

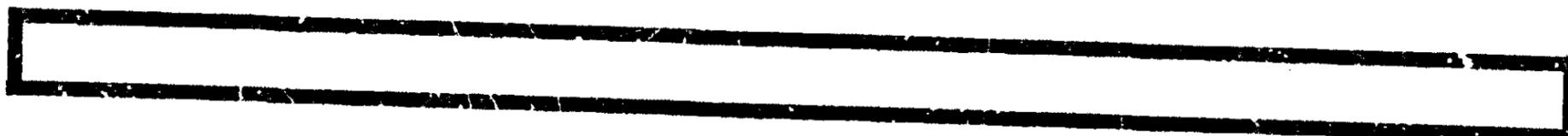
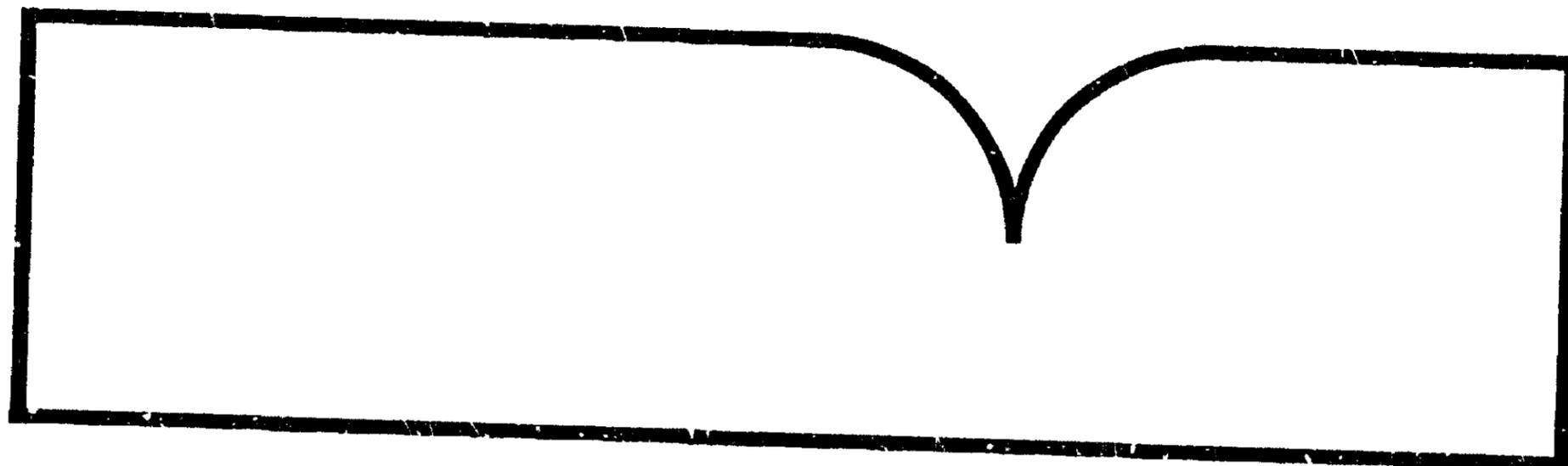


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National Transportation Safety Board Highway Accident Reports
Brief Format Issue Number 1, Reports Issued August 1993

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16. Abstract A compilation of 17 highway accident investigation briefs have been prepared by the National Transportation Safety Board in fiscal year 1992, none of which were previously published in highway accident or special investigation reports. Each brief gives the date, time, and location of the accident; the accident's resulting damages and injuries; and a description of the accident, including its probable cause and the resulting safety accomplishments when applicable.							
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INTRODUCTION

This publication compiles 17 highway accident investigation briefs prepared by the National Transportation Safety Board in fiscal year 1992, none of which were previously published in highway accident or special investigation reports. Each brief gives the date, time, and location of the accident; the accident's resulting damages and injuries; and a description of the accident, including its probable cause and the resulting safety accomplishments when applicable.

The 17 cases contained in this volume are summarized below:

- 6 accidents involved heavy truck collisions and overturns (3 of which resulted in fires).
- 5 cases involved school buses (3 of which were school bus loading zone accidents).
- 3 accidents involved grade crossing collisions.
- 3 accidents involved intercity buses.

The Safety Board determined that human performance issues were the primary causal factor in all 17 accidents, that vehicle issues either contributed to the cause or injury severity in 3 accidents, and that environmental issues caused 2 accidents. The primary and contributing causal factors for these accidents are summarized in more detail in the probable cause matrix that follows.

