unfit. Although anyone may voluntarily report an unfit driver to the Louisiana Division of Motor Vehicles, reports of unfit drivers are not always confidential.[67] Only health care providers that report unfit drivers have immunity from legal action, as stated in Article 40, Section 1356, of the Louisiana Revised Statutes:

> No person shall have a cause of action for damages or loss against any health care provider nor shall any criminal liability be imposed as a result of a report by the health care provider to the Department of Public Safety and Corrections or the Louisiana Medical Advisory Board of any visual ability or physical condition, impairment, or disability of an applicant for a driver's license or of a licensed driver, which may impair such person's general ability to exercise ordinary and reasonable control in the operation of a motor vehicle, whether the health care provider is statutorily mandated to make such a report or whether such report is made voluntarily, when the health care provider is acting without malice and in the reasonable belief that such action is warranted to protect the public.

At least 19 States do not offer immunity to physicians or to other health care providers. At least 37 do not offer immunity to persons other than health care providers who report an unfit driver in good faith (see appendix G).[68]

If a health care provider in Louisiana sends written notification to the licensing agency that a driver presents an "immediate risk" or "should not be driving," the driver's license is immediately suspended and a pickup order issued for a law enforcement officer to seize the license. If the examiner expresses concern over a particular condition but does not specify that the driver may be a "danger" or a "risk," the licensing agency sends the driver notification that he or she needs to provide a medical report on that condition. The driver's license is put on a pending status, and the driver is given 30 days to respond. If the driver does not respond within the given timeframe, his or her license is suspended and a pickup order is issued.[69]

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[67] *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*.

[68] Data are not available for all States.

[69] Carla Doris, Louisiana Department of Motor Vehicle CDL help desk supervisor, telephone interview, December 2000.

Medical Certification Program for Airmen

In January 2000, the Safety Board conducted a 2-day hearing in New Orleans that examined the adequacy of commercial driver oversight, including the medical certification process.[70] During the hearing, testimony was given regarding the FAA's medical certification process for airmen[71] and how it compares with that for commercial vehicle drivers.

With an annual budget of $5.7 million in 1999, the FAA's Division of Aeromedical Certification is responsible for certifying the health of approximately 600,000 airmen. Medical certification is required for any airman acting as pilot-in-command or other required crewmembers of an aircraft (except for free balloons, gliders, and ultralights). This includes student pilots in solo flight as well as private, commercial, and airline pilots.[72] These airmen are required to go to one of approximately 5,500 FAA-trained and -registered aviation medical examiners (AMEs) for their certification. All AMEs are either doctors of medicine or osteopathy. To become an AME, an individual must attend a 1-week seminar on the FAA's medical certification program and then take a refresher course every 3 years.[73] Each AME receives a copy of the *Aviation Medical Examiner's Guide*, which contains step-by-step instructions performing the physical examination, as well as specific guidance for handling the most commonly encountered abnormal findings.

Each AME is assigned examination forms that can be used only by that individual. A unique serial number is printed on each form so that the form can be tracked by the Division of Aeromedical Certification. The AME must then send the completed examination form to the division, regardless of whether the airman passes the physical. As of October 2000, the process became fully computerized; now most examination forms are completed and transmitted to the division via the Internet. Data from nonelectronic forms are also entered into the system when received by the division. A computer system performs a preliminary review of all forms; forms that are considered nonstandard[74] (for instance, when the airman was denied certification or the certification decision was deferred) are reviewed by hand. The division employs 33 reviewers especially trained for this purpose.[75] The division's database of examination information, which was established in 1953, gives the FAA the ability to use historical data to identify inconsistencies on an

[70] National Transportation Safety Board public hearing, Effectiveness of Commercial Driver Oversight Programs, New Orleans, Louisiana, January 20 through 21, 2000. See <http://www.ntsb.gov/events/2000/comm_driver/agenda.htm> for the public hearing agenda.

[71] A pilot, mechanic, or other licensed aviation technician.

[72] For frequently asked questions regarding the medical certification of pilots, see the FAA Office of Aviation Medicine, Civil Aeromedical Institute, Web site <http://www.cami.jccbi.gov/AAM-300/amcfaq.html>.

[73] Dr. Warren Silberman, Manager, Division of Aeromedical Certification, FAA, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[74] A nonstandard form is one that has incomplete entries, has entries that are inconsistent with the certification decision, or has entries that for any other reason make the form conspicuous.

[75] Rita Smith, Division of Aeromedical Certification, FAA, telephone interview, December 2000.

individual's examination form. In addition to utilizing its tracking capabilities, the FAA can make simple statistical queries on this data.

The regulations describing the fitness standards that medically certified airmen must meet were last updated in 1996. The regulations cover physical and mental conditions ranging from vision, hearing, cardiovascular condition, diabetes, and epilepsy to an airman's mental state.[76] The regulations give AMEs some discretion in diagnosing and certifying the fitness of these airmen. As noted, AMEs receive training and guidance to help with their certification decision and may call the division for further guidance. Additionally, the FAA sends all AMEs the *Federal Air Surgeon's Medical Bulletin,* a quarterly newsletter that provides current information on the medical certification process.[77]

The regulations state that it is unlawful to make fraudulent or intentionally false statements on an application for a medical certificate or any other document that is used to verify or validate an airman's fitness.[78] Doing so would be a basis for actions such as revoking the airman's medical certificate, denying all applications for medical certification, denying applications for waivers, or revoking an airman's pilot certificate, depending on how severe the FAA considers the offense. In addition, the U.S.C. allows for a $250,000 fine, 5 years of imprisonment, or both.[79]

An airman may apply for an authorization of special issuance of a medical certificate if he or she has a well-controlled condition or a condition that has been in remission. A special issuance authorization may be granted for such conditions as insulin-controlled diabetes, hypertension, and coronary artery disease, depending on the type of flying an airman does.[80] An AME may authorize a special medical flight test, practical test, or medical evaluation to determine whether to grant special issuance. Airmen who are granted special issuance authorizations are usually required to have examinations more frequently than healthy pilots.[81]

An airman may also be granted, at the discretion of the Federal Air Surgeon, a Statement of Demonstrated Ability (SODA), instead of a special issuance authorization. This is given to a person whose disqualifying condition is static or nonprogressive and who has been found capable of performing airman duties without endangering public safety. A SODA does not expire and authorizes a designated aviation medical examiner to issue a medical certificate of a specified class if the examiner finds that the airman's condition has not adversely changed.[82]

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[76] Title 14 CFR 67 contains the medical fitness standards that apply to airmen.

[77] Current and past editions of the Federal Air Surgeon's Medical Bulletin are archived at the FAA Office of Aviation Medicine, Civil Aeromedical Institute, Web site <http://www.cami.jccbi.gov/AAM-400A/fasmb.html>.

[78] Title 14 CFR 67.403.

[79] Title 18 U.S.C. 1001 and 3671.

[80] Information obtained on May 30, 2001, from the FAA Office of Aviation Medicine, Civil Aeromedical Institute, Web site <http://www.cami.jccbi.gov/AAM-300/medcon.html>.

[81] Title 14 CFR 67.401.

Individuals may contact the FAA if they believe that an airman is not medically fit to operate an aircraft due to a specific condition. The FAA allows these contacts to be anonymous. An airman suspected of being medically unfit is asked by the FAA to submit relevant medical records. If an airman is unable to show that he or she is fit to fly, the FAA may revoke the medical certificate.[83]

Previous Safety Board Actions

As part of its investigative process, the Safety Board verifies driver qualification information. Several of the accidents the Safety Board has investigated have involved driver fitness issues (appendix H). This section highlights the Safety Board's recommendations in this area.

Willow Creek, California. In 1983, an empty dump truck collided head on with a southbound school bus loaded with 37 passengers. The truckdriver and one school bus passenger were killed, and 31 others were injured. Available medical records indicated that the truckdriver had several medical problems, none of which were noted on his latest commercial medical examination form.[84]

The events leading to this accident prompted the Safety Board to make the following recommendation to the FHWA:

> H-83-68
>
> Revise Federal Motor Carrier Safety Regulation 49 *Code of Federal Regulations* 391.43 to incorporate a provision, similar to that specified in 14 *Code of Federal Regulations* 67.20(A) for Airmen Medical Certification, which will prohibit the falsification or omission of medical information in connection with a medical certification physical examination.

The FHWA responded to this recommendation in May 1988 by adding 49 CFR 390.35 to the FMCSRs. This part made fraudulent or intentionally false statements on any application, certificate, report, or record required by the FMCSRs an offense subject to criminal or civil penalties. Consequently, in September 1988, the Safety Board classified this recommendation "Closed—Acceptable Action."

Middletown, New Jersey. On September 6, 1987, an intercity bus ran off the road, struck a guardrail and bridge rail, and overturned onto its right side. The busdriver and one passenger sustained fatal injuries, and 32 passengers sustained minor to moderate injuries. Safety Board investigators found several pieces of evidence indicating that the driver routinely forged his medical certificates, including his most recent one.[85]

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[82] Title 14 CFR 67.401.

[83] Jackie Bivins, FAA Division of Aeromedical Certification, telephone interview, May 2001.

[84] National Transportation Safety Board, *Collision of Humboldt County Dump Truck and Klamath-Trinity Unified District Schoolbus, State Route 96, Near Willow Creek, California, February 24, 1983,* Highway Accident Report NTSB/HAR-83/05 (Washington, DC: NTSB, 1983).

As a result of the information obtained from this accident, the Safety Board made the following recommendation to the FHWA:

> H-88-24
>
> Revise Title 49 *Code of Federal Regulations* Part 391 (*Federal Motor Carrier Safety Regulations*) to require a motor carrier to verify the authenticity of a medical examiner's certificate if the certificate has been prepared by a physician who has not been selected by the motor carrier to perform the examination. Information concerning the fact that verification was made should be retained as part of the driver's qualification file.

In July 1998, the Safety Board classified this recommendation "Closed—Unacceptable Action," because of the FHWA's failure to revise the relevant regulations. On October 1998, the FHWA stated that it had completed regulatory negotiation with representatives of the States, the motor carrier industry, and the medical community to include the certification of physical fitness of drivers to operate commercial motor vehicles as part of the CDL process. The FHWA stated that it expected to publish a notice of proposed rulemaking (NPRM) that would satisfy H-88-24 by early 1999. In March 2001, an FMCSA representative stated that the release of this NPRM would probably not occur until 2002, due to a shift in priorities.

Nashville, Tennessee. On November 19, 1988, a Greyhound bus carrying 45 passengers went out of control, rotated 190 degrees clockwise, and overturned. The unrestrained bus driver and 38 passengers were injured in the accident. Safety Board investigators found that the bus driver had not informed his examiner about his hypertension or about the medications he was taking.[86] As a result of this accident, the Safety Board made the following recommendation to the FHWA:

> H-89-31
>
> Revise section 391.43 of the *Federal Motor Carrier Safety Regulations* to incorporate a provision that will prohibit the omission of medical information in connection with a medical certification physical examination; require that when commercial drivers are examined, they sign a statement certifying that the medical history they have provided is both complete and accurate and that the motor carrier has the authority to obtain information on the bus driver's medical history from their personal health care providers; and require that the medical history form elicit more complete information on drivers, using commonly understandable terminology.

In September 1992, the FHWA stated that it intended to publish a notice in the *Federal Register* regarding driver physical/medical requirements addressing, but not

[85] National Transportation Safety Board, *Academy Lines, Inc., Intercity Bus Run-off-Roadway and Overturn, Middletown, New Jersey, September 6, 1987*, Highway Accident Report NTSB/HAR-88/03 (Washington, DC: NTSB, 1988).

[86] National Transportation Safety Board, *Greyhound Lines, Inc., Intercity Bus Loss of Control and Overturn Interstate Highway 65, Nashville, Tennessee, November 19, 1988,* Highway Accident Report NTSB/HAR-89/03 (Washington, DC: NTSB, 1989).

limited to, the Safety Board's recommendation. The FHWA further stated that it was interested in simplification and improvement of the effectiveness of the examination form and whether the form should be reviewed and retained by the employer. Based upon the FHWA's failure to revise the regulation in the almost 10 years since the recommendation had been issued, in July 1998, the Safety Board classified this recommendation "Closed—Unacceptable Action."

The new medical examination form, created in October 2000, requires that drivers sign a statement certifying that the medical history they have provided is both complete and true and that false or missing information may invalidate the examination and the medical examiners certificate. It also expands the health history section and uses more understandable terminology in the medical history section. It does not give the carriers permission to obtain driver medical history information from personal health care providers without the driver's permission.

1990 Safety Study. In 1990, the Safety Board published a study that investigated the role of fatigue, alcohol, other drugs, and medical factors in 182 fatal-to-the-driver heavy truck crashes.[87] The Safety Board found that the driver's medical condition caused or contributed to 10 percent of the accidents. Over 90 percent of medical-condition-related accidents involved some form of cardiac incident.

Because of these findings, the Safety Board recommended that the FHWA:

H-90-24

Amend 49 *Code of Federal Regulations* 391.43 to require more extensive and frequent state-of-the-art cardiac screening tests and examinations of older commercial truck drivers (age 40 and above) and for all commercial drivers with cardiac conditions. Commercial drivers with a cardiac history or condition should be disqualified until cleared by a competent medical authority.

H-90-25

Develop a clear set of medical standards for cardiac risk assessment and require physicians to use them in qualifying older commercial truck drivers and for commercial drivers with cardiac conditions. Medical certification should include medical state-of-the-art cardiac risk factors.

H-90-27

Improve the medical examination form in 49 *Code of Federal Regulations* 391.43 to ensure that the examining physician is aware of truck operation risk factors and of the physical and other stress producing requirements of commercial truck operation. Provide for a means for physicians to acknowledge that they understand the rigors of commercial truck operation and that the driver being examined is qualified for such commercial truck operations. The physician should

[87] National Transportation Safety Board, Vol. 1 of *Fatigue, Alcohol, Other Drugs, and Medical Factors in Fatal-to-the-Driver Heavy Truck Crashes*, Safety Study NTSB/SS-90/01 (Washington, DC: NTSB, 1990), 2 Vols.

> also certify that he understands the penalties for deliberate and/or false statements on the medical certificate and for medical certificate falsification.

As noted, in October 2000, the FMCSA published its final rule on the new medical examination form. The new form has an expanded health history section and includes questions on heart surgery and high blood pressure. In addition, the physical evaluation section, which contains the list of health items the examiner must check, now includes guidelines for blood pressure evaluation, including information on recommended certifications periods for drivers with various severities of hypertension. Although the Safety Board noted in its June 20, 2001, response letter that it is unclear how the FMCSA would enforce the use of the form, since no one other than the examiner must see it, the Safety Board believed that the new form provided a substantially improved resource for examiners to more appropriately evaluate a driver's cardiac condition. Therefore, the Safety Board classified H-90-24 and -25 as "Closed—Acceptable Alternate Action" in June 2001.

The new medical examination form also includes a section describing the responsibilities, work schedules, physical demands, and emotional demands that commercial drivers may encounter. It also makes medical guidance material more accessible. Based on this information, Safety Recommendation H-90-27 was classified "Closed—Acceptable Action" in June 2001.

Central Bridge, New York. The accident that occurred in Central Bridge is discussed here at length because of the similarities in medical certification issues found during that investigation to those in the New Orleans accident.[88] The Safety Board deferred analyses of medical certification issues affecting the Central Bridge accident driver until this report.[89]

About 10:30 a.m. on October 21, 1999, in Schoharie County, New York, a Kinnicutt Bus Company school bus was transporting 44 students, 5 to 9 years old, and 8 adults on an Albany City School No. 18 field trip. The bus was traveling north on State Route 30A as it approached the intersection with State Route 7, which is about 1.5 miles east of Central Bridge. Concurrently, an MVF Construction Company dump truck, towing a utility trailer, was traveling west on State Route 7. The dump truck was occupied by the driver and a passenger. As the bus approached the intersection, it failed to stop as required and was struck by the dump truck. Seven bus passengers sustained serious injuries; 28 bus passengers and the truckdriver received minor injuries. Thirteen bus passengers, the busdriver, and the truck passenger were uninjured.

The subsequent Safety Board investigation found that the 79-year-old busdriver had a history of serious heart and kidney problems. According to his medical records, the

[88] National Transportation Safety Board, *School Bus and Dump Truck Collision, Central Bridge, New York, October 21, 1999,* NTSB/HAR-00/02 (Washington, DC: NTSB, 2000).

[89] School bus operations are exempt from the Federal medical certification regulations. However, this accident has relevancy because many States, such as New York, have adopted the Federal medical certification regulations for its school bus drivers and intrastate commercial carriers. (See appendix C.)

driver had a heart attack in 1993, experiencing congestive heart failure and dyspnea (difficulty breathing). He was found to have a severe blockage in the artery supplying blood to the right side of his heart. He underwent angioplasty, which was successful in opening the artery, but he developed a blood clot in his leg. He was placed on a blood thinner (Coumadin) as a result of the clot. He was placed on a diuretic as a result of his heart failure.

Approximately 6 months after his angioplasty, he underwent a stress test to determine whether he had additional coronary artery disease. This test did show reversible ischemia,[90] but the driver's cardiologist decided not to do additional testing or treatment, since the driver was "asymptomatic." A year later, the driver had additional dyspnea due to "predominantly right-sided heart failure," and his cardiologist increased his diuretic dose. The driver continued to use an additional diuretic occasionally (as often as every other day) to control fluid retention. He had at least one episode of an abnormal heart rhythm.

The driver's diabetes was essentially uncontrolled. He did not follow appropriate dietary restrictions, did not routinely check his blood sugar, and on two occasions was "totally confused"[91] about how much medication he was supposed to be taking. His fasting blood sugar levels were routinely over 200 mg/dL, and within a year before the accident, had a blood sugar level of 460 mg/dL.[92] His personal physician frequently noted that the driver was not motivated to control his diabetes, especially when it came to watching his diet. The physician had twice considered placing the driver on insulin, once in September 1996 and again in January 1999, but had not done so.

According to his medical records, during one visit on October 1995, the driver told his personal physician that it was his practice to take his diabetes medication at 6:30 a.m., drive the school bus, then have breakfast at 10:30 a.m. The physician told him that this practice was unacceptable and that the driver ran the risk of having a low blood sugar reaction while driving the bus.[93] The physician noted that the driver said he understood the dangers and would change his behavior. The driver's medical records do not note anything further with regard to the driver's diet and medication as it related to his driving schedule.

On September 4, 1999, the driver visited a physician for his medical certification examination. The treating physician was not the driver's regular physician, and she only had access to the medical history the driver provided. On the health history section of the examination form, the driver did not note treatment for congestive heart failure and did not list any of his cardiac medications or his blood thinner. The physician performing the CDL examination was aware that the driver was a diabetic, but did not direct the driver to obtain

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[90] Decreased blood flow to a portion of the heart as a result of exercise, a condition that improves with rest.

[91] Physician's notes from September 1997. See docket number HWY-00-FH-001.

[92] The normal range for fasting blood sugar levels is approximately 75 to 115 mg/dL.

[93] The American Diabetes Association <www.diabetes.org> list includes the following symptoms for hypoglycemia (low blood sugar): shakiness, dizziness, sweating, hunger, headaches, sudden moodiness or behavior changes, clumsy or jerky movements, difficulty paying attention, and confusion.

a 6-month evaluation as required by the New York State Commissioner Regulations, Part 6, and the New York Department of Motor Vehicles (NYDMV), Article 19-A. Those requirements consist of "certification by the employee's personal physician that his or her condition has remained stabilized and that he or she has not had an incident of hypoglycemic shock since the last certification." No medical review of the driver's physical examination form was apparently performed by anyone, other than the examining physician. Kinnicutt also was aware of the driver's diabetic condition and requested a statement from his personal physician, to comply with the NYDMV regulations, regarding the driver's diabetic condition in November 1998. The driver's personal physician noted that "he has no hypoglycemic attacks" but did not note whether the driver's condition was stabilized. The Safety Board concluded that the busdriver's performance might have been affected by his medical condition, his advanced age, or both.

Recent Federal Initiatives

New Model Medical Examination Form. In October 2000, the FMCSA published its final ruling on a new model medical examination form and certificate. According to the FMCSA, the previous examination form had not been revised since 1970 and did not always reflect current knowledge and practice. The new form includes more updated and simplified information. The FMCSA expects the new form to reduce the incidence of errors and provide more uniform medical examinations to commercial motor vehicle drivers. Examiners may use the previous form until November 2001, but must use the new form after that date.

The new form was developed under a contract with the Association for the Advancement of Automotive Medicine (AAAM), and was reviewed by a group of medical providers, State agency representatives, motor carriers, FHWA field staff, and other interested groups. Although the final ruling updated the examination form in content and format, it did not modify or update any of the underlying physical qualification standards contained in the regulations.

The new form is organized into three sections.[94] The first section inquires about the driver's health history. This section has been modified and expanded over the previous form by replacing some medical terminology with a list of symptoms, expanding inquiries into cardiovascular diseases, and expanding inquiries to include sleep disorders and medication (prescription and over-the-counter). If a driver responds that he or she has a particular symptom or disease, the driver must expand on his or her answer. At the bottom of this section, the driver is required to certify that the information provided is complete and accurate and acknowledge that inaccurate, false, or missing information may invalidate both the examination and the medical certificate.

The second section covers the physical examination and tests performed by the examiner. Several changes have been made to this section, mainly to reduce the potential for errors by an examiner. Not only does the form include the relevant Federal physical

[94] As with the current form, the content of the new form is defined, but the States may determine its format.

qualification standards, but it also has guidance on selected testing and evaluation procedures, such as evaluating a driver's blood pressure and urine sample. The second section also includes an area to be completed if the driver does not qualify for a 2-year certificate but qualifies for a certificate of less than 2 years.

The final section of the examination form details the Federal physical qualification standards found in 49 CFR 391.41, describes the driver's role and the type of duties faced as a result of that employment, and contains the FMCSA's advisory guidelines to help examiners better assess a driver's physical qualifications. In addition, the form includes the telephone number for the FMCSA Office of Bus and Truck Standards and Operations; a representative of the FMCSA Driver and Carrier Operations Division stated that she has noticed an increase in the number of incoming telephone calls since publishing the new examination form. The Driver and Carrier Operations Division currently fields approximately 30 calls a day.[95]

Merger of the CDL and Medical Certification Processes. The Commercial Motor Vehicle Safety Act of 1986 created the CDL and gave the DOT the authority to link the CDL with the medical certificate. In 1990, FHWA began exploring the possibility of merging the CDL and medical certification processes and assigning stewardship of the program to the States. The FHWA saw several benefits to this.[96] First, the merger would minimize the documents that a commercial vehicle driver would need to carry. Second, since the presence of a valid license would also indicate physical fitness, it would reduce the number of separate documents that law enforcement would have to authenticate. Third, transferring the medical certification process to the States could take advantage of their existing infrastructure to begin recording and tracking medical certificates. In addition, State medical advisory boards could process Federal, as well as State, SPE certificates and exemptions and attend to other fitness-related issues.