PROBABLE CAUSE MATRIX

P = Primary Causal Factors

C = Contributing Causal Factors

FACTOR	CASE NUMBER																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Driver Failure		P		P	P	P	P	P	P	P		P	P	P		P	P
Fatigue/Inattention	P								P								
Carrier Oversight							C										
Brake Performance										P			P				
Alcohol or Other Drug Impairment						P	P										
Inappropriate Warning Signs/Other											C					P	
Miscellaneous		C	P	C						C	P	C				P	C

DEFINITION OF FACTORS

Driver Failure - Driver failed to take appropriate action to avoid the accident.

Fatigue/Inattention - Driver was impaired by fatigue or inattentive to driving.

Carrier Oversight - A deficiency in the carrier's supervision of the driver or the vehicle.

Brake Performance - A deficiency in the mechanical operation of the vehicle's brake system.

Alcohol or Other Drug Impairment - Driver was impaired by alcohol or other drugs.

Inappropriate Warning Signs/Other - A deficiency in the message, location, or physical characteristics of roadway signs.

Miscellaneous - Other improper actions or deficiencies involving persons, vehicles, or the roadway.

All of the accidents that follow were investigated for the Safety Board by its Highway Regional Offices. The factual information obtained during these investigations is maintained in a public docket at the Safety Board's Washington, D.C. headquarters. The Safety Board's determination of probable cause in each accident brief was based on an analysis of all available factual information.

**Highway Accident Briefs
Fiscal Year 1992**

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**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 1**

Investigation No.: SRH-92-F-H002
Type of Accident: School bus rollover
Accident Location: Pinetop, Kentucky
Lanes: Two, asphalt-paved, 10-foot-wide; two-way roadway
Shoulders: Grass
Median: None
Features: Rural; winding roadway; 55-mph posted speed limit
Date and Time: October 24, 1991, 4:15 p.m. local
Ambient Conditions: Clear, dry, and warm
Vehicles Involved: 1984 Wayne Lifeguard 71-passenger school bus
Occupants: 25 passengers and 1 driver
Injuries: 4 serious and 22 minor

Description of the Accident

The school bus was traveling eastbound on State Highway 582 entering a left-hand curve when it departed the right edge of the paved surface, traveled a total of 154 feet along the shoulder and down an embankment, and rolled over once, coming to rest on its top in a creek bed.

The driver stated that the vehicle's steering had malfunctioned. However, the Safety Board examined the steering gear and linkage and found no deficiencies.

Students aboard the bus indicated that a "paper wad" fight had been in progress at the time of the accident. Eight of the students indicated that the busdriver was involved and had been seen picking up paper wads and throwing them when the vehicle left the roadway.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the school busdriver's inattention because he was participating in prankish conduct with passengers.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 2

Investigation No.: NRH-92-F-11001
Type of Accident: School bus/pedestrian collision while unloading
Accident Location: Westport, Connecticut
Lanes: Two, asphalt-paved, 10-foot-wide; two-way roadway
Shoulders: None
Median: None
Features: Rural; straight and level; residential street
Date and Time: December 10, 1991, 3:44 p.m. local
Ambient Conditions: Clear and dry
Vehicle Involved: 1990 Thomas transit 66-passenger school bus
Occupants: 23 passengers and 1 driver
Injuries: One fatal

Description of the Accident

The school bus had left school about 3:35 p.m. to return elementary school students children ages 6 to 10 to their homes. As the bus stopped on the highway to unload passengers at a common driveway shared by two residences, an 8-year-old girl exited the bus from the forward entrance door. From this exit position, the child had to turn to her right and walk toward the rear of the bus to reach her home driveway. That travel path necessitated walking past the steering axle wheels of the transit-style bus (with front axle rearward of the front entrance door).

The busdriver stated that, following the child's exit from the bus, he watched her progress by observing his right-side mirror. He further stated that he watched the child walk away from the bus before he started driving again. However, as the bus began moving forward the driver felt a "bump." He stopped the bus and upon exiting found the child lying in the street fatally injured.

The victim was wearing a yellow jacket and hood. The jacket had a draw cord with metal ends that allowed the jacket to be drawn tight at the waist. Following the accident, the draw cord was torn apart, a portion of it remaining with the jacket and a portion found lying on the first step of the bus stairwell. Subsequent investigation found that as the child attempted to exit the bus, the waist cord first had become entangled in the stepwell handrail and, subsequently, the molded rubber trim that surrounded the wheel well of the right front tire. The Safety Board determined that the child, due to that entanglement, was pulled off her feet and run over by the right-side tires of the bus.

The school bus was equipped with 8-inch-diameter convex and 10-by-5-inch rectangular mirrors on both sides. The investigation found that the mirrors were in proper adjustment and should have provided the driver with an unobstructed view of the child's position alongside the bus.