In an effort to determine whether States would be able to manage medical certification along with the CDL process, six States (Alabama, Arizona, Indiana, Missouri, North Carolina, and Utah) were selected to participate in a pilot project that required each to create a prototype medical review program.[97] As part of the program, the licensing agency of each State was required to collect the completed medical examination forms for review as part of the process for obtaining a license to operate a commercial motor vehicle. The results of this study prompted the FHWA to conclude that the pilot States "demonstrated the potential capability of assuming the responsibility of the commercial driver fitness certification." The agencies were able to detect unfit drivers and could restrict them from driving within the parameters set by the licensing agency and the State medical advisory board.

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[95] Sandra Zywokarte, FMCSA, telephone interview, May 2001.

[96] FHWA, "Commercial Driver Physical Qualifications as Part of the Commercial Driver's License Process," advance notice of proposed rulemaking (ANPRM); request for comments (July 15, 1994) and notice of intent to form a negotiated rulemaking committee (April 29, 1996), FHWA docket number MC-93-23.

[97] Association for the Advancement of Automotive Medicine, *Prototype State Review Program: Final Report*, DTFH 61-90-C-00098 (Washington, DC: FHWA, 1995).

During the pilot study, the FHWA tested the hypotheses that a significant number of commercial vehicle drivers were either forging the medical examiner's signature, altering the long form, driving without a medical certificate, or driving with an expired certificate. The data gathered from the six pilot States indicated that these hypotheses were not always supported. However, several issues were uncovered. In three States, a high proportion of the examination forms had to be returned to the applicants because some entries were either incomplete or inconsistent with other entries.[98] Many of the omissions or inconsistent entries were related to vision testing and blood pressure readings. One somewhat common mistake was examiners forgetting to note the expiration date on the certificate, which can be particularly important for drivers requiring periodic evaluation (such as, diabetes or borderline high blood pressure).

The reviews also yielded a number of applicants who were issued medical certificates, but who did not meet the medical standards. For example, in Missouri, of the 8,086 examination forms received and analyzed by the licensing agency, 32 drivers were identified who did not meet Federal fitness standards, despite being issued medical certificates by certified examiners. In Arizona, of the 39,678 examination forms received and reviewed by the motor vehicle department, 2,662 drivers (6.7 percent) were found not to meet the Federal fitness standards. These drivers were subsequently denied medical certification and had their CDL driving privileges cancelled. Another 175 drivers had their driving privileges cancelled for falsifying their medical long form.

In 1994, the FHWA released an advance NPRM (ANPRM) on the merger of the CDL and the medical certification processes.[99] It described several reasons for considering the merger (many given above), and listed several issues that would need to be resolved for the merger to take place, to include the need for a medical fitness tracking and review system and the need for an examiner registry.

In 1996, the FHWA released a notice of intent to form a Negotiated Rulemaking Advisory Committee on the merger. The purpose of the advisory committee was to promote an open exchange of ideas between interested parties, with the hope that it would lead to innovative resolutions to the issues surrounding the merger. The notice suggested six topics of discussion, which were based on prior interviews with potential committee members:

- Whether the physical qualification guidelines currently used by the agency should be modified to more effectively implement the current medical standards.
- The scope of any medical qualifications tracking system which might be used by law enforcement officials and carriers.

[98] Alabama returned 43.3 percent of the long forms because they were incomplete; Arizona, 32.6 percent; and Missouri, 31 percent (noncertified examiners) and 17 percent (certified examiners). Two other States reported low return rates: Indiana, 5 percent, and Utah, 2.9 percent. A return rate was not given for North Carolina.

[99] See FHWA docket number MC-93-23.

- Whether useful information could be utilized from the federally funded State Prototype Medical Review pilot programs in drafting a rule on merging CDL and physical qualification requirements.
- The amount of control various parties should have over the medical review process, and whether the current commonly used procedure, in which a company directs its drivers to physicians it selects, needed to be replaced or simply modified.
- How best to clarify the current physical examination requirements and guidelines and communicate them effectively to the medical provider community.
- Whether there was a way to merge the separate medical and CDL requirements without burdening the small operator who moves to another State.

During the Safety Board's January 2000 hearing on driver oversight, an FMCSA representative stated that an NPRM on the merger was expected sometime in the year 2000.[100] However, changed priorities have delayed the projected release date of this NPRM until 2002.[101]

California, Arizona, Utah, and Nevada have already formally merged the medical certification and the CDL processes together. In California[102] and Arizona,[103] commercial drivers are required to provide their respective licensing agency with a complete and current medical examination form every 2 years. The licensing agency reviews and tracks each form. If a problem is found with the information on a form, the form is sent back to the driver for clarification. If the driver does not respond within 30 days, the licensing agency can take action.[104] Since medical fitness is an integral part of having a CDL, drivers with invalid or missing medical certification risk immediate disqualification and a fine. Both States have systems that allow law enforcement to check a driver's license status during routine stops and safety inspections. Because of this, law enforcement is able to prevent unfit drivers from driving.[105]

[100] Robert Redmond, FMCSA, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[101] Teresa Doggett, FMCSA contact for the NPRM on the CDL-medical certification process merger, telephone conversation, April 2001.

[102] Soubeih Al-Jundi, Principal Driver Safety Officer, California Department of Motor Vehicles, telephone interview, April 2001.

[103] Lupe Valdivia, Arizona Motor Vehicle Division Medial Review Program, telephone interview, May 2, 2001.

[104] Arizona immediately suspends the driver's license. California may take any one of a number of actions, including converting the CDL to a private vehicle license.

[105] As part of its investigation, the Safety Board also reviewed the medical fitness requirements of Mexico, Canada, the United Kingdom, and Australia, and found that all but Australia have incorporated medical fitness requirements into their commercial driver's license programs. (See appendix I.)

Alcohol and Drug Testing Procedures

Postcrash toxicological tests on the busdriver involved in the New Orleans crash detected THC, the major active substance in marijuana, in the driver's blood and tetrahydrocannabinol carboxylic acid (THC-COOH), the major inactive metabolized derivative of THC, in the driver's blood and urine. This driver had tested positive for drugs on four previous occasions—twice as an employee of The Regional Transit Authority, once as an employee of Westside Bus Service, and once when applying for a job with Greyhound. Below is the applicable background information on the drug testing regulations for commercial vehicle drivers.

Regulations on Commercial Vehicle Driver Drug Testing

According to 49 CFR Part 382, drivers holding a CDL must be tested for five controlled substances[106] before holding a safety-sensitive position with a carrier and may also be tested at certain times during employment with that carrier. It is the carrier's responsibility to comply with the drug testing regulations.

Use of a controlled substance is determined by collecting a urine sample from the driver and having it analyzed by a drug testing laboratory certified by the U.S. Department of Health and Human Services. Title 49 CFR 40 details the procedures that must be followed to collect the sample. Results of the analyses are then relayed by the laboratory to an MRO[107] who reviews the results and the chain of custody before releasing the results. If a controlled substance is found in concentrations above the reporting levels specified in 49 CFR 40.29,[108] or if there is evidence that the specimen provided by the employee was substituted or adulterated, the MRO contacts the employee to determine whether there are legitimate reasons for the results and whether the employee would like a retest.[109] The MRO informs the designated employee representative (DER) of all positive and negative test results.[110]

Alcohol tests are administered by a breath alcohol technician or a screening test technician[111] who is trained in the operation of an evidential breath testing device or alcohol screening device. An employee found to have an alcohol concentration of 0.02 or more must take a confirmatory test. The results of all alcohol tests are submitted to the DER.

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[106] Marijuana, cocaine, opiates, phencyclidines (PCPs), and amphetamines.

[107] Title 49 CFR 40, Subpart G, describes the qualifications and functions of an MRO.

[108] Under the new drug testing rule that takes effect in August 2001, the controlled substance chart in 49 CFR 40.29 will appear under 49 CFR 40.87.

[109] When a urine specimen is taken, the specimen is split and sent to two laboratories. One laboratory analyzes the urine, while the second laboratory stores the urine specimen in case the employee requests a retest following an initial positive drug test result.

[110] The results may also be reported to a consortium or third party administrator, if so arranged by the carrier.

[111] Title 49 CFR 40, Subpart J, describes the qualifications of a breath alcohol technician and a screening test technician.

Consequences of a Positive Drug or Alcohol Test. If an alcohol test reveals an alcohol concentration exceeding 0.02, the carrier must not allow the driver to perform safety-sensitive functions, including driving a commercial vehicle, for at least 24 hours.

If a driver tests above the reporting level for a controlled substance, or is found to have an alcohol level of more than 0.04, the driver is not allowed to perform safety-sensitive functions, including driving a commercial motor vehicle, until being evaluated by a substance abuse professional (SAP).[112,113] Failure to prevent a driver from performing a safety-sensitive function until that time may subject the carrier and the driver to the penalty provisions of 49 U.S.C. section 521(b),[114] which includes immediately placing the driver out of service and levying a civil penalty not to exceed $2,500.

The SAP must determine a course of treatment to help the driver resolve problems with abuse. The SAP must also reevaluate the driver to determine whether he or she properly followed the prescribed treatment program. Before being able to return to duty following the evaluation and treatment for drug or alcohol abuse, a driver must pass a return-to-duty test. In addition, the driver is subject to at least six unannounced drug and alcohol tests during the first 12 months following his or her return to duty, with additional testing possible in the following 48 months (a total period of 5 years).[115]

An employer may also independently establish guidelines for disciplinary action, which may include the termination of employment.[116,117] No regulatory requirement exists to report a driver who has tested positive to any regulatory or enforcement authority.

Not all drivers who are required to have a current medical certificate are also required to be drug tested, but the regulations pertaining to the physical qualification of drivers do address the use of controlled substances. Title 49 CFR 391.41(12)(i) states that a person is physically qualified to drive a commercial motor vehicle if that person "does not use a controlled substance identified in 21 CFR 1308.11 Schedule I,[118] an amphetamine, a narcotic, or any other habit-forming drug."

Preemployment Drug Tests. The Federal regulations state that an employer must not allow a new driver to drive or perform other safety-sensitive functions unless he or she has been tested for controlled substances and been found negative.[119] The employer may

[112] Referral, evaluation, and treatment regulations are given in 49 CFR 382.605(b).

[113] Title 49 CFR 40, Subpart O, describes the qualifications for a substance abuse professional.

[114] Title 49 CFR 382.507.

[115] Title 49 CFR 382.605(c)(2)(ii).

[116] Title 49 CFR 382.601(c).

[117] During the Safety Board's Driver Oversight hearing in January 2000, Peter Van Beek, Director of Safety, Coach USA, pointed out that States may restrict the actions of carriers in response to a positive drug test.

[118] Title 21 CFR 1308.11, Schedule I, lists controlled substances under the following families: opiates, opiate derivatives, marijuana derivatives, hallucinogenics, depressants, and stimulants. It does not list cocaine, but 49 CFR 391.41(b)(12)(i) covers this drug under the phrase, "any other habit-forming drug."

[119] Title 49 CFR 382.301(a).

waive the test, if, during the preemployment process, the employer had verified knowledge[120] that the driver participated in a controlled substance testing program within the previous 30 days, and (1) was tested and found negative within the past 6 months or (2) participated in a random controlled substances testing program for the previous 12 months with no violations in the past 6 months.

In addition to preemployment testing, the regulations specify that employers must test drivers:

- as part of a random drug testing program (49 CFR 382.305),
- after an accident of specified severity (49 CFR 382.303),
- when there is reasonable suspicion of drug and alcohol use (49 CFR 382.307),
- before being allowed to return to work after testing positive for a controlled substance or a concentration of alcohol above 0.04 (49 CFR 382.309), and
- as an unannounced followup after having tested positive for drugs previously (49 CFR 382.605 (b)(2)(ii)).

Employers are required to keep positive test results for alcohol (0.02 or greater) and controlled substances for 5 years, even if they go out of business. They are also required to retain for 5 years documentation of a driver's refusal to take a required alcohol and/or controlled substance test. Records of negative tests, canceled tests, and tests with results of less than 0.02 must be kept for at least 1 year.

Owner-operators must comply with the drug testing regulations by implementing "a random alcohol and controlled substances testing program of two or more covered employees in the random testing selection pool."[121] In general, owner-operators and carriers with only a few employees may join with other owner-operators and small carriers to form a pool. The pool is then administered by a testing facility and the "randomness" consists of selection of people from that pool. Therefore, an owner-operator meets the percentage requirements of 49 CFR 382.305 when the pool meets the requirement. This also means that an owner may never be tested, yet still be in compliance. Positive results are reported only to the employer, who in some cases is an owner-operator.

Obtaining Past Controlled Substance and Alcohol Test Results. Drug testing results may not be released without the permission of the driver, except to Federal, State, and local officials with authority over the employer or any of its drivers.[122] The driver may also request the information, and it may be released as part of legal action.[123]

Under 49 CFR 391.21, driver applicants must provide prospective employers with a complete and accurate list of previous employers from the last 3 years.[124] Applicants

[120] Title 49 CFR 382.301(c)(1).

[121] Title 49 CFR 382.103(b).

[122] Title 49 CFR 382.405(d).

[123] Title 49 CFR 382.405(g).

must also provide prospective employers with a list of all violations of motor vehicle laws from the last 3 years, as well as denials, revocations, or suspensions of licenses, permits, or privileges to operate a motor vehicle from the last 3 years.

Prospective employers are required, under 49 CFR 382.413,[125] to contact each applicant's previous employers 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. Employers must not allow new drivers to continue performing a safety-sensitive function after 14 days of hire without having made a good faith effort to obtain this information.[126] Employers must record efforts made in this regard for each driver's qualification file. Before contacting previous employers for this information, employers must obtain a written authorization from each driver applicant.

According to 49 CFR 382.405(f), previous employers must release a driver's drug testing records to a new employer upon receipt of a written request from the driver. However, there is no penalty for not complying with this regulation. The previous employers of the New Orleans busdriver did not respond to Custom's requests for driver history information, despite Custom having the driver's signed permission to do so.

As will be discussed shortly, two NPRMs were recently published that propose modifications to the process by which employers obtain past drug testing information regarding a driver. Final rules are expected later in 2001.

Past Safety Board Actions

Safety Study on Accidents Involving Drugs and Alcohol. The Safety Board has investigated numerous commercial vehicle accidents where drivers have used alcohol and illegal drugs (appendix J). In 1990, the Safety Board published a safety study that focused on the role of fatigue, drugs, alcohol, and medical factors in fatal-to-the-driver heavy truck crashes.[127] One hundred and eighty-two accidents involving 186 trucks were included in this study. From the toxicological tests, the Safety Board found that 33 percent of the fatally injured drivers tested positive for alcohol and other drugs of abuse.[128] The most prevalent drugs found in drivers who had tested positive were marijuana and alcohol (13 percent each), followed by cocaine (9 percent), methamphetamine/amphetamines (7 percent), other stimulants (5 percent), and codeine and phencyclidine (PCP) (less than 1 percent each). Stimulants (for example, cocaine and

[124] Title 49 CFR 391.21(b)(10). If the driver is applying to operate a commercial vehicle that requires a CDL license, 49 CFR 391.21(b)(11) requires that the driver provide the prospective employer a list of commercial vehicle operator employers for up to 10 years.

[125] Will also be required by 49 CFR 40.25, which takes effect August 2001.

[126] Title 49 CFR 40.25 gives employers 30 days after hiring an employee to obtain this information. As will be discussed shortly, a new NPRM proposes to modify 382.413 to make it consistent with 49 CFR 40.25.

[127] Safety Study NTSB/SS-90/01, Vol. 1.

[128] These drugs included over-the-counter and prescription stimulants, as well as illegal drugs such as cocaine and marijuana.

amphetamines) were the most frequently identified drug class among fatally injured truck drivers. As a result of this study, the Safety Board made several recommendations pertaining to drug screening and testing procedures to all levels of government, trucking associations, and the trucking industry, including the following to the FHWA:

> H-90-17
>
> Require preemployment alcohol and other drug tests on all drivers of commercial trucks with a gross vehicle weight rating of 10,000 pounds and above as a condition of employment.
>
> H-90-18
>
> Amend 49 *Code of Federal Regulations* 391.21, "Application for Employment" and 391.23, "Investigations and Inquiries," to include a complete review of alcohol and other drug abuse treatment history prior to employment as a commercial truck driver.
>
> H-90-20
>
> Require close supervision, including frequent, unannounced drug testing, for an appropriate period, of commercial truck drivers with an identified alcohol or other drug abuse problem. Such testing should be sufficiently frequent to create the likelihood of detection if the person uses drugs of abuse.

In 1991, Congress passed the Omnibus Transportation Employee Testing Act, which made alcohol and drug testing a requirement for those holding a CDL. Therefore, only drivers of vehicles above 26,000 pounds are subject to preemployment testing. Because of this Act, the Safety Board classified Safety Recommendation H-90-17 as "Closed—Acceptable Alternate Action" on April 20, 1994.

In January 1991, the FHWA responded that it planned to revise the physical examination form to include drug use treatment information, may amend the FMCSRs to require that motor carriers release drug test results and treatment history to prospective employers, and may require that prospective employers obtain this information before employment or use of a driver. Consequently, on April 20, 1994, the Safety Board classified Safety Recommendation H-90-18 as "Closed—Acceptable Action."

In February 1994, the FHWA passed the final rule for alcohol and drug testing, section 382.311, which states that a driver identified as abusing drugs or alcohol would be subject to at least six followup tests within the first 12 months upon returning to driving duties, with additional testing possible in the following 48 months. Consequently, on April 20, 1994, the Safety Board classified Safety Recommendation H-90-20 as "Closed—Acceptable Action."

Commercial Driver Oversight Public Hearing, January 2000. At the Safety Board's Commercial Driver Oversight Public Hearing in January 2000,[129] several witnesses expressed opinions on the adequacy of drug testing procedures, including (1)

the accessibility of drug testing results, (2) driver privacy, and (3) the general effectiveness of current regulations.

Several witnesses and panelists expressed concern that positive drug testing results are inaccessible and recommended that a drug registry be created to track previous positive drug tests. Currently, a company cannot release a former employee's drug testing results to a prospective employer without the employee's consent. In addition, drug tests done at the request of an employment agency or prospective employers (assuming the driver is not hired) do not have to be released because these parties are not considered previous employers.

Some offered the opinion that a drug test registry might conflict with a driver's right to privacy. A representative of FMCSA stated that he believed that more people are currently allowed access to a driver's CDL record than are allowed access to drug and alcohol testing records, but he believed that decision makers should have as much information as they can get to make an informed assessment of a driver's ability.[130] A representative of the National Private Truck Council stated that the rights of the individual must be weighed against inherent public good.[131]

Panelists also commented on the feasibility of the drug testing system. A representative of the Owner-Operator and Independent Drivers Association, Inc., stated that the trucking industry spends easily $600 million a year on drug testing programs, but he knew of no evidence supporting the claim that drugs and alcohol are a problem in trucking. He further stated that the gaps in the New Orleans busdriver's employment history should have been a "red flag" to the carrier that last employed him.[132] A representative of Coach USA voiced a different concern, stating that State laws have sometimes curtailed the company's safety efforts by prohibiting the termination of employees who test positive during drug tests.[133]

Recent Federal Initiatives

NPRM on the Safety Performance History of New Drivers. In 1996, the FHWA published an NPRM to specify minimum safety information that new and prospective employers must seek from former employers during the investigation of a driver's employment record.[134] The NPRM would modify 49 CFR Parts 382, 383, 390, and 391[135] to require that a motor carrier obtain a 3-year history of a driver's hours-of-service

[129] Docket number DCA-00-SH002.

[130] Robert Redmond, FMCSA, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[131] John McQuaid, National Private Truck Council, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[132] Todd Spencer, Owner-Operator and Independent Drivers Association, Inc., testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[133] Peter Van Beek, Coach USA, testimony, Commercial Driver Oversight Public Hearing, Safety Board. In an April 2001 interview, Mr. Van Beek mentioned that Wisconsin and Iowa have laws that prohibit the termination of an employee after one positive drug test.

[134] *Safety Performance History of New Drivers*, 61 FR 10548, March 14, 1996.

violations, accident record, violations resulting in an out-of-service order, alcohol and drug violations, and failures to undertake or complete a rehabilitation program recommended by a substance abuse professional. Previous employers would have 30 days to respond to a request, and drivers would have an opportunity to review and comment on the information provided.

The FMCSA requires only previous employers that are motor carriers to provide prospective employers with drug and alcohol information. Moreover, the NPRM only applies to drivers who operate commercial vehicles requiring a CDL, because only those drivers are subject to the drug and alcohol requirements described in Part 382. The NPRM also recommends modifications to Part 391 that would make it easier for motor carriers that operate commercial vehicles weighing between 10,000 and 26,000 pounds to better determine the fitness of their drivers. Although such employers would not be subject to all of Part 382, it would nevertheless require them to inquire whether a prospective driver had used a controlled substance or had failed to undertake or complete a recommended treatment program. These employers would not be allowed to assign a driver who had used alcohol or drugs illegally within the past 3 years to a safety-sensitive function until the driver had received the recommended treatment.

According to an FMCSA representative, due to other pressing regulatory issues that have surfaced since the release of the NPRM, the FMCSA does not expect to release a final ruling on the NPRM regarding the safety performance history of new drivers until sometime in 2002.[136]

Transportation Equity Act for the 21st Century. The Transportation Equity Act for the 21st Century (TEA-21) was enacted on June 9, 1998, as Public Law 105-178, and authorized funding for Federal surface transportation programs in highway engineering, highway safety, and transit until the year 2003. TEA-21 also enacted new legislation on certain aspects of highway safety. One new piece of legislation limits the liability of motor carriers complying with regulations regarding the furnishing and use of driver safety performance records. [137] Regulations that will become effective August 1, 2001, will require motor carriers to request records showing the safety performance history of drivers they plan to hire from the former motor carrier employers of those drivers. In addition, these regulations will require former employers to furnish the requested information. As mentioned previously, 49 CFR 391.21 and 382.405(f) already require similar, if not identical, actions and information. However, TEA-21 addresses the fear of liability for both former and potential employers by limiting a carrier's liability while protecting the driver's rights and privacy.[138]

Motor Carrier Safety Improvement Act of 1999. The Motor Carrier Safety Improvement Act of 1999 separated the OMC from the FHWA to create the FMCSA. It

[135] Part 382 concerns controlled substance and alcohol use and testing; part 383 concerns commercial driver licensing standards; and parts 390 and 391 concern driver qualifications.

[136] Valerie Height, FMCSA contact for the NPRM on the safety performance history of new drivers, telephone conversation, April 27, 2001.