Although the bus was owned by the school district, it was operated by a separate bus contractor. The contractor had been in business for about 32 years. At the time of the accident, the contractor operated 39 buses for the school district and employed 45 drivers on a full- or part-time basis. An official of the contractor said that safety classes are provided five times a year by a third-party contractor covering "...many facets of school bus safety, including the loading and unloading of students." No records were kept on who had attended that training.

The driver of the bus involved in this accident had been employed by the contractor for about 11 years, both full- and part-time. He was licensed by the State as a school busdriver, and had passed the State-mandated school busdriver training course, which included loading and unloading procedures. At the time of the accident he was being used by the contractor as a "driver instructor" for training newly hired drivers.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the school busdriver's failure to ensure that an exiting child had cleared the bus before beginning forward motion.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 3

Investigation No.: SRH-92-F-H008
Type of Accident: Tank truck collision, overturn, and fire
Accident Location: State Route 45A near Crawford, Mississippi
Lanes: Two, asphalt-paved; two-way roadway
Shoulders: Earthen, 6-foot-wide
Median: None
Features: Rural and level; right curve in a "no passing" zone
Date and Time: January 20, 1992, 10:30 a.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1985 International tractor/cargo tank semitrailer
1979 Ford truck tractor/semitrailer
1982 International truck tractor/semitrailer
1979 Buick automobile
Occupants: Four (drivers only)
Injuries: Three fatal and one minor

Description of the Accident

The driver of an International tractor/cargo tank truck was traveling north on State Route 45A, approximately 3 miles north of Crawford, Mississippi, when he pulled into the southbound lane in a marked "no passing zone" and began passing a northbound Buick. The truckdriver began his maneuver with insufficient clearance ahead and had to swerve back to the right to avoid an approaching Ford truck tractor trailer/semitrailer. The swerving maneuver caused the tank truck to begin a jackknife, and its cargo of 10,000 gallons of propane began overturning to the left. The tank truck then collided with the southbound Ford truck, puncturing the headwall on the tank truck. The escaping propane fuel ignited and propelled the tank truck several hundred feet. The International tank truck and the Ford truck came to rest and burned in the postcrash fire. The tank truck driver was found in the burned wreckage, and the Ford truck driver was ejected and killed at impact. A southbound 1982 International truck that had been traveling behind the Ford was also consumed in the postcrash fire, and its driver died 9 days later from thermal injuries. The driver of the Buick that the tank truck had attempted to pass received minor injuries.

A postcrash inspection of the tank truck trailer's kingpin showed that it had horizontal breakage at the 1 and 7 o'clock positions. The tank truck had passed current cargo tank

inspection standards, and a metallurgical analysis of tank headwall at the Safety Board laboratory showed that no fatigue or corrosion was present.

The truckdriver had been working for his present employer, Golden Triangle Wholesale Gas Company (GTWGC), for 2 months. A previous employer of the truckdriver stated to the Safety Board that the 36-year-old truckdriver had been driving trucks since he was 17 years old. However, the truckdriver had only listed the previous 3 years of experience on his employment application.

Mississippi driver record files showed that the truckdriver had a valid Commercial Driver License. The record indicated that the truckdriver had been involved in three other accidents and had been convicted of six moving traffic violations since 1989. A 50-State driver record check showed that the driver had received an additional traffic violation in Florida in 1987 and that he failed to contact the court or pay the fine. The check also showed that the driver was involved in another accident on July 8, 1988, in Illinois and as a result, his Illinois driving privileges had been suspended until January 22, 1990. However, the driver continued to drive and did not inform his employer of the accident or of the privilege suspension.

An inspection of the GTWGC's driver qualification file showed that the carrier had failed to perform the background investigation required by 49 CFR 391.23. The truckdriver's previous employer confirmed that GTWGC had never contacted them for a reference.

The Federal Highway Administration Office of Motor Carriers conducted a safety review of the carrier on March 24, 1988, and issued GTWGC a satisfactory rating. After the accident, a compliance review was performed. At this time, violations of the Federal Motor Carrier Safety Regulations were discovered, and an enforcement case against GTWGC is pending.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the truckdriver's decision to initiate an illegal passing maneuver, which resulted in the loss of control of his combination unit.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 4

Investigation No.:	NRH-92-F-H003
Type of Accident:	Intercity bus rollover
Accident Location:	South Bend, Indiana
Lanes:	Four, asphalt-paved, 12-foot-wide; two-way roadway
Shoulders:	Asphalt-surfaced, 10-foot-wide
Median:	Grass
Features:	Rural; straight and level
Date and Time:	January 24, 1992, 12:15 a.m. local
Ambient Conditions:	Heavy snowfall with limited visibility
Vehicle Involved:	1988 47-passenger MCI bus
Occupants:	36 passengers and 1 driver
Injuries:	2 fatal, 1 serious, and 34 minor

Description of the Accident

An intercity bus, carrying members of the University of Notre Dame women's swim team, was traveling eastbound in heavy snowfall at what the driver estimated to be 40 to 45 mph. The busdriver reported seeing a slow-moving vehicle ahead in the right lane and that he had steered toward the left lane in an attempt to pass. The slower vehicle then started moving leftward, into the path of the bus. When the busdriver applied the brakes, they locked up and the rear of the bus slid to the left. Attempts by the driver to correct the slide were unsuccessful, and the bus rotated approximately 180 degrees, departed the roadway, and descended a 19-percent sideslope. As the bus traveled down the sideslope, its left-rear wheels struck a concrete culvert. The bus overturned onto its roof and came to rest about 100 feet from where it left the roadway.