[137] Section 4014, which modifies 49 U.S.C. 508.

also included several rule changes and directives. One such directive was for the Secretary of Transportation to conduct a commercial driver drug test results study within the next 2 years, to evaluate the feasibility and merits of:

- Requiring medical review officers or employers to report to the State that issued the driver's CDL all verified positive controlled substances test results on any driver subject to controlled substances testing under 49 CFR Part 382, including the identity of each person tested and each controlled substance found, and
- Requiring prospective employers, before hiring any driver, to query the State that issued the driver's CDL for records of any verified positive controlled substances test on that driver. [139]

NPRM on Drug and Alcohol Use and Testing. In April 2001, DOT published an NPRM preamble[140] that described the DOT's intent to make the drug testing requirements of its six administrations conform with the new 49 CFR 40, which was published in December 2000.[141] The preamble states that:

- The agencies would authorize, but not require, employers to conduct preemployment alcohol testing. However, an employer choosing to conduct preemployment alcohol testing under Federal authority must conduct it in accordance with the 49 CFR 40 requirements.
- Employers would be allowed to apply for a stand-down waiver, which would allow an employer to prohibit an employee from performing a safety-sensitive function until verification of a positive drug test result.
- Employers would be required to ask individuals applying for safety-sensitive positions whether they had ever tested positive on a preemployment test for an employer that subsequently did not hire them. If an applicant admits that he or she had a positive test or a refusal to test, the employer cannot use the applicant in a safety-sensitive position until successful completion of a return-to-duty process is documented.

[138] Public Law 105-178, Section 4014, states that, "No action or proceeding for defamation, invasion of privacy, or interference with a contract that is based on the furnishing or use of safety performance records in accordance with regulations issued by the Secretary may be brought against (1) a motor carrier requesting the safety performance records of an individual under consideration for employment as a commercial motor vehicle driver as required by and in accordance with regulations issued by the Secretary; (2) a person who has complied with such a request…."

[139] Motor Carrier Safety Improvement Act of 1999, Section 226.

[140] *Transportation Workplace Drug and Alcohol Testing Programs; Amendments to DOT Agency Rules Conforming to Department of Transportation Final Rule; Notices of Proposed Rulemaking; Common Preamble, 49 CFR part 382,* 66 FR 21492, April 30, 2001.

[141] Department of Transportation, *Procedures for Transportation Workplace Drug and Alcohol Testing Programs; Final Rule,* 65 FR 79462, December 19, 2000.

- A consortium or third party administrator (C/TPA) who directs an owner-operator or other self-employed individual to appear for a drug or alcohol test can make a refusal determination[142] if the individual does not appear and has no legitimate reason for doing so.

The FMCSA NPRM that followed the preamble proposed changes to its drug testing procedures, as described in 49 CFR 382, to conform with the new 49 CFR 40.[143] The FMCSA proposed to delete from 49 CFR 382 regulatory text regarding referral, evaluation, and treatment requirements; followup testing; inquiries for alcohol and controlled substances information from previous employers; and SAPs. Instead, the regulations would reference the appropriate provisions of 49 CFR 40. The NPRM also proposes new language to address changes to preemployment testing and the stand-down waiver provision and clarifies the regulations to allow employees to self-identify that they have an alcohol or drug problem without DOT consequences or penalties. A final rule is expected in August 2001.

Recent State Initiatives

In March 2000, the State of Oregon adopted legislation to supplement and strengthen Federal drug testing requirements. Among other things, it requires that the results of *any* positive drug test by an Oregon CDL driver be reported to the Oregon Department of Transportation's Driver and Motor Vehicle Services (DMV) so it can be entered in the driver's State driving record. This includes preemployment tests.

When a medical review officer reports a positive drug test, the DMV will advise the driver of the right to a hearing. If a hearing is requested, no entry will be made on the driver's commercial driving record pending the outcome of the hearing. Once the drug test result is entered into a driver's driving record, it remains there for 5 years. The DMV will release drug test information contained on a commercial driving record only with the written permission of the driver.

Although this legislation was adopted early in 2000, funding problems delayed implementation of the law until September 2000.[144] According to an Oregon State representative, from September 2000 to May 2001, 269 positive drug tests were reported to the DMV, most originating from random drug tests.[145] Twenty-five drivers have requested hearings because of positive drug tests.

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[142] A refusal determination would cause the individual to be removed from performing a safety-sensitive function. It is proposed that such a determination by a C/TPA be reported to the DOT or to the applicable DOT agency, which in the case of commercial drivers is the FMCSA. Presumably, the DOT would enforce the appropriate action.

[143] FMCSA, *Controlled Substances and Alcohol Use and Testing; Notice of proposed rulemaking (NPRM); request for comments, 49 CFR part 382,* 66 FR 21538, April 30, 2001.

[144] Because the Oregon attorney general ruled that the State could not use highway funds to support the new regulation, MCSAP funds were eventually used.

[145] Julie Santos, Driver Program Unit, Oregon Department of Transportation, electronic-mail correspondence, May 2001.

Analysis

Exclusions

In the New Orleans investigation, the Safety Board examined several factors that may have caused or influenced the severity of the crash, including the performance of the driver, the vehicle, the motor carrier, the highway elements, emergency management, and survival factors. The Safety Board has identified several human performance issues with regard to driver medical certification and the accessibility of health history information during preemployment screening. In addition, survival factors and bus crashworthiness issues similar to those uncovered in a recent Safety Board report on bus crashworthiness were also observed.[146] The investigation also found a highway infrastructure inspection and maintenance problem, although its presence did not influence the severity of the crash. These issues will be discussed in greater detail in later sections of this analysis.

At the time of the accident, visibility was clear and the pavement dry, making it unlikely that weather contributed to the accident. Within 2 minutes of the accident, emergency management services were notified, and they responded quickly and effectively. After the accident, Safety Board investigators inspected the motorcoach and found no mechanical problems likely to have contributed to the accident.

The Safety Board could find no procedural or operational problems with the motor carrier. The Safety Board's evaluation of the 1996 FHWA and CSS compliance reviews revealed that the differences in safety rating were due to methodological differences. This resulted in CSS noting numerically more violations than the FHWA, although, substantially, the same violations were found.

The Safety Board evaluated Custom's actions with regard to the medical certification process to determine whether it followed the regulations and whether it could have done more to prevent this accident. In compliance with the regulations, Custom required that the driver submit to a medical examination after he was physically unable to complete a scheduled run and after several subsequent hospital admissions. The driver passed the physical examination, which likely indicated to Custom officials that despite their concerns, the driver was physically fit enough to drive under the Federal regulations. Custom officials did not have a medical background and had no reason to doubt the conclusions of the examiner, especially since the Federal regulations state that all commercial driver examiners must be knowledgeable of the physical and mental demands associated with operating a commercial vehicle, must be knowledgeable of the regulations pertaining to driver fitness, and must be proficient in the use of the medical protocols necessary to adequately perform a commercial driver medical examination. Custom

[146] National Transportation Safety Board, *Bus Crashworthiness Issues,* Highway Special Investigation Report NTSB/SIR-99/04 (Washington, DC: NTSB, 1999).

clearly relied on the knowledge and opinion of the commercial driver examiner to determine whether the New Orleans driver was physically fit enough to continue driving.

The Safety Board believes that it might have been possible for Custom to better monitor the driver's absences, frequency of medical appointments, and observed medical symptoms to make further evaluations on his health. However, in the Safety Board's opinion, given the current state of the medical certification system, there was little that Custom could have done differently to avert the accident.

Custom complied with the Federal regulations pertaining to drug testing. The driver underwent one preemployment and three random drug tests while with Custom, and all tests were negative for drugs. It also attempted to obtain information about the driver from previous employers, but received no responses. Even had Custom persisted and eventually obtained information about the driver from a former employer, the information obtained would probably not have been useful in making a hiring decision since the driver only listed former employers that had not fired him for positive drug test results.

Therefore, the Safety Board concludes that the mechanical condition of the bus, the weather, emergency management, and motor carrier management did not contribute to or influence the severity of the accident.

The remainder of this analysis will address the medical certification, drug testing, bus crashworthiness, and highway issues identified during the investigation.

The Accident

The driver did not have control of the bus before the accident, resulting in the bus departing the right side of the roadway, striking the terminal end of a guardrail, traveling through a chain link fence, vaulting over a paved golf cart path, and colliding with the far side of a dirt embankment. Several pieces of evidence point to incapacitation as the reason the driver failed to maintain control of the bus. First, one of the witnesses, who had been in a van behind the motorcoach, stated that the bus initially drifted towards the center lane and almost hit a small green car, but then drifted back to the middle of the left lane. Shortly after this, the bus left its lane and departed the side of the road. She stated that the bus was not out of control, did not have its brakes applied, and did not waiver or swerve in any direction.

These observations of the motorcoach correspond with an eyewitness account by one of the bus passengers regarding the driver. According to this passenger, she recalled seeing the busdriver "slouch down," as if reaching for a soda. He came back up, but then went down again. The next thing she remembered was waking up in the hospital.

Postaccident toxicology tests of the driver revealed that the driver had used marijuana sometime before going on duty, which could have led to a loss of coordination, lethargy, and problem-solving difficulties. Diphenhydramine, a drug with both sedating

and performance-impairing effects, was also found in his blood. In addition, due to his hospitalization the night before, the driver spent only 6 hours at home before leaving for work. These factors suggest that the driver may have been fatigued before the crash. However, although the driver's health condition was likely exacerbated by the effects of marijuana and a sedating antihistamine, the witness' descriptions of the driver's actions and the bus' motion suggest medically related incapacitation, rather than falling asleep at the wheel, as the probable cause of this accident.

The observed behavior of the driver prior to the accident is consistent with his experiencing a significant reduction in blood flow to the brain, resulting in an impairment of consciousness. Consciousness was likely restored when the driver's head descended to a level below that of his heart. When the driver resumed an erect posture, with his head once again above the level of his heart, this likely led to a repeated reduction or interruption of blood flow to his brain, again leading to a loss of consciousness from which the driver did not recover until after the accident. The witnesses' description is less consistent with fatigue and falling asleep at the wheel, actions that are more associated with head nodding than a gross loss of body posture.[147]

The driver had several serious medical conditions, any of which could have caused a reduction or interruption of blood flow to the brain. Congestive heart failure is, by definition, an inability of the heart to maintain an adequate output of blood, and the driver had a history of recurrent episodes of congestive heart failure as a result of his dilated cardiomyopathy. In addition, cardiac arrest is common in individuals with dilated cardiomyopathy, frequently as a result of an abnormal heart rhythm, and the driver had experienced such abnormal heart rhythms without warning on previous occasions. Finally, dialysis treatment itself can leave an individual susceptible to episodes of low blood pressure (such as that experienced by the driver the night before the accident). This is made more likely with his use of medication, such as metoprolol, which reduces the capability of even a normal heart to compensate for reduced blood pressure.

The Medical Certification Process

The bus driver involved in the New Orleans accident had serious medical conditions that should have called into question his ability to safely operate a commercial vehicle. In this case, as in the Central Bridge accident and in the other accidents summarized in appendix H, the certification system failed to ensure even a cursory evaluation of the drivers' medical conditions. In those investigations, evidence was available to the examiners suggesting that such an evaluation was necessary to determine the fitness of the drivers.

[147] Physiological characteristics associated with fatigue include eyelid droop, blink frequency, head nodding, microsleep, and changes in electroencephalograph (EEG) readings. Studies have not mentioned a loss of body posture as a symptom of fatigue. *From* D.F. Dinges and M.M. Mallis, "Managing fatigue by drowsiness detection: Can technological promises be realized?," L. Hartley, ed., *Managing Fatigue in Transportation* (Oxford, U.K.: Pergamon) 209-229 and J.C. Stutts, *Sleep Deprivation Countermeasures for Motorist Safety,* NCHRP Synthesis 287 (Washington, DC: National Academy Press).

Federal regulations dictate the criteria by which interstate commercial drivers may be certified as medically fit to drive. Federal oversight of the biennial medical certification process conducted for an estimated 9 million licensed commercial vehicle drivers is accomplished almost exclusively by three full-time individuals in the FMCSA. State oversight of the medical certification process for interstate drivers is not mandated by Federal regulations, and the decision to certify a driver as fit to drive typically rests with the individual examiner performing the physical examination on the driver.

Medical Certification Process Issues

Despite suffering from potentially incapacitating medical conditions, the driver involved in the New Orleans accident was able to obtain a medical certificate by falsifying and omitting crucial health history information from the examination form. Even though the examiner was able to determine that the driver had heart disease, and possibly kidney disease, she believed that the available FMCSA guidance was insufficient to deny the driver a current medical certificate. Although several of the driver's physicians were aware of the driver's profession and were also aware of the seriousness of his illnesses, none reported their concerns to the State licensing agency. Other serious flaws found during the course of this investigation, and during the Safety Board's driver oversight hearing, called into question the effectiveness of the entire medical certification process.

The following section of the analysis describes the limitations of the current certification process, including:

- Adequacy of examiner qualifications.
- Adequacy of the Federal regulations.
- Adequacy and availability of nonregulatory guidance.
- Lack of a review process.
- Lack of a tracking mechanism for medical certification exams.
- Role of other responsible parties.
- Lack of strong certification enforcement.
- Accessibility of driver health history information.

Adequacy of Examiner Qualifications

The New Orleans driver received medical certification without a specialized or detailed medical evaluation, despite a history of serious disease. This was also true of the driver in the Central Bridge accident and of the drivers in the 15 other incidents noted in appendix H. Further instances of unfit drivers who obtained medical certificates are given in the Safety Board's 1990 report on fatigue, alcohol, other drugs, and medical factors in fatal-to-the-driver heavy truck crashes.[148] The Safety Board therefore concludes that the

[148] Safety Study NTSB/SS-90/01, Vol. 2.

failure of the medical certification process to remove unfit drivers is a systemic, not an isolated, problem.

Although the Federal regulations require medical examiners to be familiar with the physical and mental demands facing commercial drivers, the instructions that generally accompany the old examination form do not describe these demands. In addition, there are no training or certification courses for examiners, so it is unclear how familiar the New Orleans and Central Bridge examiners were with these demands. The new medical examination form should make it easier for examiners to become familiar with some of the demands of operating a commercial vehicle. However, the Safety Board is still concerned that some examiners might not possess the skills or background necessary to evaluate common medical problems facing commercial vehicle drivers.

An example of this concern is the inability of most chiropractors, who may serve as examiners in many States, to assess the possible effects of prescription drugs, nonprescription drugs, and drug interactions on commercial vehicle operators. The practice of chiropractic medicine specifically avoids the use of medications; chiropractors typically receive no formal training in pharmacology and are not licensed to prescribe medication. It is therefore unreasonable to expect that most doctors of chiropractic would know how certain medications affect driving performance.

The FAA's medical certification program stands in contrast to that for commercial drivers in both examiner qualifications and skills. All AMEs participating in the program are physicians, who must attend a 1-week seminar on the FAA's medical certification program and take a refresher course every 3 years. In addition, they are kept abreast of new regulations and guidelines through a quarterly newsletter.

Since not all commercial driver examiners have a background in drugs and drug interactions, or are familiar with the mental and physical demands of commercial driving, or are knowledgeable about the regulations and accompanying guidance material, the Board concludes that individuals who are authorized to perform medical examinations and certify commercial drivers as fit to drive may lack knowledge and information critical to certification decisions. Consequently, drivers with serious medical conditions may not be evaluated sufficiently to determine whether their condition poses a risk to highway safety.

Adequacy of the Federal Regulations

The accident driver had been diagnosed with kidney failure in July 1998 and had been receiving hemodialysis since December of that year. His medical records indicate that he failed to show up for dialysis treatments at least four times and that he terminated treatment prematurely on two occasions. One such occasion occurred the night before the accident, when the driver terminated hemodialysis treatment prematurely against medical advice. Although a person with kidney failure that is well controlled may experience few, if any, debilitating effects from the disease, a person with poorly controlled kidney failure can suffer symptoms ranging from fatigue and dizziness to seizures and coma.

Kidney failure and other potentially debilitating diseases are not directly addressed in the regulations regarding the medical certification of commercial drivers, although the health history section of the medical examination form does provide a check box for kidney disease. A general clause requires disqualification for "any other condition, which is likely to cause loss of consciousness or any loss of ability to control a commercial motor vehicle,"[149] but this requires the examiner to make a subjective assessment of the driver's condition. Thus for a driver with significant diseases such as kidney failure, liver failure, breast cancer, gastrointestinal disease, or malignant melanoma, the regulations do not provide the examiner with specific, unambiguous language on which to deny medical certification. In addition, the regulations state that an examiner shall "be knowledgeable of the specific physical and mental demands associated with operating a commercial motor vehicle…,"[150] but they do not define what constitutes "being knowledgeable."

One of the primary reasons for the new commercial driver examination form was to have it better reflect current medical knowledge, terminology, and practice. Yet the new form is still based on regulations that have not been updated substantially in 30 years.[151] As a result, the form and the regulations do not reflect new knowledge in areas such as monocular vision (problems affecting one eye), kidney disease, sleep apnea, and fatigue. Strict application of the regulations could result in the disqualification of fit drivers and the certification of unfit drivers. Furthermore, examiners may be hampered in their ability to disqualify drivers that have medical problems mentioned in the new examination form but not specifically covered in the current regulations.

Although the FAA's medical fitness and certification criteria for airmen can appear as nonspecific as the criteria for commercial drivers (for example, kidney disease and cancer are also not specifically mentioned), the medical certification rules and procedures in place at the FAA make this less of a concern. For example, AMEs must also undergo certification training, are given a handbook containing examination procedures and guidance material, and are apprised of changes to the regulations and guidelines through a quarterly medical bulletin. In addition, examination forms are reviewed to better ensure that all certified airmen meet a consistent level of fitness.

In contrast, commercial driver examiners are not required to attend a training or certification program, are not given a handbook of examination procedures, and do not receive regular updates of guidance information. Examination forms are not reviewed for completeness or consistency with the regulations and guidance information. Factors such as these make it all the more important that the regulations on commercial driver fitness be updated to reflect current knowledge and include more specific information on potentially disqualifying conditions.

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[149] Title 49 CFR 391.41(b)(8).

[150] Title 49 CFR 391.43(c)(1).

[151] In contrast, the "Medical Standards for Drivers" section of Canada's *National Safety Code*, which has been voluntarily adopted by the provincial and territory licensing agencies as the minimum fitness requirement for drivers, is reviewed every 2 years by physicians representing each province and territory to keep it current with the medical literature.

As the New Orleans accident clearly demonstrated, the regulations, as written, often do not permit examiners to determine whether drivers with common, potentially debilitating medical conditions should be issued a medical certificate. Coupled with the lack of certification training and the lack of knowledge about available guidance, this could result in some examiners incorrectly certifying unfit drivers. The Safety Board concludes that the regulations on the medical certification of commercial drivers do not reflect current medical knowledge and information and can be ambiguous regarding the conditions that may constitute disqualification.

Adequacy and Availability of Nonregulatory Guidance

Although the FMCSA had medical guidance information available on its Web site at the time of the New Orleans accident and provided guidance material to examiners who contacted its staff, the New Orleans examiner was apparently unaware of the additional guidance material. As a result, she may not have had the information she needed to adequately judge the health of the accident driver. The New Orleans crash clearly illustrates that some examiners may lack the proper resources to judge the fitness level of commercial vehicle drivers and may not know where to obtain it.

During the Safety Board's Commercial Driver Oversight Public Hearing, one witness testified that although examiners are expected to be knowledgeable of the regulations and guidance regarding commercial drivers and of the physical and mental requirements of the profession, some examiners do not know that the regulations or guidance exists.[152] Further, even examiners who are aware of the regulations and guidance may not be aware of new information or changes to the material. The witness cited a study by the AAAM monitoring the performance of examiners, which indicated that, in some States, nearly half of the exams were done incorrectly.[153]

Although not a Federal requirement, the old commercial driver physical examination forms normally include instructions on the back regarding how to perform and record the medical examination. The new form created by the final rule published October 2000 includes a more thorough health history section that also prompts the driver to provide information on medication use. It contains the instructions and guidelines next to each item in the medical evaluation section, a section describing the type of duties that a driver might face as a result of his/her employment and an attached section containing the pertinent regulations and detailed instructions. However, because these instructions and guidelines are not a required part of the medical examination form, the possibility still exists that not all examiners will benefit from having this information. In addition, the final rule published in October 2000 notes that "existing forms may be used until November 6, 2001." The old form is not as informative and the Safety Board is uncertain how this "sunset date" for the old form will be enforced, since no Federal requirement exists for anyone other than the examiner to see the form.

[152] Dr. Natalie Hartenbaum, Occumedix, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

[153] Association for the Advancement of Automotive Medicine, *Prototype State Medical Review Program: Final Report,* DTFH 61-90-C-00098 (Washington, D.C.: Federal Highway Administration, 1995).

Nevertheless, the Safety Board is encouraged by the progress that is being made to make the guidance information more accessible and to inform examiners of the occupational hazards of commercial driving. Under most situations, the medical examination instructions included with the new form may provide a satisfactory amount of information for examiners to evaluate drivers properly and a source of individualized guidance when available. Therefore, the Safety Board concludes that the new medical certification form for commercial drivers is a substantial improvement over the previous version and, if used in its entirety and in conjunction with attached instructions, will aid examiners in making certification decisions.

During the Safety Board's Commercial Driver Oversight Public Hearing, a witness stated that FMCSA staff members are "receptive and available for questions and guidance when an examiner knows to call them."[154] The FMCSA has made the medical advisory criteria available on its Web site and has included the criteria in the instructions for the new form, along with a telephone number. However, the FMCSA Driver and Carrier Operations Division has only one part-time and two full-time registered nurses on the medical team, who manage virtually the entire interstate medical certification process for an estimated 9 million commercial vehicle drivers.

The Safety Board is encouraged by the attempts of the FMCSA to increase the dissemination of guidance to potential examiners through its Web site and the new medical examination form. However, the New Orleans accident, as well as other investigations that the Safety Board has conducted, have demonstrated that not all examiners are aware of such information. The Safety Board concludes that not all individuals who are authorized to perform medical examinations and certify commercial drivers as fit to drive are made aware of information sources that could assist them with certification decisions.

Lack of a Review Process

The medical examination forms completed for the drivers in the New Orleans and Central Bridge crashes noted significant medical histories, but received no further evaluation. The examiner of the New Orleans driver said that the driver was on medications for congestive heart failure, but she did not require further evaluation or disqualify him from driving. In the Central Bridge case, the physician noted the driver's diabetes and his history of angioplasty, but she did not require a twice-yearly reevaluation of his diabetes, as mandated by State regulations, or additional evaluations of the driver's heart condition. In addition, the Central Bridge driver did not complete the driver's history section of his examination form, possibly allowing him to avoid questions about his heart condition.

The current Federal medical certification program does not require that medical certificates or examination forms be reviewed by State licensing authorities or others once issued. A review process might have led to the detection of the inconsistencies and omissions present on the Central Bridge and New Orleans medical examination forms.

[154] Dr. Natalie Hartenbaum, testimony, Commercial Driver Oversight Public Hearing, Safety Board.

Concerns regarding the lack of a review process prompted the FHWA to require the six States participating in its pilot study to collect and review the medical examination forms of commercial vehicle drivers as part of the study. This requirement gave the State licensing authorities an opportunity to monitor the fitness of commercial drivers at the time of license application or renewal. Secondly, it allowed the licensing authorities to evaluate the quality of the medical certification process and the completeness and accuracy of the medical form. The results of the pilot program showed that the reviews uncovered several incomplete or otherwise unacceptable examination forms. The reviews also identified a number of applicants who did not meet the Federal or State fitness standards and who were subsequently disqualified. It is likely that these applicants would have obtained their CDLs and would have continued driving under the current Federal medical certification program.

The NPRM for merging the CDL and the medical certificate, which is expected in 2002, is anticipated to propose several sweeping changes aimed at creating a more complete driver and examiner oversight system. The Safety Board is encouraged by the results of the pilot tests that drove the release of the ANPRM and the formation of a Negotiated Rulemaking Advisory Committee and hopes that the FMCSA moves quickly and aggressively towards enacting a complete and effective medical certification system.

Louisiana does have a review process. Licensing agencies in the State review and track the latest medical examination form of drivers who are renewing their CDLs. However, because Louisiana requires that the CDL be renewed every 4 years, compared to every 2 years for the medical certificate, only every other medical examination form is reviewed and tracked by the licensing agency. The driver involved in the New Orleans accident renewed his CDL in November 1995 and submitted his latest medical examination form at that time. His health apparently began deteriorating after his last CDL renewal.[155] Since he was not scheduled to renew his CDL until November 1999, the licensing agency did not have the results of his April 1998 and August 1998 commercial vehicle driver physicals.

In comparison, California, Arizona, and Hawaii currently require that commercial drivers of vehicles heavier than 10,000 pounds submit their full medical examination form to the licensing agency for review and tracking. California and Arizona require that the form be submitted every 2 years, whereas Hawaii requires that the form be turned in during CDL issuance, renewal, or transfer.[156] The District of Columbia and Indiana require that CDL holders submit the examination form every 2 years for review and tracking. Nevada requires intrastate CDL drivers to submit their examination forms.[157] At least 11

[155] The busdriver's August 1997 medical records indicate that the busdriver had a 2-year history of high blood pressure and borderline diabetes.

[156] In Hawaii, a CDL is current for 6 years.

[157] *From* the Association for the Advancement of Automotive Medicine's 1997 report to the FHWA, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs.* Wyoming requires that an examination form be submitted if it is known that a driver has a medical condition that might potentially impair his/her driving. Review and tracking information was not obtained for Alabama, Alaska, Oklahoma, and Pennsylvania.

other States require drivers to submit a copy of their medical certificates to the licensing agency (see appendix D), but because the certificate only contains waiver information and the examiner's endorsement and not the actual examination results, a full verification of the information that resulted in the certification is not possible.

One of the most telling pieces of information about the New Orleans driver's last medical examination was the date it was performed. Although the driver had a current medical certificate, his condition was such that Custom nevertheless required him to have another examination performed. Had this form been submitted to the State for review, the shortened renewal cycle would probably have been noticed and might have resulted in further scrutiny. Although a few States collect and review commercial driver examination forms more frequently than Louisiana, none has a system in place that could identify whether a driver had an examination performed *within* the 2-year medical certification cycle. The swift deterioration of the New Orleans driver's medical condition illustrates that such a system is necessary for a reviewing agency to identify drivers who are potentially unfit. The FAA has such a system in place, with AMEs submitting every examination form to the Division of Aeromedical Certification. Therefore, the Safety Board concludes that the absence of a process under which every driver medical examination form is reviewed greatly increases the likelihood that medical certificates will be issued inappropriately, thereby allowing medically unqualified commercial vehicle drivers to continue driving.

Other characteristics of the current commercial driver medical certification system support the need for a review process. During a commercial driver examination, examiners are placed in the difficult position of disqualifying some drivers, thereby depriving the drivers of their livelihood. This can be especially difficult for examiners who are also the drivers' personal physicians. In addition, fear of legal action from drivers may exert further pressure on examiners to certify drivers with serious conditions that the regulations do not clearly establish as disqualifying, instead of requiring additional evaluation or disqualifying such drivers. A system of comprehensive review could eliminate some of the pressure on examiners, potentially allowing them to defer difficult cases; the FAA does this in its medical certification process. Finally, any agency designated to review medical examinations could serve as an effective source of guidance for examiners who have questions about a particular applicant.

The Lack of a Tracking Mechanism for Medical Certification Exams

When filling out his examination form, the New Orleans busdriver did not complete the health history section truthfully. In the check boxes provided, the driver indicated that he did *not* have a history of kidney or cardiovascular disease. He also told the examiner that he did not suffer from heart problems. When the examiner asked whether he was taking any medication, his response prompted her to ask him about heart problems again. Only then did he tell her that he indeed had a history of high blood pressure and congestive heart failure. The busdriver involved in the Central Bridge accident also failed to disclose his medical condition to the examiner. In the health history section of the examination form, the driver failed to indicate (either "yes" or "no") whether he had a history of high blood pressure, heart disease, or vision problems. In

addition, the driver failed to note past treatments for congestive heart failure and did not list his cardiac medications or his blood thinner. Any of this information might have helped the physician better establish the seriousness of the driver's medical conditions.

In each of these cases, the examiner issued the driver a medical certificate. However, even had the examiner denied the medical certificate, no regulation or mechanism existed to prevent the driver from simply visiting another examiner. Because such visits are not tracked, it is impossible to know whether a driver has, in fact, been denied medical certification by another examiner.

The potential for an unfit driver to visit multiple examiners until one is found that will certify his or her health was a concern voiced by both physicians and licensing administrators during the Commercial Driver Oversight Public Hearing. "Doctor shopping" is possible because the current Federal regulations do not require examiners to contact a driver's employer or the State licensing authority if a driver is found medically unqualified to operate a commercial vehicle.[158] Therefore, only the driver and that administering examiner know whether the driver passed the fitness exam. Again, because of the lack of a tracking mechanism, the frequency of "doctor shopping" cannot be estimated reliably, but there are several reports of its occurrence.[159] The Safety Board therefore concludes that, in the absence of a mechanism to track all medical certification examinations, a commercial driver with a serious medical condition who is denied a medical certificate by one examiner may be able to obtain a medical certificate from another examiner, thus subverting the purpose of the medical certification process.

The current medical certification process for commercial vehicle drivers stands in contrast to the FAA's certification system. The examination form used by the FAA can be obtained only through the Division of Aeromedical Certification. Each form is stamped with a unique number and must eventually be turned into the division regardless of whether it is used for an examination (for example, even if an examiner spills coffee on the form, making it unusable, it must still be turned in). In addition, the FAA maintains a registry of AMEs. The FAA also verifies, reviews, and tracks the information on every examination form. By tracking each form and by reviewing and maintaining a registry of examiners, the FAA has effectively eliminated the threat of "doctor shopping."

The Role of Other Responsible Parties

The need for guidance extends beyond examiners to other health care professionals and individuals who may encounter commercial vehicle drivers between physical examinations. In the 2 years before the accident, several physicians and health

[158] Dr. Natalie Hartenbaum testified that examiners at American College of Occupational and Environmental Medicine (ACOEM) seminars on DOT medical certification frequently asked whom they should notify upon examining a driver not meeting fitness requirements. (National Transportation Safety Board public hearing, Highway Transportation Safety Aspects of the North American Free Trade Agreement, Los Angeles, California, October 20 through 22, 1999.)

[159] Some sources describing incidences of "doctor shopping" are N.P. Hartenbaum, *The DOT Medical Examination* (OEM Press: USA, 1997); S. Twedt, "Rigged for Disaster," *Pittsburgh Post Gazette*, January 16, 2000; and testimony, Commercial Driver Oversight Public Hearing, Safety Board.

care providers treated the New Orleans busdriver for heart failure and kidney failure. The driver was in the hospital as often as six times a week for hemodialysis treatment and dobutamine therapy. Many of them knew the busdriver's profession, but apparently no one attempted to contact his employer or the State licensing authority concerning the busdriver's fitness to operate a commercial vehicle. Louisiana has a procedure in place for physicians to report unfit drivers; as mentioned previously, it also offers immunity from criminal or civil action to any health care provider who files such reports in good faith.

In August 1998, Custom required the driver to have a medical examination because of concerns about his fitness to operate a bus. However, Custom did not, and was not required to, report his condition to any regulatory authority. The health care providers that treated the driver during his frequent visits to the hospital knew he was a busdriver and were aware of his life-threatening medical conditions, but none reported, or were required to report, any concerns they might have had to any regulatory authority or to the driver's employer. Similarly, the personal physician of the driver involved in the Central Bridge accident had expressed serious concerns about the driver's condition and medication adversely impacting his ability to safely perform his job, but was not required to report his concerns, and apparently discussed them only with the driver. The Safety Board concludes that many drivers whose occupations and serious medical conditions are known to their employers, health care providers, and others are never reported, thereby potentially endangering the drivers themselves and others.

Although Louisiana has an immunity law that protects physicians who report unfit drivers, it does not have one for other people who report unfit drivers in good faith. As shown in appendix G, at least 19 States do not offer immunity to physicians, and at least 30 do not offer immunity to those who report an unfit driver in good faith but are not physicians. Because of the critical importance of such reports in ensuring highway safety, the Safety Board believes that the National Conference of State Legislatures[160] should inform State legislatures about this accident and make them aware of the importance of establishing immunity laws for the good-faith reporting of potentially impaired commercial drivers by all individuals and of ensuring that the medical community and the commercial transportation industry are familiar with these laws.

Lack of Strong Certification Enforcement

During his medical examination in August 1998, the New Orleans driver attempted to mislead the examining physician by stating in the health history section of the examination form that he did not have cardiovascular disease or kidney disease. The driver's actions indicated that he clearly understood a full disclosure of his conditions would likely lead to a denial of his medical certification. However, it is also clear from the driver's actions that the penalties for intentionally making false statements on the examination form were either not known to the driver or did not serve as an effective

[160] The National Conference of State Legislatures provides State lawmakers with research and consulting services, publications, meetings, and seminars. The organization's Web site <http://www.ncsl.org> states that the organization serves as a conduit for State lawmakers to communicate with one another and share ideas and assists States in representing their common interests before Congress, the administration, and Federal agencies.

deterrent. The driver may have also known that an enforcement action was remote, given that this examination form did not need to be submitted to the Louisiana Division of Motor Vehicles.

According to 49 CFR 390.37, making fraudulent or false statements on any application, certificate, report, or record described in that particular subchapter of the regulations (such as the commercial driver medical examination form) may result in civil or criminal penalties. As noted previously, the regulations do not mention any other penalties that apply specifically to the falsification of the medical examination form, such as the revocation of the medical certificate or the suspension of a driver's CDL. The data compiled by the FMCSA on enforcement action only mention monetary penalties. Data are not readily available regarding whether any of the cited drivers had their medical certificate revoked or their license suspended or were disqualified from driving. This contrasts with the regulations that apply to the FAA's medical examination form, for which there are specific penalties for making intentionally false statements. Airmen found to have made intentionally false statements on the form could have their licenses revoked if the FAA considers the offense serious.

During their investigations, Safety Board investigators have occasionally encountered a driver who was carrying a forged medical certificate, such as in the Walker, California, and Middletown, New Jersey crashes (see appendix H). This is possible because the examination form is readily available from a variety of sources (for example, the new certificate and form can be ordered from a vendor), and no procedure or information source exists to validate the medical certificate itself or the name of the examiner who signed it.

The absence of a procedure or information source to determine the validity of a current medical certificate has limited the effectiveness of MCSAP safety inspections. As noted previously, in most cases, MCSAP safety inspectors only check whether a driver has a current medical certificate, whether a driver meets medical exemption requirements, and whether the carrier has included a current copy of a driver's medical certificate in the file. In most cases, inspectors can only determine whether a driver is unfit to operate a commercial vehicle when the driver clearly requires a medical exemption but does not have one; it is not surprising that only the lack of a proper SPE certificate or exemption, or the absence of corrective lenses or a hearing aid when one is required by a driver's medical certificate, can result in the driver being placed out of service under Federal law.[161, 162]

Some States, such as California and Arizona, not only review and track commercial driver examination forms, but have also merged the CDL with the medical certificate. Both California and Arizona allow the licensing agency to disqualify a commercial driver if the driver does not posses a current medical examination form or if the agency has concerns about the accuracy or completeness of the form. Because law

[161] *North American Standard Out-Of-Service Criteria*, 2001.

[162] State laws may include other violations that could result in the driver being placed out of service.

enforcement officers in these States are able to check on a driver's license status during inspections and routine stops, they are able to prevent disqualified drivers from driving, effectively keeping potentially unfit drivers from operating commercial vehicles. Unfortunately, this enforcement program works only for commercial drivers licensed in California and Arizona, because most other States have not implemented a medical examination form review process and have not linked driver fitness with the CDL.

The Safety Board concludes that enforcement authorities cannot, in most instances, determine the validity of a medical certificate during safety inspections and routine stops because of the absence of procedures or information sources to validate the medical certificate itself. The Safety Board further concludes that the inability to authenticate the information on a medical certificate hampers enforcement authorities in their ability to identify unfit drivers and place them out of service.

Toward an Effective Medical Certification Program

Based on the New Orleans accident and on other accidents involving drivers with known serious medical conditions who were still able to obtain medical certificates, the Safety Board finds a number of elements to be critical to the establishment of an effective medical certification program for commercial drivers, as discussed below:

Qualified Examiners. Examiners should have specific training for performing examinations to determine the fitness of commercial drivers; in addition, examiners required to be the certifying authority should have a background permitting them to adequately evaluate all common medical conditions or medications for their potential to impair a driver.

Medical Certification Regulations. The regulations are updated regularly to permit trained examiners to clearly determine whether to issue a medical certificate to drivers with certain common medical conditions.

Adequate Guidance. Potential examiners should receive guidance that permits them to perform a physical examination adequate for making informed certification decisions on a commercial driver. Examiners, if required to be the certifying authority, are given guidance regarding the certification of medical conditions not covered by the regulations. Examiners should have a readily identifiable source of information for specific questions in which the guidance may be inadequate.

Review Process. Completed examination forms should undergo at least one review by a trained individual other than the examiner so that certifications issued in error are corrected or prevented. All applications or completed medical examinations on commercial drivers are recorded and reviewed so that comparisons may be made of every subsequent application or examination. This comparison ensures that significant changes in medical information provided through the medical certification system can be adequately evaluated.

Identification of Invalid Certification. Law enforcement will be able to establish, during safety inspections and routine stops, that a commercial driver's medical certification is valid.

Removal of Uncertified Drivers. Upon determining the validity of a certificate, law enforcement can disqualify a driver from operating a commercial vehicle. The driver will not be permitted to return to commercial driving until receiving a medical evaluation that establishes that the driver has no potentially impairing or incapacitating medical condition.

Reporting of Medical Conditions. Drivers who are found by their employers, their health care providers, or others to have developed a potentially impairing or incapacitating condition between required medical certification examinations will be reported to the appropriate regulatory authority. All potential reporters of such information are aware of and are able to utilize procedures for such reports. All medical conditions discovered through such a reporting process will be adequately evaluated.

The severity of the New Orleans busdriver's medical condition might have been rare, but the situation is not unique. The ease in which the current medical certification procedures can be bypassed virtually assures that some unfit drivers will find their way behind the wheel of a commercial vehicle, endangering themselves and the motoring public. To curb this danger and to better accomplish the intent of the medical certification process, the Safety Board believes that the FMCSA should develop a comprehensive medical oversight program for interstate commercial drivers that contains the following program elements:

- Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers.
- A tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed.
- Medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate.
- Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations.
- The review process prevents, or identifies and corrects, the inappropriate issuance of medical certification.
- Enforcement authorities can identify invalid medical certification during safety inspections and routine stops.
- Enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place.

- Mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, health care providers, and employers are aware of these mechanisms.

The Safety Board is aware that all of the State licensing agencies have adopted the Federal requirements for interstate commercial driver fitness for their intrastate commercial drivers. The Board recognizes that the issues discussed here apply fully to intrastate drivers as well. The American Association of Motor Vehicle Administrators (AAMVA) represents State and provincial officials in the United States and Canada who administer and enforce laws pertaining to the motor vehicle and its use. The programs administered by the AAMVA, such as the Commercial Driver License Information System and the International Registration Plan,[163] encourage uniformity and reciprocity among the States, other levels of government, and the private sector. The Safety Board recommends that AAMVA urge its member States to develop a comprehensive medical oversight program for intrastate commercial drivers containing the features discussed in the recommendation to the FMCSA.

Drug Testing Procedures

When the New Orleans driver applied for the position at Custom, he listed his former positions with Hertz Car Rental and Turner's Bus Service, but did not mention positions held with The Regional Transit Authority and with Westside Bus Service, where he had been dismissed for testing positive for marijuana. He explained the gaps in his employment record by stating that he was a musician in a brass band during those times.

Custom sent requests for information to both Hertz Car Rental and Turner's Bus Service, both of which were authorized by the busdriver. However, Custom did not receive a response from either company. While with Custom, the driver underwent a preemployment and three random drug tests during his tenure with negative results.

Three problems are evident from the events described above. First, the driver was able to avoid negative scrutiny from Custom by omitting parts of his employment history. Second, although Custom obtained the driver's permission to investigate his employment history, it did not receive a response from any of the former employers it contacted. Third, no enforcement mechanism or incentive exists to compel previous employers to comply with information requests.

Although the 1996 NPRM on new driver safety performance history proposes that prospective employers expand their inquiries into a driver's background, it is still possible for drivers to hide positive drug test results in the manner of the New Orleans driver. Title 49 CFR 391.21 requires drivers to provide carriers with the names and addresses of employers from their previous 3 years of employment, including their employment dates

[163] See <http://www.aamva.org> for an explanation of these programs.

and reasons for leaving. However, drivers are unlikely to provide such history when it might limit their opportunities for employment. Additionally, enforcing this requirement is difficult because the only way to detect a false employment history would be to obtain employment information from someone other than the driver.

The April 2001 NPRM on workplace drug and alcohol testing programs issued by the FMCSA proposes that employers ask individuals applying for safety-sensitive positions whether, in the past 2 years, they had ever tested positive on, or had refused to test for, any preemployment drug or alcohol test administered by an employer who subsequently did not hire them. The Safety Board does not believe this self-reporting method will effectively identify problem drivers because drivers are unlikely to provide information that may limit their employment opportunities. Because employees are unlikely to divulge positive drug test results and because prospective employers may not have sufficient employment history or the authority to obtain information from previous employers regarding positive drug tests, the Safety Board concludes that results of tests for controlled substances performed under the DOT testing guidelines, even when positive, are often not available to prospective employers, making it difficult for them to make well-informed hiring decisions.

Drivers who own and operate their own commercial vehicles (owner-operators) are required by the regulations to comply with all the requirements stipulated for both drivers and employers. Owner-operators are thus in the precarious position of overseeing their own substance abuse program. No Federal requirements exist for reporting drivers who have tested positive for controlled substances to any regulatory or certifying authority. Therefore, the only entity with information regarding a positive test is the employer, who, if an owner-operator, may also be the individual being tested. Such an arrangement requires owner-operators who are abusing controlled substances to remove themselves from driving if they test positive for such substances. It seems highly unlikely that those owner-operators who are not complying with the regulations regarding the use of controlled substances will comply with other sections of the drug testing regulations. Therefore, the Safety Board concludes that the current Federal drug testing regulations cannot adequately identify owner-operators who abuse controlled substances.

A database that records positive drug and alcohol test results and refusal determinations for all commercial drivers would provide an effective way for both employers and certifying authorities to verify and evaluate the drug test history of all commercial drivers. Such a database would allow employers to make more informed hiring decisions and would allow certifying authorities to determine whether a driver has a potentially disqualifying medical condition regarding substance abuse. Therefore, the Safety Board believes that the FMCSA should develop a system that records all positive drug and alcohol test results and refusal determinations that are conducted under the DOT 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.

Bus Crashworthiness

In the New Orleans accident, many of the passengers were thrown forward from their seating compartments and later found lying on top of other passengers near seat row four. In addition, EMS personnel found nine passengers and the driver lying outside the vehicle. In all, 22 passengers were fatally injured as a result of this accident. The loss of survivable space was apparent for some seating positions; in others, survivable space was present and could have been utilized had the passenger been retained within the seating compartment.

Investigators determined, based upon the driver's injuries and the distance that he was thrown from the bus, that the driver was not wearing a seat belt at the time of the accident. The driver's seat was the only belted position on the motorcoach and is the only position required by Federal regulations to have a seat belt.

From its investigations of past motorcoach accidents, the Safety Board has become concerned that motorcoach passengers are not adequately protected in collisions. Although *Federal Motor Vehicle Safety Standards* exist for large school buses relating to passenger seating, crash protection, and body joint strength, no similar standards apply to other types of large buses, including motorcoaches. In other words, no Federal regulation or standard requires that large buses sold or operated in the United States be equipped with active or passive occupant protection (other than for the driver).

In September 1999, the Safety Board published a report titled *Bus Crashworthiness Issues* [164] that addressed these concerns and examined 36 motorcoach accidents investigated by the Board from 1968 through 1997. Based on the investigations and current knowledge of occupant protection systems, the Safety Board concluded that one of the primary causes of preventable injury in motorcoach accidents involving a rollover, ejection, or both is occupant motion out of the seat compartment during a collision when no intrusion occurs into the seating area. In addition, the Board concluded that the overall injury risk to occupants in motorcoach accidents involving rollover and ejection could be reduced significantly by retaining the passenger in the seating compartment throughout the collision.

In the bus crashworthiness report, the Safety Board issued five recommendations to improve the structure and safety of motorcoaches. The Safety Board notes that the improvements identified in this report also apply to the New Orleans accident. Accordingly, the Board is reiterating Safety Recommendations H-99-47 through H-99-51 from the bus crashworthiness report to the National Highway Traffic Safety Administration (NHTSA):

[164] NTSB/SIR-99/04.

H-99-47

In 2 years, develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers.

H-99-48

Once pertinent standards have been developed for motorcoach occupant protection systems, require newly manufactured motorcoaches to have an occupant crash protection system that meets the newly developed performance standards and retains passengers, including those in child safety restraint systems, within the seating compartment throughout the accident sequence for all accident scenarios.

H-99-49

Expand your research on current advanced glazing to include its applicability to motorcoach occupant ejection prevention, and revise window glazing requirements for newly manufactured motorcoaches based on the results of this research.

H-99-50

In 2 years, develop performance standards for motorcoach roof strength that provide maximum survival space for all seating positions and that take into account current typical motorcoach window dimensions.

H-99-51

Once performance standards have been developed for motorcoach roof strength, require newly manufactured motorcoaches to meet those standards.

NHTSA has responded favorably to these recommendations. With regard to H-99-47 and -48, NHTSA stated in March 2000 that it would consider whether seat belts would be beneficial in motorcoaches. However, NHTSA also noted that since only about five passengers are killed in motorcoach accidents each year, it would be inappropriate to reduce funding for other programs that have the potential to save many more lives to concentrate on motorcoach issues. NHTSA acknowledged that the crashworthiness issues raised by the Safety Board deserve to be analyzed and said that it would examine opportunities to share the cost of research with motorcoach manufacturers.

With regard to H-99-49, in August 2001, a NHTSA representative stated that the agency is working on testing procedures for ejection mitigation in light vehicles. The procedures take into account window glazing as well as advanced designs for side curtains/airbags. NHTSA further stated that once it has an ejection mitigation testing procedure that works for light vehicles, the agency plans to use it as a starting point for investigating ejection mitigation in motorcoaches.

With regard to H-99-50 and -51, NHTSA responded that it was unaware of recent incidents where roof crush was a predominant factor in the injuries to occupants in motorcoaches.[165] It stated that although the increased sizes of side windows may lead to motorcoaches having fewer side support columns to support the weight of the motorcoach during rollovers, the material and manufacturing processes have improved in the 30 years since the Safety Board last reported an accident in which roof strength was a factor in occupant injuries. However, contingent upon the availability of resources, NHTSA stated that it will begin assessing the possibility of requiring motorcoaches to meet the same or similar standards for roof crush as do large school buses.

In April 2001, the Safety Board acknowledged that NHTSA had initiated a research plan to address Safety Recommendations H-99-47 through -51. Accordingly, pending an update on NHTSA's activities in this area, the Safety Board has classified Safety Recommendations H-99-47 through –51 as "Open—Acceptable Response."

Guardrail Performance

During the accident sequence, the motorcoach struck the terminal end of a guardrail and fractured 11 wooden guardrail posts. The 27-inch-high guardrail at the accident scene was not designed to redirect vehicles as tall (center of gravity 39 inches above the ground) and heavy as a 35,250-pound motorcoach. Given an estimated speed of 60 mph and the approach angle of the motorcoach, it struck the guardrail with a force that was 62 times more than the guardrail was designed to absorb. If the guardrail had not failed, it may have caused the motorcoach to roll over[166] because of the motorcoach's having a higher center of gravity than the vehicles for which the guardrail was designed. A rollover may have led to side window ejections and roof crush that would have reduced the amount of survivable space in the bus. Although it is difficult to speculate on the extent of occupant injuries had the Custom motorcoach rolled over, the Safety Board has documented the risk to occupants of bus rollovers and roof crush in its special investigation report on bus crashworthiness issues.[167]

Although the presence of the guardrail system had little effect on the severity of the accident, Safety Board investigators were concerned that the extensive termite damage found in some of the guardrail posts could have compromised the safety of the smaller private passenger vehicles that the barrier system was designed to stop.[168] According to the USFS report, the original shear strength of the undecayed portions of the posts was above

[165] The Safety Board's investigation into a December 1998 motorcoach accident in Old Bridge, New Jersey (docket number HWY99MH007), revealed that one passenger, who was alive after the accident, died due to asphyxiation from roof crush. In addition, the Safety Board is investigating another motorcoach accident, which occurred in Canon City, Colorado, in December 1999, that resulted in extensive roof crush.

[166] NTSB/SIR-99/04.

[167] NTSB/SIR-99/04.

[168] This type of guardrail system is designed to redirect safely small and large passenger cars. It was performance tested with vehicles that weighed between 1,764 and 4,409 pounds.

average. However, two of the four decayed samples were determined to have considerable insect damage, with clear indications of feeding galleries, excrement, and soil. These posts had suffered such severe attack from insects that their ability to resist impact loads was reduced, which suggests that the posts may have failed if hit by a passenger car.

The Safety Board concludes that although it is highly unlikely that the breakaway cable terminal and W-beam guardrail system would have redirected the bus, even had the posts been in good condition, the damaged and weakened condition of the posts before the accident makes it likely that they would have been inadequate at redirecting private passenger vehicles as well.

The DOTD was apparently unaware of the insect damage because it does not have a program to periodically inspect guardrail posts for structural integrity. Therefore, the Safety Board believes that the DOTD should inspect all wooden guardrail posts for structural integrity and replace those that do not meet the AASHTO crash performance design criteria.

The AASHTO guidelines state that preservative-treated wooden posts, such as the ones used at the accident site, require almost no maintenance, except for an occasional cleaning and painting**.** However, evidence gathered from the accident site indicates that periodic inspections of wooden guardrail posts may be warranted. Therefore, the Safety Board believes that AASHTO should inform its members about the weakened guardrail conditions due to termite infestation found in this accident and urge them to perform periodic structural inspections of wooden guardrail posts.

Conclusions

Findings

1. The mechanical condition of the bus, the weather, emergency management, and motor carrier management did not contribute to or influence the severity of the accident.

2. The failure of the medical certification process to remove unfit drivers is a systemic, not an isolated, problem.

3. Individuals who are authorized to perform medical examinations and certify commercial drivers as fit to drive may lack knowledge and information critical to certification decisions. Consequently, drivers with serious medical conditions may not be evaluated sufficiently to determine whether their condition poses a risk to highway safety.

4. The regulations on the medical certification of commercial drivers do not reflect current medical knowledge and information and can be ambiguous regarding the conditions that may constitute disqualification.

5. The new medical certification form for commercial drivers is a substantial improvement over the previous version and, if used in its entirety and in conjunction with attached instructions, will aid examiners in making certification decisions.

6. Not all individuals who are authorized to perform medical examinations and certify commercial drivers as fit to drive are made aware of information sources that could assist them with certification decisions.

7. The absence of a process under which every driver medical examination form is reviewed greatly increases the likelihood that medical certificates will be issued inappropriately, thereby allowing medically unqualified commercial vehicle drivers to continue driving.

8. In the absence of a mechanism to track all medical certification examinations, a commercial driver with a serious medical condition who is denied a medical certificate by one examiner may be able to obtain a medical certificate from another examiner, thus subverting the purpose of the medical certification process.

9. Many drivers whose occupations and serious medical conditions are known to their employers, health care providers, and others are never reported, thereby potentially endangering the drivers themselves and others.

10. Enforcement authorities cannot, in most instances, determine the validity of a medical certificate during safety inspections and routine stops because of the absence of procedures or information sources to validate the medical certificate itself.

11. The inability to authenticate the information on a medical certificate hampers enforcement authorities in their ability to identify unfit drivers and place them out of service.

12. Results of tests for controlled substances performed under the U.S. Department of Transportation testing guidelines, even when positive, are often not available to prospective employers, making it difficult for them to make well-informed hiring decisions.

13. The current Federal drug testing regulations cannot adequately identify owner-operators who abuse controlled substances.

14. Although it is highly unlikely that the breakaway cable terminal and W-beam guardrail system would have redirected the bus, even had the posts been in good condition, the damaged and weakened condition of the posts before the accident makes it likely that they would have been inadequate at redirecting private passenger vehicles as well.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the driver's incapacitation due to his severe medical conditions and the failure of the medical certification process to detect and remove the driver from service. Other factors that may have had a role in the accident were the driver's fatigue and the driver's use of marijuana and a sedating antihistamine.

Recommendations

To the Federal Motor Carrier Safety Administration:

Develop a comprehensive medical oversight program for interstate commercial drivers that contains the following program elements:

- Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers. (H-01-17)
- A tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed. (H-01-18)
- Medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate. (H-01-19)
- Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations. (H-01-20)
- The review process prevents, or identifies and corrects, the inappropriate issuance of medical certification. (H-01-21)
- Enforcement authorities can identify invalid medical certification during safety inspections and routine stops. (H-01-22)
- Enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place. (H-01-23)
- Mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, health care providers, and employers are aware of these mechanisms. (H-01-24)

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)

To the American Association of Motor Vehicle Administrators:

Urge your member States to develop a comprehensive medical oversight program for intrastate commercial drivers that contains the following program elements:

- Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers.
- A tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed.
- Medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate.
- Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations.
- The review process prevents, or identifies and corrects, the inappropriate issuance of medical certification.
- Enforcement authorities can identify invalid medical certification during safety inspections and routine stops.
- Enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place.
- Mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, health care providers, and employers are aware of these mechanisms. (H-01-26)

To the National Conference of State Legislatures:

Inform State legislatures about this accident and make them aware of the importance of establishing immunity laws for the good-faith reporting of potentially impaired commercial drivers by all individuals and of ensuring that the medical community and the commercial transportation industry are familiar with these laws. (H-01-27)

To the American Association of State Highway and Transportation Officials:

Inform your members about the weakened guardrail conditions due to termite infestation found in this accident and urge them to perform periodic structural inspections of wooden guardrail posts. (H-01-28)

To the State of Louisiana Department of Transportation and Development:

Inspect all wooden guardrail posts for structural integrity and replace those that do not meet the American Association of State Highway and Transportation Officials crash performance design criteria. (H-01-29)

The NTSB also reiterates the following recommendations:

To the National Highway Traffic Safety Administration:

In 2 years, develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers. (H-99-47)

Once pertinent standards have been developed for motorcoach occupant protection systems, require newly manufactured motorcoaches to have an occupant crash protection system that meets the newly developed performance standards and retains passengers, including those in child safety restraint systems, within the seating compartment throughout the accident sequence for all accident scenarios. (H-99-48)

Expand your research on current advanced glazing to include its applicability to motorcoach occupant ejection prevention, and revise window glazing requirements for newly manufactured motorcoaches based on the results of this research. (H-99-49)

In 2 years, develop performance standards for motorcoach roof strength that provide maximum survival space for all seating positions and that take into account current typical motorcoach window dimensions. (H-99-50)

Once performance standards have been developed for motorcoach roof strength, require newly manufactured motorcoaches to meet those standards. (H-99-51)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

CAROL J. CARMODY
Acting Chairman

JOHN A. HAMMERSCHMIDT
Member

JOHN J. GOGLIA
Member

GEORGE W. BLACK, JR.
Member

Adopted: August 28, 2001

Appendix A

Investigation and Public Hearing

The National Transportation Safety Board was notified of the New Orleans, Louisiana, accident about 1:00 p.m. on May 9, 1999. The Safety Board dispatched an investigative team with members from the Washington, D.C.; Atlanta, Georgia; Parsippany, New Jersey; Arlington, Texas; Denver, Colorado; and Gardena, California, offices. Groups were established to investigate highway, vehicle, and survival factors; human performance; and motor carrier operations.

Parties to the on-scene investigation were the Federal Motor Carrier Safety Administration; Louisiana Department of Transportation; Louisiana State Police; New Orleans Police Department; United Motorcoach Association; Custom Bus Charters, Incorporated; National Seating Company; Motor Coach Industries; and TRW, Commercial Steering Systems.

The Safety Board also conducted a public hearing for this accident on January 20 and 21, 2000, in New Orleans, Louisiana. Parties to the hearing were the U.S. Department of Transportation; American Automobile Association; American Association of State Highway and Transportation Officials; Commercial Vehicle Safety Alliance; National Association of Governors' Highway Safety Representatives; American Trucking Associations, Inc.; National Private Truck Council; Owner-Operator Independent Drivers Association, Inc.; American Bus Association; United Motorcoach Association; Motor Coach Industries; Amalgamated Transit Union; International Brotherhood of Teamsters; Transport Workers Union of America; Advocates for Highway and Auto Safety; and Parents Against Tired Truckers.

Appendix B

New Orleans Driver Medical Information

Table 3. Information extracted from the driver's medical records by the Medical Officer, National Transportation Safety Board.

Date	Information	Source
8/21/97	Admitted to hospital with shortness of breath, exercise intolerance, orthopnea (shortness of breath when lying down), and pedal edema (swelling of the feet) worsening over "past month or so." He was noted to have a 2-year history of high blood pressure and borderline diabetes, and it was stated that he "reports not taking his medication over the last 4 months," and that he "had no medical workup in past 10 years." Family history indicated "+/- father died at 54 with enlarged heart, ? if had myocardial infarction [heart attack]." On admission, he had abnormal laboratory values that included BUN (blood urea nitrogen) of 34, serum creatinine of 4, and 3+ protein and granular casts in his urine. He was admitted with a diagnosis of "new onset Congestive Heart Failure" and "renal insufficiency with proteinuria."	Records obtained under subpoena from Medical Center of Louisiana (Charity Hospital).
8/22/97	Echocardiogram performed as inpatient indicated "severe global left ventricular hypokinesis with an estimated ejection fraction of 10%." The summary of the study stated "Findings consistent with end-stage dilated cardiomyopathy."	Records obtained under subpoena from Medical Center of Louisiana.
8/23/97	Discharged from hospital on medications: Lasix (furosemide) 40 mg per day, K-Dur (potassium) 20 meq per day, and Zestril (lisinopril) 10 mg per day.	Records obtained under subpoena from Medical Center of Louisiana.
11/25/97	Seen in the emergency department with 5-day history of shortness of breath, orthopnea. Notes indicate that he "admits being non-compliant with Lasix regularly secondary to job (drives bus)." Comments under "Financial Information" state that he "has been unemployed 4 months," but indicates "Hertz corporation" under "Employer Name." Laboratory evaluation indicated a BUN of 56 and serum creatinine of 4.0. Impression was listed as "44 year-old with end-stage cardiomyopathy presents with shortness of breath after 2-3 weeks non-compliance." It was noted that "patient needs close followup for congestive heart failure and chronic renal insufficiency. "	Records obtained under subpoena from Medical Center of Louisiana.
3/20/98	Transferred from hospital in Shreveport to Ochsner Foundation Hospital. Admission note indicates "Presented on 3/16/98 with 3 week history of dyspnea on exertion, 2 pillow orthopnea and paroxysmal noncturnal dyspnea [shortness of breath at night] all with increase progressively. On day of presentation he had severe shortness of breath and diaphoresis [sweating] while moving luggage. … MUGA scan 3/98 ejection fraction 17%." Home medications were listed as Lasix (furosemide) 10 mg each day and Zestril (lisinopril) 10 mg each day. Laboratory evaluation on admission indicated a BUN of 62 and a serum creatinine of 5.5. Nursing admission note indicates occupation as "Driving" and admission record indicates employer as "Custom Bus Ch." Right heart catheterization was performed indicating "high wedge pressure" of 30 and "poor cardiac output/cardiac index" of 3.47/1.48. Echocardiogram was performed indicating "global left ventricular systolic function appears severely depressed with a visually estimated ejection fraction of 10%."	Records obtained under subpoena from Ochsner Medical Institutions.

Date	Information	Source
3/23/98	Discharged from hospital with principal diagnosis of "Congestive Heart Failure Stage IV" and other significant diagnoses of "acute on chronic renal failure, dilated cardiomyopathy, hypertension, morbid obesity." Progress notes indicate "not a transplant candidate due to renal failure and weight." Discharge medications listed as hydralazine 75 mg three ties a day, Lopressor (metoprolol) 25 mg twice a day, Imdur (Isosorbide mononitrate) 60 mg per day, Coumadin (warfarin) 5 mg per day, aspirin one tablet per day, Axid (nizatidine) 150 mg per day, and Lasix (furosemide) 40 mg twice a day. Discharge summary notes level of activity as "some limitation" and states "rest if short of breath at work. No overexertion."	Records obtained under subpoena from Ochsner Medical Institutions.
7/5/98	Admitted to hospital with progressive shortness of breath for 3 to 4 days. Notes state "The patient is on chronic medical therapy for this problem but continues to work. He gets breathless at low levels of activity…" Medications on admission were listed as Lasix (furosemide), Coumadin (warfarin), Apresoline (hydralazine), nitrates, and Micro-K (potassium). The records note that he "initially developed problems in Shreveport while on a bus trip." Laboratory evaluation on admission indicated a BUN of 55 and a serum creatinine of 6.3. His weight on admission was noted to be 89.1 kg.	Records obtained under subpoena from West Jefferson Medical Center (Marrero, Louisiana).
7/8/98	Echocardiogram performed as inpatient indicated "dilated left ventricle. Assessment for wall motion and abnormalities is very difficult but appears to be akinetic posterior and posterolateral wall. Ejection fraction is estimated to be on the order of 20%" and "mitral regurgitation at least moderate…"	Records obtained under subpoena from West Jefferson Medical Center.
7/10/98	Discharged from hospital with diagnoses: "congestive failure not compensated," "dilated cardiomyopathy," and "advanced renal failure." Discharge medications were: Lopressor (metoprolol) 25 mg per day, Coumadin (warfarin) 5mg per day, Apresoline (hydralazine) 25 mg four times a day, and Bumex (bumetanide) 2 mg twice a day.	Records obtained under subpoena from West Jefferson Medical Center.
7/17/98	Underwent kidney biopsy; pathology report indicated "severe global and segmental glomerulosclerosis," "nephrosclerosis, severe," and "acute interstitial nephritis, consistent with iatrogenic etiology."	Records obtained under subpoena from West Jefferson Medical Center.
8/7/98	Outpatient cardiology notes indicate "… comes in for follow up after his hospitalization at West Jefferson Medical Center for congestive heart failure. … He reports that since his discharge he has done fairly well except for some dyspnea [difficulty breathing] last night. He has not had any orthopnea, peripheral edema, chest pain or palpitations. He continues on his Coumadin although he is uncertain why he is on that medication." Patient registration form indicates "Occupation" as "charter bus driver." Medical history questionnaire indicates under "Have you ever been diagnosed with heart problems?" – "Yes – Congestive heart failure," under "Has anyone in your immediate family been diagnosed with heart disease?" — "Yes – father died of enlarged heart," under "have you ever or do you currently use any recreational drugs?" neither "Yes" nor "No" is marked, under "have you been diagnosed with …diabetes – Yes … high blood pressure – Yes … kidney or bladder problems – Yes."	Records obtained under subpoena from Heart Clinic of Louisiana.
8/19/98	Underwent examination for Commercial Driver's License. All of the "Yes/No" blocks under health history are marked "No," including those for kidney and cardiovascular disease. Written notes indicate past medical history of hypertension and congestive heart failure, and medications including warfarin, hydralazine, Lasix (furosemide), metroprolol, and Bumex (bumetanide). Urine albumin indicates "trace." Under "General Comments" is the note "Patient must continue medication and follow up routinely with doctor." The Medical Examiner's Certificate is signed indicating that the individual was found qualified under 49 CFG 391.41 through 391.49.	Records obtained from Westbank Primary Care (Westwego, Louisiana).

Date	Information	Source
10/8/98	Coumadin Therapy Record notes from Ochsner clinic indicate "Patient has not responded to our letter and we are unable to communicate with patient – never returns our calls."	Records obtained under subpoena from Ochsner Medical Institutions.
10/5/98	"Patient Information Form" for primary care physician indicates employer as "Custom Bus Charters." Physician's note indicates: "Wants to get referral to see his cardiologist … History of congestive heart failure twice in past … still with some shortness of breath. Snores. Sleepy days but shift changes constantly (charter bus driver)." Medications refilled: metoprolol 50 mg per day, Coumadin (warfarin) 5 mg per day, hydralazine 25 mg twice a day, and Bumex (bumetanide) 2.5 mg four times a day.	Records obtained under subpoena from Dr. Janice S. Glenn.
10/12/98	Referral form from primary care physician to Cardiology indicates diagnosis of "Congestive Heart Failure - Hypertension."	Records obtained under subpoena from Dr. Janice S. Glenn.
10/15/98	Referral form from primary care physician for "Sleep Study" indicates diagnosis of "Sleep Apnea."	Records obtained under subpoena from Dr. Janice S. Glenn.
11/9/98	Primary care physician's note indicates that the cardiologist phoned: "creatinine 7.7!! Referred him immediately…." Referral form from primary care physician to Nephrology indicates diagnosis of "Abnormal lab test (elevated creatinine)."	Records obtained under subpoena from Dr. Janice S. Glenn.
12/1/98	Seen in emergency department for "progressive shortness of breath for 3-4 days, increased orthopnea." Noted that he was "told he has moderate kidney problems and hypertension but is not aware that he has serious end-organ damage /very poor insight into his condition." Laboratory evaluation indicated a BUN of 160 and a serum creatinine of 12.7. Medications on admission to hospital were noted to be prednisone 80 mg/day, Bumex (bumetanide) 2 mg twice a day, Coumadin (warfarin) 5mg per day, and Zaroxolyn (metolazone) 5 mg every other day.	Records obtained under subpoena from West Jefferson Medical Center.
12/2/98	Inpatient echocardiogram performed showing "left ventricular chamber size is markedly enlarged," "global mild to moderate hypokinesis," and conclusions of "marked cardiomegaly" and "dilated cardiomyopathy" with "mild to moderate mitral regurgitation" and "mild to moderate aortic regurgitation."	Records obtained under subpoena from West Jefferson Medical Center.
12/3/98	Inpatient nursing notes and rhythm strip document 11 beats of ventricular tachycardia prior to inpatient surgery to place a catheter and arteriovenous fistula for hemodialysis access. Hemodialysis begun on Tuesday, Thursday, Saturday schedule. Weight after initial hemodialysis noted at 110.5 kg.	Records obtained under subpoena from West Jefferson Medical Center.
12/8/98	Inpatient nursing notes and rhythm strip document 5 beats of ventricular tachycardia. Discharged from hospital on outpatient dialysis regimen. Discharge diagnoses were "congestive heart failure," "cardiomyopathy/mitral insufficiency," "end stage renal disease – begun on dialysis," and insertion of AV fistula/Tesio catheter this admit." Discharge medications were prednisone 80 mg per day and Coumadin (warfarin) 5 mg per day. Discharge orders signed by primary care physician.	Records obtained under subpoena from West Jefferson Medical Center.

Date	Information	Source
12/10/98	Referral form for dialysis indicates "Employer Name" as "Custom Bus Charter" and "Occupation" as "Driver." "Primary diagnosis" is noted as "Hypertension" and "Other conditions" noted as "Cardiomyopathy" and "Congestive heart failure." Admission nursing assessment indicates weight as 124.8 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
12/14/98	Primary care physician notes state "Patient is in for follow-up after being in hospital. Patient is ready to go back to work. On dialysis now Tuesday, Thursday, Saturday 5-8 pm. Anxious to return to work. Minor cramps in hands occasionally – not right after dialysis. Still has staples left arm shunt. Using Tesio catheter now." Examination indicates "Alert, cheerful, no acute distress. Chest clear. Cardiac regular rate and rhythm without murmurs or gallops. No edema. Weight decreased 10 lbs. since 10/98." Assessment indicates "On dialysis, doing well." Prescription note signed by primary care physician indicates: "May return to work 12/17/98. Needs to be at West Jefferson Hospital by 5 p.m. Tuesdays, Thursdays, and Saturdays."	Records obtained under subpoena from Dr. Janice S. Glenn.
12/29/98	Dialysis notes indicate estimated dry weight: "try 111.5" kg. Pre-dialysis weight noted as 111.9 kg. Post-dialysis blood pressures noted as: sitting – 120/70, standing – 110/60. Post-dialysis pulse noted as 88. Post-dialysis weight noted as 111.4 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
1/5/99	Outpatient Social Service evaluation performed; notes indicate: "Employment – 'Custom Bus Charter' – driver – 2 years" "His employer is very supportive – schedules his work around his treatment."	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
1/20/99	Seen in emergency department for "coughing, fever, and chest pain for 4 days." Medications on admission to hospital were listed as prednisone 80 mg/day, Bumex (bumetanide) 2 mg twice a day, Coumadin (warfarin) 5mg every other day, and Zaroxolyn (metolazone) 5 mg every other day. Right arm and neck noted to be swollen.	Records obtained under subpoena from West Jefferson Medical Center.
1/21/99	Inpatient vascular ultrasound of right subclavian vein revealed "findings compatible with near complete thrombosis of the right jugular, right axillary and right subclavian veins." Begun on intravenous heparin. Cardiology evaluation indicated the diagnosis of "subendocardial myocardial infarction – small."	Records obtained under subpoena from West Jefferson Medical Center.
1/22/99	Inpatient echocardiogram performed showing "left ventricle is severely dilated in both end diastolic and end systolic dimension," "calculated ejection fraction is approximately 10 to 15%," "evidence of concentric left ventricular hypertrophy," "generalized akinesis," "moderately severe bi-atrial enlargement," "moderate mitral regurgitation," and mild amount of aortic stenosis." Conclusions included "severe left ventricular systolic dysfunction."	Records obtained under subpoena from West Jefferson Medical Center.
1/25/99	Inpatient surgery to remove Tesio catheter.	Records obtained under subpoena from West Jefferson Medical Center.
1/27/99	Inpatient nursing notes document 13 beats of ventricular tachycardia.	Records obtained under subpoena from West Jefferson Medical Center.

Date	Information	Source
1/28/99	Inpatient evaluation by social services – notes that he is "working full-time for Custom Bus Charters" and "will call him with home health agency that is to see patient Monday." Notes and rhythm strip document 8 beats of ventricular tachycardia. Discharged from hospital on Coumadin (warfarin) 10 mg per day for two days, then 5 mg per day.	Records obtained under subpoena from West Jefferson Medical Center.
2/4/99	Outpatient "Initial Nutrition Assessment" for dialysis notes "Occupation" as "Bus driver." Estimated dry weight indicated as 108.5 kg. Dialysis notes indicate increase in scheduled dialysis time from 3 to 4 hours.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
2/8/99	Primary care physician's notes written by student nurse practitioner and signed by primary care physician indicate "In hospital for 1 week for thrombus in right arm, 'little touch' of pneumonia, 'mild heart attack.' Was in cardiac care unit. Feels he is ready to go back to work, has no follow-up appointment with cardiologist … States has been taking meds religiously … Short of breath this morning after 'really brisk walk.' Also describes nausea with shortness of breath, symptoms went away after 10 minutes … States he rests frequently, taking it easy, no heavy lifting. Wants to go back to work part time on 'short runs.' … Heart rate regular at 112 beats per minute … (Patient is sweating) … No work. Refer to cardiologist … for follow-up and cardiac rehab program."	Records obtained under subpoena from Dr. Janice S. Glenn.
2/12/99	Outpatient medical questionnaire from cardiology clinic indicates "had heart attack was hospitalized and discharged on 1/21/99 and would like an OK to go back to work." Indicated under "occupation" is "bus driver," under "use of recreational drugs," neither "Yes" nor "No" is marked. Outpatient cardiology notes indicate "comes in for follow up after his hospitalization in December for congestive heart failure when dialysis was started. He has been doing well with dialysis, no dyspnea, no chest discomfort, and no peripheral edema. He denies any palpitations or syncope or presyncope." Pulse noted as "60 and regular."	Records obtained under subpoena from Heart Clinic of Louisiana.
2/15/99	Short-form health survey performed by dialysis center – responses include: "How would you rate your health in general now? – much worse now than one year ago." "Does your health limit you now in … vigorous activities…? – Yes, limited a lot." "During the past 4 weeks have you … cut down on the amount of time you spent on work or other activities — Yes." accomplished less than you would like — Yes." were limited in the kind of work or other activities — Yes." had difficulty performing the work or other activities — Yes." accomplished less than you would like — Yes." didn't do work or other activities as carefully as usually — Yes." "During the past 4 weeks … did you feel worn out — All of the time." "I expect my health to get worse — Definitely true." Potassium level noted as 7.2.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
3/12/99	Admitted to hospital with "acute thrombosis of a Gortex AV loop graft." Admission medications Prinivil (lisinopril) 2.5 mg twice a day, metoprolol 25 mg twice a day, and Coumadin (warfarin) 5 mg per day. Anesthesia note indicates "potassium 6.3. Unacceptably high for anesthesia due to risk of arrythmias especially in patient with recent myocardial infarction and congestive heart failure. Will recommend … dialysis before A-V access placed." A Quinton catheter was placed in the left internal jugular vein and he underwent dialysis.	Records obtained under subpoena from West Jefferson Medical Center.

Date	Information	Source
3/13/99	Inpatient surgery – AV graft was removed with "evidence of low-grade staph epidermitis infection" and a "brachial Cimino fistula" was constructed.	Records obtained under subpoena from West Jefferson Medical Center.
3/15/99	Ultrasound of fistula – "AV fistula was thrombosed." Discharged from hospital, to receive intravenous vancomycin at dialysis once a week for 6 weeks.	Records obtained under subpoena from West Jefferson Medical Center.
3/27/99	Dialysis notes indicate estimated dry weight: "try 107.5" kg. Pre-dialysis weight noted as 110.5 kg. Post-dialysis blood pressures noted as: sitting – 142/90, standing – 150/90. Post-dialysis pulse noted as 100. Post-dialysis weight noted as 107.7 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
4/1/99	Dialysis note states "trying a new estimated dry weight of 105.5 kilos."	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
4/6/99	Outpatient placement of Quinton catheter into left internal jugular vein. Procedure note states "his last Quinton 'fell out' on Saturday [4/3/99]."	Records obtained under subpoena from West Jefferson Medical Center.
4/7/99	Dialysis note states "no show for 2 treatments."	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
4/8/99	Transplant referral form indicates "marginal candidate" and "patient's cardiovascular condition precludes transplantation surgery." Transplantation surgeon indicates "Please do not refer this patient for transplantation evaluation." Dialysis notes indicate estimated dry weight: "try 105.0" kg. Pre-dialysis weight noted as 106.6 kg. Post-dialysis blood pressures noted as: sitting – 132/90, standing – 140/90. Post-dialysis pulse noted as 92. Post-dialysis weight noted as 104.9 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
4/17/99	Admitted to hospital for "increasing shortness of breath at night over the last two weeks." Medications on admission were indicated as Prinivil (lisinopril) 10 mg each morning and metoprolol 50 mg each morning.	Records obtained under subpoena from West Jefferson Medical Center.
4/19/99	Dialysis notes state "Patient's doctor contacted social worker and informed that patient is not returning to work and to assist patient in the necessary paperwork in applying for disability. Patient is in the hospital at present but when he returns to dialysis social worker will do so."	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.

Date	Information	Source
4/20/99	Inpatient cardiac catheterization. Findings included: “left ventricle was markedly dilated”; “ejection fraction was approximately 10% to 20%”; “pulmonary capillary wedge mean of 23”; left main coronary artery, left anterior descending artery, left circumflex artery, and right coronary artery were all described as “normal.” Conclusion was “normal coronary angiogram with marked left ventricular dysfunction.”	Records obtained under subpoena from West Jefferson Medical Center.
4/21/99	Inpatient vascular surgery consult for vascular access. “Recommendations” note “Agree with insertion of Tesio catheters, however, the patient refuses any intervention today.”	Records obtained under subpoena from West Jefferson Medical Center.
4/22/99	Inpatient nephrology note indicates “re-assess estimated dry weight. Still increased wedge at 100 kg.” Discharged with orders for 3 hours of outpatient intravenous Dobutrex (dobutamine) treatment 5 mcg/kg/min 3 times per week.	Records obtained under subpoena from West Jefferson Medical Center.
4/23/99	Outpatient procedure note indicates 3-hour treatment with intravenous Dobutrex.	Records obtained under subpoena from West Jefferson Medical Center.
4/26/99	Outpatient procedure note indicates 3-hour treatment with intravenous Dobutrex.	Records obtained under subpoena from West Jefferson Medical Center.
4/27/99	Dialysis notes state “Social worker provided the necessary paperwork for applying for disability at patient’s request. Patient is frustrated at not being able to return to work. Besides 3 times per week (Tues/Thurs/Sat) of dialysis, patient has 3 times per week (Mon/Wed/Fri) of Dobutrex therapy.” Notes also state “patient called and stated his catheter fell out.”	Records obtained under subpoena from Marrero Artificial Kidney Center.
4/28/99	Admitted to hospital for vascular access. Underwent placement of Tesio catheter in left internal jugular vein. Nephrology note indicates “status post Tesio catheter placement (lost Quinton yesterday) unable to dialyze – last treatment Saturday [4/24/99].” Discharge note states “He required general anesthesia for the procedure. Tolerated well and underwent dialysis the same day and left the hospital against medical advice.” Nursing notes state “9:00 p.m. Patient going home without escort, denied transport.”	Records obtained under subpoena from West Jefferson Medical Center.
4/29/99	Dialysis notes indicate “treatment terminated early against medical advice, patient cath soaked flushed per RN, vital signs stable, kidney cleared.” Pre-dialysis weight noted as 100.8 kg. Post-dialysis blood pressures noted as: sitting – 140/80, standing – 138/100. Post-dialysis pulse noted as 94. Post-dialysis weight noted as 100.1 kg. Potassium level noted as 5.2. Nephrology note indicates “left hospital against medical advice today intermittent shortness of breath. Started Dobutrex last week had cardiac catheterization showing dilated cardiomyopathy with normal coronaries — prognosis poor.”	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
4/30/99	Outpatient procedure note indicates 3-hour treatment with intravenous Dobutrex.	Records obtained under subpoena from West Jefferson Medical Center.

Date	Information	Source
5/1/99	Dialysis notes state “no show.”	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
5/4/99	Dialysis notes indicate estimated dry weight: “try 100.0” kg. Pre-dialysis weight noted as 101.6 kg. Post-dialysis blood pressures noted as: sitting – 130/80, standing – 138/80. Post-dialysis pulse noted as 88. Post-dialysis weight noted as 99.4 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
5/5/99	Outpatient procedure note indicates 3-hour treatment with intravenous Dobutrex.	Records obtained under subpoena from West Jefferson Medical Center.
5/6/99	Dialysis notes indicate estimated dry weight: “try 99.0” kg. Pre-dialysis weight noted as 101.2 kg. Post-dialysis blood pressures noted as: sitting – 128/84, standing – 118/64. Post-dialysis pulse noted as 78. Post-dialysis weight noted as 98.5 kg.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
5/7/99	Outpatient procedure note indicates 3-hour treatment with intravenous Dobutrex.	Records obtained under subpoena from West Jefferson Medical Center.
5/8/99	Dialysis notes indicate “Signed off against medical advice. Counseled on the possible consequences including death and is aware of the fluid and dietary regimes. Left vital signs stable.” Time on dialysis indicated as 2:55 p.m. Scheduled dialysis time indicated as 4 hours. Pre-dialysis weight noted as 103.4 kg. Post-dialysis blood pressures noted as: sitting – 120/64, standing – 118/60. Post-dialysis pulse noted as 72. Post-dialysis weight noted as 98.7 kg. Time off dialysis indicated as 6:35 p.m.	Records obtained under subpoena from BMA Marrero Artificial Kidney Center.
5/8/99	Emergency department notes indicate that he was brought in to the emergency department by ambulance at 8:45 p.m. with a pulse of 105 and a blood pressure of 71/46. Physician’s notes state “patient came home from dialysis and had 2 episodes of nausea and weakness each of which lasted 5 minutes. Patient said he had no chest pain. Emergency Medical Technicians noted blood pressure of 70/palpable on arrival. Patient had received 1 liter intravenous fluid by time of my exam and was asymptomatic. Patient says the nephrologist was ‘fishing around’ for his dry weight. Says it used to be 102 kg, today after dialysis his weight was 96 kg. Patient believes ‘they took off too much fluid’ today in dialysis and that this is the reason for his symptoms tonight.” Blood pressure at 10:00 p.m .105/72, pulse 94. Discharged from emergency room at 11:00 pm with diagnosis of “near syncope – resolved.”	Records obtained under subpoena from West Jefferson Medical Center.

Appendix C

Federal Motor Carrier Safety Ratings Procedures

The Motor Carrier Safety Act of 1984 directed the U.S. Secretary of Transportation to establish a procedure to determine the safety fitness of owners and operators of commercial motor vehicles operating in interstate or foreign commerce. Subsequently, the Federal Highway Administration set safety fitness standards and established a methodology for determining whether a carrier has adequate safety management controls to ensure acceptable compliance with the safety requirements. The original methodology was modified as a result of the Motor Carrier Safety Act of 1990 and a 1997 rulemaking. Six factors (see table C-1) form the basis for a carrier's safety rating, that is, the degree to which a carrier is in compliance with the *Federal Motor Carrier Safety Regulations* and therefore meets the safety fitness standards.

Table 4. Motor carrier safety rating factors (49 CFR 385, appendix B).

Factor*	Applicable FMCSR
1 - General	Parts 387 and 390
2 - Driver	Parts 382, 383, and 391
3 - Operational	Parts 392 and 395
4 - Vehicle	Parts 393 and 396
5 - Hazardous Materials	Parts 397, 171, 177, and 180
6 - Accident Factor	Recordable Preventable Rate
*All factors are given equal weight.	

The six factors in the rating system shown in table C-1 represent the six major categories of a motor carrier's operations covered by Federal regulations. The Federal Motor Carrier Safety Administration (FMCSA) has determined that certain sections of the referenced Federal Motor Carrier Safety Regulation Parts are more indicative of a safe motor carrier operation than others. These selected sections are classified "acute" or "critical" (see 49 *Code of Federal Regulations* [CFR] 385, appendix B, section VII). Sections classified *acute* define conditions that demand immediate corrective action regardless of the overall safety posture of the motor carrier, for example, requiring or permitting the operation of a vehicle declared out of service before repairs are made (49 CFR 396.9[c][2]). Sections classified *critical* define conditions that indicate breakdowns in a carrier's management controls, for example, requiring or permitting a driver to drive after having been on duty for 15 hours (49 CFR 395.3[a][2]).

During an FMCSA compliance review, the carrier is evaluated on its compliance with each of the referenced Parts. A carrier that violates an acute section is assessed 1 point for that factor. A carrier that violates a critical section two or more times, with the number of violations exceeding 10 percent of the sample reviewed (termed a "pattern of violations"), is assessed 1 point for that factor.

An exception to the above point assessment takes effect if the carrier's accident rate (per million miles traveled) over the previous 12 months is greater than 1.7 for a carrier operating in an urban area (entirely within 100 air miles of the home terminal) or greater than 1.5 for all other carriers. In such cases, carriers are assessed 2 points.

Ratings for individual factors are based on the number of points assessed for that factor:

- 0 points—satisfactory.
- 1 point—conditional.
- 2 points—unsatisfactory.

After all factors are rated, an overall rating for the carrier is determined by assembling the ratings assigned to each factor as shown in table C-2.

Table 5. Motor carrier safety rating table.

Factor ratings		Safety rating
Number of unsatisfactory ratings	Number of conditional ratings	
0	2 or fewer	Satisfactory
0	more than 2	Conditional
1	2 or fewer	Conditional
1	more than 2	Unsatisfactory
2 or more	0	Unsatisfactory

Examples

1. A carrier receiving no unsatisfactory factor ratings and 1 conditional factor rating would receive an overall rating of satisfactory.
2. A carrier receiving 1 unsatisfactory factor rating and 1 conditional factor rating would receive an overall rating of conditional.
3. A carrier receiving 2 unsatisfactory factor ratings would receive an overall rating of unsatisfactory.

Under 49 CFR 385.13, a carrier that receives an overall unsatisfactory rating is deemed "unfit" and has 60 days to correct the deficiencies found in the compliance review or to file an appeal with the FMCSA. A passenger carrier or a carrier transporting hazardous materials that receives an overall unsatisfactory rating has 45 days to correct the deficiencies found in the compliance review or to file an appeal with the FMCSA. If an appeal is not filed and the carrier does not correct the deficiencies noted in the compliance review, the carrier is deemed unfit and prohibited from continued operation.

Appendix D

State Medical Certification Process

All 50 States and the District of Columbia have substantially adopted the *Federal Motor Carrier Safety Regulations* for intrastate operations, including the commercial driver physical fitness regulations contained in 49 *Code of Federal Regulations* 391. Several States have exempted agricultural and Government transportation operations from certain aspects of these requirements. Several States have grandfathered intrastate commercial drivers who do not meet the Federal physical fitness requirements but have operated commercial vehicles before the State's adoption of these requirements. Furthermore, a number of States have also adopted stricter rules for drivers of hazardous materials, school buses, and commercial passenger vehicles.

State	Intrastate medical exemptions/waivers[1]	*Interstate* driver information kept by States[2]		*Intrastate* driver information kept by States[2]		CDL renewal cycle (years)[3]	Other information[2]
		Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers	Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers		
Alabama	Limb, vision, diabetes	No requirement	Long form for new CDL; self-certification for renewals	No requirement	Long form for new CDL; self-certification for renewals	N/A	Long form required for hazmat renewals
Alaska	Limb, vision	Self-certification	Self-certification	Self-certification	Self-certification	5	
Arizona	Limb, vision	Long form and medical certificate	Long form and medical certificate	Long form and medical certificate	Long form and medical certificate	5	Long forms collected every 2 years
Arkansas	Limb, vision	No requirement	Self-certification	No requirement	Self-certification	4	
California	Limb, vision, hearing, diabetes, epilepsy, cardiovascular, others	Long form and medical certificate	Long form and medical certificate	Long form and medical certificate	Long form and medical certificate	4	Long forms collected every 2 years
Colorado	Limb, vision, diabetes, epilepsy, cardiovascular	No requirement	Medical certificate	No requirement	Medical certificate		
Connecticut	Limb, vision, diabetes	No requirement	Medical certificate (long form required for passenger endorsement)	No requirement	Medical certificate (long form required for passenger endorsement)	4	
Delaware	Limb, vision, diabetes, epilepsy, cardiovascular, others	No requirement	None except for medical waiver situations	No requirement	None except for medical waiver situations	5	No intrastate waivers for passenger drivers

[1]Information obtained from Association for the Advancement of Automotive Medicine (AAAM), *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs,* DT FH61-95-P-01200 (Washington, D.C.: Federal Highway Administration, 1997) and Motor Carrier Regulations Information System (MCREGIS).
[2]Information obtained from interviews with FMCSA State Directors or State Police Motor Carrier Division representatives.
[3]Information obtained from AAAM, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*.

State	Intrastate medical exemptions/waivers[1]	*Interstate* driver information kept by States[2]		*Intrastate* driver information kept by States[2]		CDL renewal cycle (years)[3]	Other information[2]
		Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers	Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers		
District of Columbia	Limb, vision	No requirement	Long form and medical certificate	No requirement	Long form and medical certificate	4	Long forms collected every 2 years
Florida	Limb, vision, diabetes	Medical certificate	Medical certificate	Medical certificate	Medical certificate	4 or 6	
Georgia	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	Self-certification	Self-certification	Self-certification	Self-certification	4	
Hawaii	Limb, vision	Long form	Long form	Long form	Long form	4	
Idaho	Limb, vision	Self-certification	Self-certification	Self-certification	Self-certification	4	
Illinois	Limb, vision	No requirement	Self-certification	No requirement	Self-certification	4	Self-certification not required on transfers
Indiana	Limb, vision, hearing	Medical certificate	Long form and medical certificate	Medical certificate	Long form and medical certificate	4	Long forms collected every 2 years
Iowa	Limb, vision	Self-certification	Self-certification	Self-certification	Self-certification	2 or 4	
Kansas	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	No requirement	Self-certification	No requirement	Self-certification	4	
Kentucky	Limb, vision, diabetes, epilepsy, cardiovascular, others	No requirement	Medical certificate	No requirement	Medical certificate	4	
Louisiana	Limb, vision	No requirement	Long form and medical certificate	No requirement	Long form and medical certicate	4	
Maine	Intrastate drivers operating within 100 miles exempt from fitness requirements	No requirement	Medical certificate	No requirement	Medical certificate	4 or 6	100-mile exemption not applicable to hazmat drivers

State	Intrastate medical exemptions/waivers[1]	*Interstate* driver information kept by States[2]		*Intrastate* driver information kept by States[2]		CDL renewal cycle (years)[3]	Other information[2]
		Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers	Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers		
Maryland	Limb, vision	No requirement	Medical certificate	No requirement	Medical certificate	5	Waivers other than limb may also be granted
Massachusetts	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	No requirement	Medical certificate	No requirement	Medical certificate	5	
Michigan	Limb, vision, hearing, diabetes, epilepsy, cardiovascular, others	Medical certificate	Medical certificate	Medical certificate	Medical certificate	4	
Minnesota	Limb, vision, diabetes	No requirement	Self-certification	Self-certification	Self-certification	4	
Mississippi	Limb, vision, hearing, epilepsy, cardiovascular	Self-certification	Self-certification	Self-certification	Self-certification	4	
Missouri	Limb, vision	Self-certification	Self-certification	Self-certification	Self-certification	3	
Montana	Limb, vision, diabetes, epilepsy	No requirement	Medical certificate	No requirement	Medical certificate	8	
Nebraska	Limb, vision	No requirement	Self-certification	No requirement	Self-certification	4	
Nevada	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	No requirement	Long form	No requirement	Long form	4	
New Hampshire	Waivers granted through the Department of Safety (not listed in either MCREGIS or AAAM)	Long form	Long form	Long form	Long form	4	
New Jersey	Limb, vision	Long form for drivers of 8+ passengers	Long form	Long form for drivers of 8+ passengers	Long form	4	Long forms, including those for drivers of 8+ passengers, collected every 2 years

State	Intrastate medical exemptions/waivers[1]	*Interstate* driver information kept by States[2]		*Intrastate* driver information kept by States[2]		CDL renewal cycle (years)[3]	Other information[2]
		Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers	Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers		
New Mexico	Limb, vision	No requirement	Medical certificate	No requirement	Medical certificate	4	
New York	Limb, vision, diabetes	Self-certification	Medical certificate	Self-certification	Self-certification	5	Medical certificate not required on transfers
North Carolina	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	No requirement	Medical certificate	No requirement	Medical certificate	5	
North Dakota	Limb, vision, diabetes, epilepsy, cardiovascular, others	Self-certification	Self-certification	Self-certification	Self-certification	4	
Ohio	Limb, vision	No requirement	Not available	No requirement	Not available	4	
Oklahoma	Limb, vision	Self-certification	Self-certification	Self-certification	Self-certification	4	
Oregon	Limb, vision, diabetes, hearing, epilepsy, cardiovascular, others	No requirement	Medical certificate	No requirement	Medical certificate	4	
Pennsylvania	Limb, epilepsy	Self-certification	Self-certification	Self-certification	Self-certification	4	
Rhode Island	Limb, epilepsy	No requirement	Self-certification	No requirement	Self-certification	5	
South Carolina	Limb, vision	No requirement	Long form or certificate	No requirement	Long form or certificate	4	
South Dakota	Limb, vision, blackout	No requirement	No requirement	No requirement	No requirement	5	Medical requirements for school bus drivers only
Tennessee	Limb, vision	No requirement	Medical certificate	No requirement	Medical certificate	5	No requirement for medical certificate renewals

State	Intrastate medical exemptions/waivers[1]	*Interstate* driver information kept by States[2]		*Intrastate* driver information kept by States[2]		CDL renewal cycle (years)[3]	Other information[2]
		Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers	Non-CDL drivers (10,001 – 26,000 lbs)	CDL drivers		
Texas	Limb, vision	No requirement	Self-certification	No requirement	Self-certification	4	Drivers must sign an affidavit
Utah	Limb, vision	No requirement	Medical certificate	No requirement	Medical certificate	5	Presentation of medical certification only required upon initial issuance of CDL
Vermont	Limb, vision, diabetes	No requirement	Self-certification	No requirement	No requirement	2 or 4	Medical requirements for school bus drivers only
Virginia	Limb, vision, diabetes	No requirement	Medical certificate	No requirement	Medical certificate	5	
Washington	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	No requirement	Medical certificate	Medical certificate	Medical certificate	4	
West Virginia	Limb, vision, hearing, diabetes, epilepsy, cardiovascular	Long form for drivers of 8+ passengers	Medical certificate and long form	Long form for drivers of 8+ passengers	Medical certificate and long form	5	Drivers of 8+ passengers and of vehicles above 8,000 lbs must present long form to Division of Motor Vehicles
Wisconsin	Limb, vision, diabetes	No requirement	Medical certificate	No requirement	Medical certificate	4	
Wyoming	Limb, vision, diabetes	No requirement	Self-certification	No requirement	Self-certification	4	

Appendix E

Instructions for Performing and Recording Physical Examinations[167]

The medical examiner must be familiar with 49 CFR 391.41, Physical qualifications for drivers, and should review these instructions before performing the physical examination. Answer each question "yes" or "no" and record numerical readings where indicated on the physical examination form.

The medical examiner must be aware of the rigorous physical, mental, and emotional demands placed on the driver of a commercial motor vehicle. In the interest of public safety, the medical examiner is required to certify that the driver does not have any physical, mental, or organic condition that might affect the driver's ability to operate a commercial motor vehicle safely.

General information. The purpose of this history and physical examination is to detect the presence of physical, mental, or organic conditions of such a character and extent as to affect the driver's ability to operate a commercial motor vehicle safely. The examination should be conducted carefully and should at least include all of the information requested in the following form. History of certain conditions may be cause for rejection. Indicate the need for further testing and/or require evaluation by a specialist. Conditions may be recorded which do not, because of their character or degree, indicate that certification of physical fitness should be denied. However, these conditions should be discussed with the driver and he/she should be advised to take the necessary steps to insure correction, particularly of those conditions, which if neglected, might affect the driver's ability to drive safely.

General appearance and development. Note marked overweight. Note any postural defect, perceptible limp, tremor, or other conditions that might be caused by alcoholism, thyroid intoxication or other illnesses.

Head-eyes. When other than the Snellen chart is used, the results of such test must be expressed in values comparable to the standard Snellen test. If the driver wears corrective lenses for driving, these should be worn while driver's visual acuity is being tested. If contact lenses are worn, there should be sufficient evidence of good tolerance of and adaptation to their use. Indicate the driver's need to wear corrective lenses to meet the vision standard on the Medical Examiner's Certificate by checking the box, "Qualified only when wearing corrective lenses." In recording distance vision use 20 feet as normal. Report all vision as a fraction with 20 as the numerator and the smallest type read at 20

[167] Extracted from 49 CFR 391.43(f).

feet as the denominator. Monocular drivers are not qualified to operate commercial motor vehicles in interstate commerce.

Ears. Note evidence of any ear disease, symptoms of aural vertigo, or Meniere's Syndrome. When recording hearing, record distance from patient at which a forced whispered voice can first be heard. For the whispered voice test, the individual should be stationed at least 5 feet from the examiner with the ear being tested turned toward the examiner. The other ear is covered. Using the breath which remains after a normal expiration, the examiner whispers words or random numbers such as 66, 18, 23, etc. The examiner should not use only sibilants (s-sounding test materials). The opposite ear should be tested in the same manner. If the individual fails the whispered voice test, the audiometric test should be administered. For the audiometric test, record decibel loss at 500 Hz, 1,000 Hz, and 2,000 Hz. Average the decibel loss at 500 Hz, 1,000 Hz and 2,000 Hz and record as described on the form. If the individual fails the audiometric test and the whispered voice test has not been administered, the whispered voice test should be performed to determine if the standard applicable to that test can be met.

Throat. Note any irremediable deformities likely to interfere with breathing or swallowing.

Heart. Note murmurs and arrhythmias, and any history of an enlarged heart, congestive heart failure, or cardiovascular disease that is accompanied by syncope, dyspnea, or collapse. Indicate onset date, diagnosis, medication, and any current limitation. An electrocardiogram is required when findings so indicate.

Blood pressure (BP). If a driver has hypertension and/or is being medicated for hypertension, he or she should be recertified more frequently. An individual diagnosed with mild hypertension (initial BP is greater than 160/90 but below 181/105) should be certified for one 3-month period and should be recertified on an annual basis thereafter if his or her BP is reduced. An individual diagnosed with moderate to severe hypertension (initial BP is greater than 180/104) should not be certified until the BP has been reduced to the mild range (below 181/105). At that time, a 3-month certification can be issued. Once the driver has reduced his or her BP to below 161/91, he or she should be recertified every 6 months thereafter.

Lungs. Note abnormal chest wall expansion, respiratory rate, breath sounds including wheezes or alveolar rales, impaired respiratory function, dyspnea, or cyanosis. Abnormal finds on physical exam may require further testing such as pulmonary tests and/or x-ray of chest.

Abdomen and viscera. Note enlarged liver, enlarged spleen, abnormal masses, bruits, hernia, and significant abdominal wall muscle weakness and tenderness. If the diagnosis suggests that the condition might interfere with the control and safe operation of a commercial motor vehicle, further testing and evaluation is required.

Genital-urinary and rectal examination. A urinalysis is required. Protein, blood or sugar in the urine may be an indication for further testing to rule out any underlying

medical problems. Note hernias. A condition causing discomfort should be evaluated to determine the extent to which the condition might interfere with the control and safe operation of a commercial motor vehicle.

Neurological. Note impaired equilibrium, coordination, or speech pattern; paresthesia; asymmetric deep tendon reflexes; sensory or positional abnormalities; abnormal patellar and Babinski's reflexes; ataxia. Abnormal neurological responses may be an indication for further testing to rule out an underlying medical condition. Any neurological condition should be evaluated for the nature and severity of the condition, the degree of limitation present, the likelihood of progressive limitation, and the potential for sudden incapacitation. In instances where the medical examiner has determined that more frequent monitoring of a condition is appropriate, a certificate for a shorter period should be issued.

Spine, musculoskeletal. Previous surgery, deformities, limitation of motion, and tenderness should be noted. Findings may indicate additional testing and evaluation should be conducted.

Extremities. Carefully examine upper and lower extremities and note any loss or impairment of leg, foot, toe, arm, hand, or finger. Note any deformities, atrophy, paralysis, partial paralysis, clubbing, edema, or hypotonia. If a hand or finger deformity exists, determine whether prehension and power grasp are sufficient to enable the driver to maintain steering wheel grip and to control other vehicle equipment during routine and emergency driving operations. If a foot or leg deformity exists, determine whether sufficient mobility and strength exist to enable the driver to operate pedals properly. In the case of any loss or impairment to an extremity which may interfere with the driver's ability to operate a commercial motor vehicle safely, the medical examiner should state on the medical certificate "medically unqualified unless accompanied by a Skill Performance Evaluation Certificate." The driver must then apply to the Field Service Center of the FMCSA, for the State in which the driver has legal residence, for a Skill Performance Evaluation Certificate under Sec. 391.49.

Laboratory and other testing. Other test(s) may be indicated based upon the medical history or findings of the physical examination.

Diabetes. If insulin is necessary to control a diabetic driver's condition, the driver is not qualified to operate a commercial motor vehicle in interstate commerce. If mild diabetes is present and it is controlled by use of an oral hypoglycemic drug and/or diet and exercise, it should not be considered disqualifying. However, the driver must remain under adequate medical supervision.

Upon completion of the examination, the medical examiner must date and sign the form, provide his/her full name, office address and telephone number. The completed medical examination form shall be retained on file at the office of the medical examiner.

Appendix F

Medical Advisory Criteria for Evaluation Under 49 CFR Part 391.41[168]

Note: Unlike regulations, which are codified and have a statutory base, the recommendations in this advisory are simply guidance established to help the medical examiner determine a driver's medical qualifications pursuant to Section 391.41 of the Federal Motor Carrier Safety Regulations (FMCSRs). The Office of Motor Carrier Research and Standards routinely sends copies of these guidelines to medical examiners to assist them in making an evaluation. The medical examiner may, but is not required to, accept the recommendations. Section 390.3(d) of the FMCSRs allows employers to have more stringent medical requirements.

§ 391.41(b)(1) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no loss of a foot, leg, hand, or arm, or has been granted a Skill Performance Evaluation (SPE) Certificate pursuant to Section 391.49.

For any loss of a foot, leg, hand, or arm, a person who is otherwise qualified under the Federal Motor Carrier Safety Regulations (FMCSRs) must apply for a Skill Performance Evaluation (SPE) certificate. The State Director will make the final determination whether the defect will interfere with the driver's ability to control and safely drive a motor vehicle.

With the advancement of technology, medical aids and equipment modifications have been developed to compensate for certain disabilities. The Skill Performance Evaluation (formerly the Limb Waiver Program) was designed to allow persons with the loss of a hand, foot or limb to qualify under the FMCSRs by use of prosthetic devices or equipment modifications which enable them to safely operate a commercial motor vehicle. Since there are no medical aids equivalent to the original body limb, certain risks are still present, and thus restrictions may be included on individual SPE certificates when a State Director for the FMCSA determines they are necessary to be consistent with safety and public interest.

If the driver is found otherwise medically qualified (§ 391.41(b)(3) through (13)), the examining physician must include the statement "medically unqualified unless accompanied by a SPE certificate" on the medical certificate issued pursuant to § 391.43(g).

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[168] Text portion of advisory reproduced on July 19, 2001, from the Web site of the Federal Motor Carrier Safety Administration <http://www.fmcsa.dot.gov/rulesregs/fmcsr/medical.htm>.

If a joint application is made, the letter of application must be submitted to the State Director in the Service Center in which the carrier's principal place of business is located. If a unilateral SPE application is filed, the application must be submitted to the State Director in the Service Center in which the driver has legal residence. The addresses for these service centers are found in Section 390.27 of the FMCSRs.

§ 391.41(b)(2) - A person is physically qualified to drive a commercial motor vehicle if that person has no impairment of:

> i. A hand or finger which interferes with prehension or power grasping;
>
> or
>
> ii. An arm, foot, or leg which interferes with the ability to perform normal tasks associated with operating a motor vehicle;
>
> or
>
> Any other significant limb defect or limitation which interferes with the ability to perform normal tasks associated with operating a motor vehicle;
>
> or
>
> Has been granted a Skill Performance Evaluation (SPE) pursuant to Section 391.49.

If the examining physician determines that an impairment (e.g., partial hand or finger amputation, or paralysis) in any way interferes with the driver's ability to perform normal tasks associated with operating a commercial motor vehicle, then the driver becomes subject to the SPE certification program pursuant to Section 391.49. If the driver is found otherwise medically qualified (§ 391.41(b)(3) through (13)), the examining physician must include the statement "medically unqualified unless accompanied by a SPE certificate" on the medical certificate issued pursuant to § 391.43(g).

The driver and the motor carrier are subject to appropriate penalty if the driver operates a motor vehicle in interstate commerce without a current SPE certificate for his/her physical impairment.

If a joint SPE application is filed, it must be submitted to the State Director in the service center in which the carrier's principal place of business is located. If a unilateral SPE application is filed, it must be submitted to the State Director in the service center in which the driver has legal residence. The addresses for these service centers are found in Section 390.27 of the Federal Motor Carrier Safety Regulations.

§ 391.41(b)(3) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no established medical history or clinical diagnosis of diabetes mellitus currently requiring insulin for control.

There is no provision in the Federal Motor Carrier Safety Regulations (FMCSRs) for an exemption from the minimum physical requirement with respect to the insulin-using diabetic. Diabetes mellitus is a disease which, on occasion, can result in a loss of consciousness or orientation in time and space. Individuals who require insulin for control have conditions which can get out of control by the use of too much or too little insulin, or food intake not consistent with the insulin dosage. Incapacitation may occur from symptoms of hyperglycemic or hypoglycemic reactions (drowsiness, semiconsciousness, diabetic coma, or insulin shock).

The administration of insulin is, within itself, a complicated process requiring insulin, syringe, needle, alcohol sponge and a sterile technique. Factors related to long-haul commercial motor vehicle operations, such as fatigue, lack of sleep, poor diet, emotional conditions, stress, and concomitant illness, compound the diabetic problem. Because of these inherent dangers, the FMCSA has consistently held that a diabetic who uses insulin for control does not meet the minimum physical requirements of the FMCSRs.

Hypoglycemic drugs, taken orally, are sometimes prescribed for diabetic individuals to help stimulate natural body production of insulin. If the condition can be controlled by the use of oral medication and diet, then an individual may be qualified under the present rule.

§ 391.41(b)(4) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no current clinical diagnosis of myocardial infarction, angina pectoris, coronary insufficiency, thrombosis,
>
> or
>
> Any other cardiovascular disease of a variety known to be accompanied by syncope, dyspnea, collapse, or congestive cardiac failure.

The term "has no current clinical diagnosis of" is specifically designed to encompass (1) a current cardiovascular condition; and/or (2) a cardiovascular condition which has not fully stabilized regardless of the time limit. The term "known to be accompanied by" is defined to include a diagnosis of a cardiovascular disease which is (1) accompanied by symptoms of syncope, dyspnea, collapse, or congestive cardiac failure; and/or which is (2) likely to cause syncope, dyspnea, collapse, or congestive cardiac failure.

It is the intent of the Federal Motor Carrier Safety Regulations to render unqualified a driver who has a current cardiovascular disease which is accompanied by and/or likely to cause symptoms of syncope, dyspnea, collapse, or congestive cardiac failure. The subjective decision of whether the nature and severity of an individual's condition will likely cause symptoms of cardiovascular insufficiency is on an individual basis and qualification rests with the medical examiner and the motor carrier. In those cases where there is an occurrence of cardiovascular insufficiency (myocardial infarction,

thrombosis, etc.), it is suggested that, before a driver is certified, he/she have a normal resting and stress EKG, no residual complications, no physical limitations, and is taking no medication likely to interfere with safe driving.

Coronary artery bypass surgery and pacemaker implantation are remedial procedures and thus not necessarily unqualifying. However, the final determination must be based on functional assessment. A pacemaker recipient should be followed by a center specializing in this field.

Coumadin is a medical treatment which can improve the health and safety of the driver and should not, by its use, medically disqualify the commercial driver.

§ 391.41(b)(5) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no established medical history or clinical diagnosis of a respiratory dysfunction likely to interfere with his/her ability to control and drive a commercial motor vehicle safely.

To function adequately the cells of the body require a continuous supply of oxygen and removal of carbon dioxide. Proper functioning of the respiratory system ensures this adequate gaseous exchange. Any interruption in respiration for more than a few minutes will result in irreversible brain damage and, ultimately death.

Since a driver must be alert at all times, any change in his or her mental state is in direct conflict with highway safety. Even the slightest impairment in respiratory function under emergency conditions (when greater oxygen supply is necessary for performance) may be detrimental to safe driving.

There are many conditions that interfere with oxygen exchange and may result in incapacitation, including emphysema, chronic asthma, carcinoma, tuberculosis, chronic bronchitis and sleep apnea. If the medical examiner detects a respiratory dysfunction, that in any way is likely to interfere with the driver's ability to safely control and drive a motor vehicle, the driver must be referred to a specialist for further evaluation and therapy. Once the driver meets the minimum physical requirements of the Federal Motor Carrier Safety Regulations, a certificate can be issued.

Anticoagulation therapy for deep vein thrombosis and/or pulmonary thromboembolism is not unqualifying once optimum dose is achieved, provided lower extremity venous examinations remain normal and the treating physician gives a favorable recommendation.

§ 391.41(b)(6) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no current clinical diagnosis of high blood pressure likely to interfere with his/her ability to operate a commercial motor vehicle safely.

Hypertension alone is unlikely to cause sudden collapse; however, the likelihood increases when target organ damage, particularly cerebral vascular disease, is present. This regulatory criteria is based on FMCSA's Cardiac Conference recommendations, which used the report of the 1984 Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure.

Mild Hypertension is considered an initial BP of 161-180 systolic and/or 91-104 diastolic.

1. The driver is given a 3-month period to reduce the BP to less than or equal to 160/90; the medical examiner should state on the medical certificate that it is only valid for that 3-month period.

2. If at any time during or by the end of this 3-month period the BP is found to be less than or equal to 160/90, a medical certificate may be issued for a 1-year period. However, the BP must confirm blood pressure control in the third month of this 1-year period.

3. The individual must be certified *annually* thereafter.

Moderate to Severe Hypertension is considered an initial BP of greater than 180 systolic and/or greater than 104 diastolic.

1. The driver should not be qualified, even temporarily, until the BP has been reduced to less than 181/105.

2. Once the individual's BP is below 181 and/or 105, the driver may be issued <u>one</u> 3-month certificate. During this 3-month period, the BP must be reduced to less than or equal to 160/90.

3. If at any time during or by the end of this 3-month period the BP is found to be less than or equal to 160/90, a medical certificate may be issued for a 6-month period. However, the BP must be confirmed in the third month of this 6-month period.

4. For initial BP greater than 180 and/or 104, documentation of continued control and recertification should be made *every 6 months* and the expiration date stated on the medical certificate.

Commercial drivers who present for certification with a normal BP reading, but who are taking medication for hypertension should be certified on the same basis as individuals who present with BPs in the mild to moderate range.

An elevated BP finding should be confirmed by at least two subsequent measurements on different days. Inquiry should be made regarding smoking, cardiovascular disease in relatives, and immoderate use of alcohol. An electrocardiogram (ECG) and blood profile, including glucose, cholesterol, HDL cholesterol, creatinine and potassium, should be made. An echocardiogram and chest x-ray are desirable in subjects with moderate or severe hypertension.

Since the presence of target organ damage increases the risk of sudden collapse, group 3 or 4 hypertensive retinopathy, left ventricular hypertrophy not otherwise explained (echocardiography or ECG by Estes criteria), evidence of severely reduced left ventricular function, or serum creatinine of greater than 2.5 warrants the driver being found unqualified to operate a commercial motor vehicle in interstate commerce.

Treatment includes nonpharmacologic and pharmacologic modalities as well as counseling to reduce other risk factors. Most antihypertensive medications also have side effects, the importance of which must be judged on an individual basis. Side effects of somnolence or syncope are particularly undesirable in commercial drivers. Commercial drivers should be informed of the side effects of drug therapy and the interaction of these drugs with other prescription drugs, nonprescription drugs, and alcohol.

Surgically Corrected Hypertension:

A commercial driver who has normal blood pressure 3 or more months after a successful operation for pheochromocytoma, primary aldosteronism (unless bilateral adrenalectomy has been performed), renovascular disease, or unilateral renal parenchymal disease, and who shows no evidence of target organ damage may be qualified. Hypertension that persists despite surgical intervention with no target organ disease should be evaluated and treated following the guidelines set forth above.

§ 391.41(b)(7) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no established medical history or clinical diagnosis of a rheumatic, arthritic, orthopedic, muscular, neuromuscular or vascular disease which interferes with his/her ability to control and operate a commercial motor vehicle safely.

Certain diseases are known to have acute episodes of transient muscle weakness, poor muscular coordination (ataxia), abnormal sensations (paresthesia), decreased muscular tone (hypotonia), visual disturbances and pain which may be suddenly incapacitating. With each recurring episode, these symptoms may become more pronounced and remain for longer periods of time. Other diseases have more insidious onsets and display symptoms of muscle wasting (atrophy), swelling and paresthesia which may not suddenly incapacitate a person but may restrict his/her movements and eventually interfere with the ability to safely operate a motor vehicle. In many instances these diseases are degenerative in nature or may result in deterioration of the involved area.

Once the individual has been diagnosed as having a rheumatic, arthritic, orthopedic, muscular, neuromuscular or vascular disease, then he/she has an established history of that disease. The physician, when examining an individual, should consider the following:

1. the nature and severity of the individual's condition (such as sensory loss or loss of strength);

2. the degree of limitation present (such as range of motion);

3. the likelihood of progressive limitation (not always present initially but may manifest itself over time); and

4. the likelihood of sudden incapacitation.

If the medical examiner determines that the disease or condition is likely to interfere with a driver's ability to safely operate a motor vehicle, the driver cannot be certified and must be sent to a specialist. In cases where more frequent monitoring is required, a certificate for a shorter time period may be issued.

§ 391.41(b)(8) - A person is physically qualified to drive a commercial motor vehicle if that person:

Has no established medical history or clinical diagnosis of epilepsy;

or

any other condition which is likely to cause the loss of consciousness; or any loss of ability to control a commercial motor vehicle.

Epilepsy is a chronic functional disease characterized by seizures or episodes that occur without warning, resulting in loss of voluntary control which may lead to loss of consciousness and/or seizures. Therefore, the following drivers cannot be qualified:

1. a driver who has a medical history of epilepsy; or

2. a driver who has a current clinical diagnosis of epilepsy; or

3. a driver who is taking antiseizure medication.

If an individual has had a nonepileptic seizure or an episode of loss of consciousness of unknown cause which did not require antiseizure medication, the decision as to whether that person's condition may result in the loss of consciousness or loss of ability to control a motor vehicle is made on an individual basis by the medical examiner in consultation with the treating physician. Before certification is considered, it is suggested that a 6-month waiting period elapse from the time of the episode. Following the waiting period, it is recommended that the individual have a complete neurological examination. If the results of the examination are negative and antiseizure medication is not required, then the driver may be qualified.

In those individual cases where a driver had a nonepileptic seizure or an episode of loss of consciousness that resulted from a known medical condition (e.g., drug reaction, high temperature, acute infectious disease, dehydration, or acute metabolic disturbance), certification should be deferred until the driver has fully recovered from that condition, has no existing residual complications, and is not taking antiseizure medication.

§ 391.41(b)(9) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has no mental, nervous, organic, or functional disease or psychiatric disorder likely to interfere with the driver's ability to drive a commercial motor vehicle safely.

Emotional or adjustment problems contribute directly to an individual's level of memory, reasoning, attention, and judgment. These problems often underlie physical disorders. A variety of functional disorders can cause drowsiness, dizziness, confusion, weakness, or paralysis that may lead to incoordination, inattention, loss of functional control and susceptibility to accidents while driving. Physical fatigue, headache, impaired coordination, recurring physical ailments, and chronic "nagging" pain may be present to such a degree that certification for commercial driving is inadvisable. Somatic and psychosomatic complaints should be thoroughly examined when determining an individual's overall fitness to drive. Disorders of a periodically incapacitating nature, even in the early stages of development, may warrant disqualification.

Many bus and truck drivers have documented that "nervous trouble" related to neurotic, personality, emotional or adjustment problems is responsible for a significant fraction of their preventable accidents. The degree to which an individual is able to appreciate, evaluate and adequately respond to environmental strain and emotional stress is critical when assessing an individual's mental alertness and flexibility to cope with the stresses of commercial vehicle driving.

When examining the driver, it should be kept in mind that individuals who live under chronic emotional upsets may have deeply ingrained maladaptive or erratic behavior patterns. Excessively antagonistic, instinctive, impulsive, openly aggressive, paranoid or severely depressed behavior greatly interfere with the driver's ability to drive safely. Those individuals who are highly susceptible to frequent states of emotional instability (schizophrenia, affective psychoses, paranoia, anxiety or depressive neuroses) may warrant disqualification.

Careful consideration should be given to the side effects and interactions of medications in the overall qualification determination.

§ 391.41(b)(10) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Has a distant visual acuity of at least 20/40 (Snellen) in each eye with or without corrective lenses;
>
> and
>
> distant binocular acuity of at least 20/40 (Snellen) in both eyes with or without corrective lenses;
>
> and
>
> field of vision of at least 70 degrees in the horizontal meridian in each eye;
>
> and
>
> the ability to recognize the colors of traffic signals and devices showing standard red, green, and amber.

The term "ability to recognize the colors of" is interpreted to mean if a person can recognize and distinguish among traffic control signals and devices showing standard red, green, and amber, he/she meets the minimum standard, even though he/she may have some type of color perception deficiency. If certain color perception tests are administered (such as Ishihara, Pseudoisochromatic, Yarn, etc.), and doubtful findings are discovered, a controlled test using signal red, green, and amber may be employed to determine the driver's ability to recognize these colors.

Contact lenses are permissible if there is sufficient evidence to indicate that the driver has good tolerance and is well adapted to their use. Use of a contact lens in one eye for distant visual acuity and another lens in the other eye for near vision is not acceptable, nor are telescopic lenses acceptable for driving commercial motor vehicles.

If an individual meets the criteria by the use of glasses or contact lenses, the following statement shall appear on the Medical Examiner's Certificate: "Qualified only if wearing corrective lenses."

§ 391.41(b)(11) - A person is physically qualified to drive a commercial motor vehicle if that person:

> First perceives a forced whispered voice in the better ear at not less than five feet with or without the use of a hearing aid,
>
> or
>
> if tested by use of an audiometric device, does not have an average hearing loss in the better ear greater than 40 decibels at 500 Hz, 1,000 Hz and 2,000 Hz with or without a hearing aid when the audiometric device is calibrated to the American National Standard [formerly American Standard Association (ASA)] (Z24.5—1951).

There are two organizations that set forth frequently used audiometric calibration standards, the American National Standards Institute (ANSI, S3, 6-1969) and the International Standards Organization (ISO, 1964). Since the prescribed standard under the

Federal Motor Carrier Safety Regulations is the ANSI, it may be necessary to convert the audiometric results:

1. at 500 Hz subtract 14 dB from the ISO reading to get the ANSI reading,

2. at 1,000 Hz subtract 10 dB from the ISO reading, and

3. at 2,000 Hz subtract 8.5 dB from the ISO reading.

The final figure is derived by averaging the readings of the three frequencies (e.g., If the loss reading at 500 Hz is 30 dB, at 1,000 Hz is 30 dB, and at 2,000 Hz is 52 dB, the average of the three readings is 37 dB, and the driver should be qualified).

If an individual meets the criteria by using a hearing aid, the driver must wear that hearing aid and have it in operation at all times while driving. Also, the driver must be in possession of a spare power source for the hearing aid.

If an individual meets the criteria by the use of a hearing aid, the following statement must appear on the Medical Examiner's Certificate "Qualified only when wearing a hearing aid."

§ 391.41(b)(12) - A person is physically qualified to drive a commercial motor vehicle if that person:

> Does not use a controlled substance identified in 21 CFR 1308.11 Schedule I, an amphetamine, a narcotic, or any other habit-forming drug. *Exception:* A driver may use such a substance or drug, if the substance or drug is prescribed by a licensed medical practitioner who is familiar with the driver's medical history and assigned duties; and has advised the driver that the prescribed substance or drug will not adversely affect the driver's ability to safely operate a commercial motor vehicle.

This exception does not apply to the use of methadone.

The intent of the medical certification process is to medically evaluate a driver to ensure that the driver has no medical condition which interferes with the safe performance of driving tasks on a public road. If a driver uses a Schedule I drug or other substance, an amphetamine, a narcotic, or any other habit-forming drug, it may be cause for the driver to be found medically unqualified. Motor carriers are encouraged to obtain a practitioner's written statement about the effects on transportation safety of the use of a particular drug.

A test for controlled substances is not required as part of this biennial certification process. The FMCSA or the driver's employer should be contacted directly for information on controlled substances and alcohol testing under Part 382 of the FMCSRs.

The term "uses" is designed to encompass instances of prohibited drug use determined by a physician through established medical means. This may or may not involve body fluid testing. If body fluid testing takes place, positive test results should be confirmed by a second test of greater specificity. The term "habit-forming" is intended to

include any drug or medication generally recognized as capable of becoming habitual, and which may impair the user's ability to operate a motor vehicle safely.

The driver is medically unqualified for the duration of the prohibited drug(s) use and until a second examination shows the driver is free from the prohibited drug(s) use. Recertification may involve a substance abuse evaluation, the successful completion of a drug rehabilitation program, and a negative drug test result. Additionally, given that the certification period is normally two years, the examiner has the option to certify for a period of less than two years if this examiner determines more frequent monitoring is required.

This is contingent on the treating/prescribing medical practitioner making a good faith judgment, with notice of the driver's assigned duties and on the basis of available medical history, that use of the substance by the driver at the prescribed or authorized dosage level is consistent with the safe performance of the driver's duties. Finally, the substance's use must be at the dosage prescribed or authorized.

§ 391.41(b)(13) - A person is physically qualified to drive a commercial motor vehicle if that person:

Has no current clinical diagnosis of alcoholism.

The term "current clinical diagnosis" is specifically designed to encompass a current alcoholic illness or those instances where the individual's physical condition has not fully stabilized, regardless of the time element. If an individual shows signs of having a possible alcohol-use problem, he or she should be referred to a specialist trained to deal in such matters. After this individual has been treated and/or undergone appropriate counseling, he/she may be considered for certification.

Appendix G

State Laws Regarding Unfit Commercial Drivers

Table 6. Ability of States to offer immunity to individuals reporting concerns regarding commercial vehicle driver fitness.

State	Power to disqualify	Immunity to persons who in good faith report an unfit driver	Immunity to physicians who report an unfit driver
Alabama	Yes	N/A	Yes
Alaska	Yes	Yes	Yes
Arizona	Yes	No	Yes
Arkansas	Yes	No	No
California	Yes	No	Yes
Colorado	Yes	Yes	Yes
Connecticut	Yes	No	Yes
Delaware	Yes	No	No
District of Columbia	Yes	No	No
Florida	Yes	Yes	Yes
Georgia	Yes	Yes	Yes
Hawaii	Yes	No	No
Idaho	Yes	No	No
Illinois	No	Yes	Yes
Indiana	Yes	No	No
Iowa	Yes	No	Yes
Kansas	Yes	Yes	Yes
Kentucky	Yes	Yes	Yes
Louisiana	Yes	No	Yes
Maine	Yes	Yes	Yes
Maryland	No	Yes	Yes
Massachusetts	Yes	No	No
Michigan	No	No	No
Minnesota	Yes	No	Yes
Mississippi	Yes	N/A	N/A

State	Power to disqualify	Immunity to persons who in good faith report an unfit driver	Immunity to physicians who report an unfit driver
Missouri	Yes	No	No
Montana	Yes	Yes	Yes
Nebraska	Yes	No	No
Nevada	Yes	N/A	Yes
New Hampshire	Yes	N/A	N/A
New Jersey	Yes	No	Yes
New Mexico	Yes	No	Yes
New York	Yes	Yes	Yes
North Carolina	Yes	No	No
North Dakota	Yes	No	Yes
Ohio	Yes	No	No
Oklahoma	Yes	Yes	Yes
Oregon	Yes	Yes	Yes
Pennsylvania	Yes	Yes	Yes
Rhode Island	Yes	No	Yes
South Carolina	Yes	N/A	No
South Dakota	Yes	No	No
Tennessee	Yes	No	No
Texas	Yes	No	Yes
Utah	Yes	Yes	Yes
Vermont	Yes	No	No
Virginia	Yes	N/A	Yes
Washington	Yes	No	No
West Virginia	Yes	No	No
Wisconsin	Yes	No	Yes
Wyoming	Yes	Yes	No

Source: From the Association for the Advancement of Automotive Medicine and Federal Highway Administration, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*, PB97-194393INZ (Springfield, Virginia: National Technical Information Service [NTIS], 1997).

Appendix H

Medical-Related Safety Board Investigations

Table 7. Accidents in which the driver's medical condition may have been a factor.

Report number	Date	Description	Location	Medical condition(s)	Issue
HAR-83/05	February 1983	Head-on collision of dump truck and school bus	Willow Creek, California	Hypoglycemia (low blood sugar)	Dump truck driver did not mention hypoglycemia in medical history section of exam form
HAR-84/07	July 1984	Collision of a patrol car and a tractor-semitrailer	Ashdown, Arkansas	None reported	Tractor-semitrailer driver did not have a medical certificate (either valid or invalid)
HAR-86/02	May 1985	Multivehicle collision	Snow Hill, North Carolina	Posttraumatic epilepsy; did not take medication as prescribed	Tractor-semitrailer driver did not mention epilepsy in medical history section of exam form
HAR-87/01	August 1985	Intercity bus loss of control and collision with bridge rail	Fredrick, Maryland	Insulin-controlled diabetes, high blood pressure, and recent kidney transplant	Intercity bus driver checked "no" for diabetes on medical history section of exam form; did not mention kidney transplant
HAR-87/04	May 1986	Intercity bus loss of control and rollover	Walker, California	Uncontrolled diabetes	Intercity bus driver forged medical certificate
HAR-88/03	September 1987	Intercity bus run off the road and overturn	Middletown, New Jersey	Diabetes	Intercity bus driver forged medical certificate on several occasions
HAR-89/03	November 1988	Motorcoach loss of control and overturn	Nashville, Tennessee	High blood pressure	Motorcoach driver did not mention high blood pressure in medical history section of exam form

Report number	Date	Description	Location	Medical condition(s)	Issue
CRH-92-FH-004	December 1991	Two trucks	Arlington, Texas	Sleep apnea	Truckdriver had sleep apnea, which is not covered under the current regulations
CRH-93-TH-015	January 1993	Propane truck overturn	Arlington, Texas	Sleep apnea	Propane truckdriver had sleep apnea, which is not covered under the current regulations
HWY-98-FH-004	October 1997	School bus struck by load from a tractor-semitrailer	Franklin, North Carolina	Driving while intoxicated	Tractor-semitrailer driver had a drinking problem and was on antidepressants
HWY-98-FH-019	October 1997	Motorcoach loss of control	New York, New York	Seizure-like episode in 1992 attributed to alcohol detoxification	Motorcoach driver checked “no” to having seizures on three most recent exam forms
HWY-98-MH-022	March 1998	School bus struck by a train	Buffalo, Montana	Poor vision	School bus driver had poor vision, but Montana allows drivers with 20/40 vision in one or both eyes to drive intrastate
HWY-98-FH-045	September 1998	School bus collision with dump truck	Holmdel, New Jersey	None reported	Dump truck driver did not have a valid medical certificate (had been cited for this previously)
HWY-98-FH-046	September 1999	School bus collision with dump truck	Holmdel, New Jersey	Migraines that were being treated with barbiturates	School bus driver’s use of barbiturates may have affected attention and cognitive processing
HWY-00-FH-001	October 1999	School bus collision with dump truck	Central Bridge, New York	Hypertension, diabetes, cardiac condition	Driver failed to mention cardiac condition during examination
HWY-00-FH-046	July 2000	Police cruiser struck by a tractor-semitrailer	Jackson, Tennessee	Sleep apnea	Tractor-semitrailer driver had been diagnosed with severe obstructive sleep apnea

Appendix I

International Commercial Vehicle Driver Certification Programs

The Safety Board conducted a brief survey of the medical certification programs of the United Kingdom, Canada, and Australia to compare them with U.S. programs. These countries were selected mainly because the common language made information gathering simpler. However, the striking differences between these three countries make a comparison of their programs worthwhile. Information on what is known about the Mexican medical certification system is also included.

The United Kingdom

In the United Kingdom, medical fitness requirements are part of the commercial driver's license (that is, Group 2 licenses). Group 2 license holders include drivers of trucks (category C) or buses (category D). Licenses are normally issued at age 21 and are valid until age 45, with exceptions for armed forces and certain passenger carrying vehicle licenses. After age 45, licenses are renewable every 5 years to age 65 unless restricted to a shorter period for medical reasons. From age 65 onward, the licenses are renewable annually. The Driver and Vehicle Licensing Agency (DVLA) does not issue licenses for taxis, ambulances, or emergency service vehicles. However, the Medical Commission on Accident Prevention recommends that Group 2 medical standards be applied to these categories as an occupational health policy.

Only physicians may perform examinations for the purpose of licensure. No registry of examiners exists; drivers are allowed to choose their examiner. Examiners are only required to perform the examination, complete the examination form (D4), and validate it with an individualized physician's stamp. Examiners are not responsible for certifying the fitness of drivers and are not required to provide an opinion on that matter. Once an examination is completed, drivers send the D4 to the DVLA. The DVLA tracks and reviews each D4 submitted and makes a fitness determination for each driver.

The D4, which can be obtained at any post office, lists the medical standards by which commercial drivers are evaluated. Physicians desiring information on the evaluation process can consult several sources of information. The DVLA provides its *At A Glance* booklet, including the regulations and guidelines that apply to Group 2 license holders, to all health care professionals requesting it.[169] If more specific information or advice is needed, doctors may write to the DVLA or may contact its medical advisers during office hours. In addition, the government-sponsored Medical Commission on

[169] Department of Environment, Transport and the Regions, Driver and Vehicle Licensing Agency, *At a Glance* (Swansea, United Kingdom: DLVA, 2000). This information is also available on the DVLA Web site <http://www.dvla.gov.uk/at_a_glance/content.htm>.

Accident Prevention publishes a booklet entitled, *Medical Aspects of Fitness to Drive*,[170] which offers further guidance for examiners.

Drivers are responsible for informing the DVLA of health problems that may affect their ability to operate a commercial vehicle. This notification is via an honor system. However, insurance companies may deny coverage to drivers who have not informed the DVLA of a potentially disqualifying disease or injury.

Australia

State and Territorial licensing authorities carry out the administrative processes for licensing and medical certification. Although no national policy is in place for these processes, national guidelines setting the minimum standards of vehicle operation and allowing for interstate commerce are voluntarily followed by the State and Territorial licensing authorities.

Commercial drivers in Australia are only required to possess a current valid driver's license for the class of heavy vehicle they are driving. Upon application for issue or renewal of a license, drivers are required to self-certify that they do not have medical conditions that may impair driving. Drivers are also required to report to the licensing authority if they become aware of such a medical condition.

A driver who informs the licensing authority of a medical condition receives an examination form. These forms can vary from state to state, but most require doctors to include their name, address, phone number, and signature. Most driver licensing authorities indicate (by name) which medical standards should be applied on this medical examination form. Additional guidelines instruct doctors unfamiliar with the medical criteria on how to obtain further information.[171]

The driver can make an appointment with a physician of his or her choice, who would conduct the examination and complete the form. Only physicians are allowed to perform examinations. An examiner registry does not exist, although it has been in consideration for several years. The main concern about establishing a registry is that it might severely limit or even eliminate the choice of physicians in low population areas.

Once the examination is completed, the physician returns the original form to the licensing authority and may keep a copy if so desired. As is the case in the United Kingdom, the licensing authority certifies a commercial driver as fit to drive. In determining whether to issue a license based on the examination certificate, issuing officers often telephone the examining physician to discuss the information provided.

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[170] J.F. Taylor, *Medical Aspects of Fitness to Drive: A Guide for Medical Practicioners* (London: Medical Commission on Accident Prevention, 1995).

[171] National Road Transport Commission, *Medical Examination of Commercial Vehicle Drivers* (Melbourne, Australia: National Road Transport Commission, 1999).

Law enforcement checks are normally not done on a person's medical history; the possession of a current license would be the basis for assuming that the driver is medically fit.

Canada

In Canada, medical certification is part of the driver's license. As in the United Kingdom and Australia, holding a current and valid license is proof of medical fitness. Licensing is under the exclusive jurisdiction of the Provinces and Territories. However, Canada's National Safety Code includes a section devoted to the Medical Standards for Drivers, which has been voluntarily adopted by the Provincial and Territorial licensing agencies as the minimum fitness requirement for drivers. Physicians, representing each Province and Territory, review the standards every 2 years to keep them current. In addition, the Canadian Medical Association publishes a guide to further help physicians in their decision to qualify drivers.

Medical examinations are required every 5 years before age 45. They are required every 3 years for drivers between 45 and 65 and annually thereafter. Not filing a medical examination results in either a license suspension or a downgrade (to a lower vehicle classification) of the commercial license. In addition to the periodic examinations, drivers must also complete a medical questionnaire on the back of their license renewal application. If a potentially disqualifying condition is indicated, further medical review is triggered, and the driver is sent a medical examination form.

Only physicians may evaluate the physical fitness of commercial drivers. Although a national registry of physicians does not exist, most provinces do require drivers to visit "recognized" physicians. For example, physicians in Manitoba must be registered with the *College of Physicians and Surgeons of Manitoba*.

Although physicians are asked to provide medical information and a recommendation on the fitness of the driver, the licensing agency ultimately approves or disapproves the driver's medical information. Physicians are required by law to report to the licensing agency conditions that may interfere with a driver's ability to safely operate a vehicle. In Manitoba, physicians are protected by legislation from liability for reporting.[172]

Canada does not have a waiver system; cases are reviewed individually by the provincial medical review boards. For example, diabetics are not automatically refused licenses but are evaluated using criteria developed by the Canadian Diabetes Association, the Medical Standards for Drivers, and the Canadian Medical Association.[173]

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[172] Shelley Serle, Assistant Supervisor, Medical Records Section, Driver and Vehicle Licensing, Manitoba Highway and Government Services, Canada, e-mail correspondence, August 25, 2000.

[173] Dr. David Irving, Chairman, Manitoba Medical Review Board, testimony, National Transportation Safety Board public hearing, Highway Transportation Safety Aspects of the North American Free Trade Agreement, Los Angeles, California, October 20 through 22, 1999.

Mexico

Mexico's commercial driver's licensing system incorporates medical certification. A commercial driver's license can be issued to individuals who are least 18 (or at least 21 for international drivers). Commercial drivers' licenses are renewed every 2 years, at which time drivers are required to be medically examined. However, drivers who suffer from medical conditions that may affect driving performance may be examined more frequently.

Ninety-six percent of passenger transportation in Mexico is by bus. Because of this, drivers of commercial passenger vehicles are subjected to a much stricter medical examination process than other commercial drivers. They are medically examined before every trip by examiners located at the bus terminals. Mexico even has mobile medical testing, and a driver can be stopped while on duty to have the testing administered.

Only physicians are allowed to become examiners. All examiners are Federal employees and are required to attend an examiners' training program. After completing an examination, the form examiner forwards the form to a central site, where it is input into a database that can be used to review and track driver fitness information. Mexico currently does not have a waiver program.[174]

[174] C.P. Alfonso Salinas Corral, Director General Adjunto de Operacion, Subsecretaria de Transporte, Mexico, interview, October 2000.

Appendix J

Drug-Related Safety Board Investigations

Table 8. Accidents in which driver's use of illicit drugs may have been a factor.

Report number	Date	Description	Location	Driver with condition	Drugs in system	Comments
HAR-87/02	November 1985	School bus loss of control and collision with guardrail	St. Louis County, Missouri	School bus driver	Phencyclidine (PCP) tetrahydrocannabinol (THC), from marijuana	No prior drug charges; no reports of drug use from previous employers
HAR-87/05	July 1986	Intercity bus collision with tractor-semitrailer	Brinkley, Arkansas	Tractor-semitrailer driver	None detected	Driver admitted to smoking marijuana 2 days prior to accident
HAR-87/04	April 1987	Tour bus collision with bridge	Alexandria, Virginia	Tour bus driver	Benzolylecognine (from cocaine); diazepam (from valium); marijuana metabolite	Driver had active suspensions from two States at the time of accident
HAR-89/02	August 1987	Flat-bed truck collision with school bus	Bronson, Florida	Flat-bed truck driver	Tetrahydrocannabinol (THC), from marijuana	Driver failed to stop at stop sign
HAR-98/01	February 1997	Multivehicle crash	Slinger, Wisconsin	Refrigeration truck driver	Tetrahydrocannabinol (THC), from marijuana	Refrigeration truck driver not at fault
CRH-92-F-H007	February 1992	Propane truck overturn	Fort Smith, Arkansas	Propane truck driver	Tetrahydrocannabinol (THC), from marijuana; 0.1 blood alcohol concentration	Two DWI convictions, 1985; one DWI conviction, 1987