The two fatally injured passengers were ejected from the bus. They were seated in left outboard positions, one in row 10 and one in row 12. One additional passenger sustained serious injuries. The driver and remaining 33 passengers received minor to moderate injuries.

A postcrash examination of the three-axle bus found no mechanical deficiencies. All brakes were well within the manufacturer's recommended adjustment tolerances. However, further inspection of the bus revealed that the glass panels of all the left-side windows were missing. This resulted from a combination of factors--the bus striking the ground, longitudinal twisting forces, and the deformation of the bus roof. Three of the window frames were found in the unlatched position, but only the second window frame from the front was actually open.

Of the glass panels from the bus' right-side windows, two were missing, four were unlatched, and one was in the open position. It could not be determined through which window(s) the fatally injured passengers had been ejected.

The intercity bus carrier had been in business since 1982 and under its current ownership since early 1990. The carrier operates 43 buses and employs 50 full- and part-time drivers. The driver had been employed by the carrier for 8 years and reportedly had at least 20 years of experience operating heavy trucks and buses. He was properly licensed to operate the bus and experienced in driving in adverse weather. Carrier officials reported that the driver was familiar with the accident route and was not under time constraints.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the intercity busdriver's excessive speed and inappropriate brake application under adverse weather conditions. Contributing to the severity of the injuries were the passenger ejections.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 5

Investigation No.: SRH-92-F-H009
Type of Accident: Truck/pedestrian collision during school bus loading
Accident Location: Bethany, Kentucky
Lanes: Three, asphalt-paved; one northbound and two southbound
Shoulders: Earthen, 10-foot-wide
Median: None
Features: Rural; steep, winding downgrade
Date and Time: January 28, 1992, 7:45 a.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1989 Peterbilt tractor/dump trailer (truck)
1980 Ford/Bluebird bus body 66-passenger school bus
Occupants: 21 passengers, 1 busdriver, and 1 truckdriver
Injuries: One fatal

Description of the Accident

The accident sequence started when a southbound school bus operated by the Mount Holiness School began slowing to a stop on Kentucky State Route 15 to pick up a 13-year-old boy. At this point, the busdriver had activated the flashing yellow light to let approaching motorists know that a red light was to follow but had not yet activated the red lights or displayed the stop arm.

Meanwhile, two northbound passenger vehicles began slowing to a stop in anticipation of the red lights and stop arm. They came to a stop while the bus was moving forward slowly. One of the passenger vehicle drivers stated that the stop arm and red lights did come on, but the closest driver was unsure whether they came on. After the bus had stopped, a northbound Peterbilt truck came up behind the stopped passenger cars and did not stop but instead steered to the left into the center lane to pass them. At the same time, a student ran into the road from the east roadside and was subsequently struck in the center lane by the truck. The truck also collided with the left-front mirror of the stopped bus and then traveled 280 feet after impact, coming to rest on the right road shoulder.

The truckdriver stated that he was traveling approximately 40 to 45 mph in the eighth gear of his 15-speed transmission when he crested a grade about 0.5 miles from the accident site and then slowed to approximately 35 mph when he passed a store about 600 feet from the accident

site. He indicated that he first noticed the school bus when he passed the driveway of the store. This driveway was 587 feet from the accident site. He also added that he was sounding his horn as he went around the stopped northbound vehicles. The truckdriver stated to the Kentucky State Police that he thought the busdriver intended to leave his flashing yellow lights on longer so that he could continue without stopping and that the passenger vehicles had stopped abruptly in front of him.

The truckdriver had 20 years of experience driving trucks. His driving record showed that he had not been convicted of any traffic violations in the preceding 5 years. Postaccident toxicological testing showed the driver's specimen did not contain alcohol or other drugs.

A postcrash inspection of the truck found no mechanical deficiencies. Evaluation of the truck's brake force capacity and the frictional properties of the pavement indicated that the truck was traveling 55 to 58 mph when it struck the child. More important, the evaluation showed that the truckdriver could have stopped in 400 to 480 feet if he reacted in 1.5 to 2.5 seconds after he saw the flashing yellow lights on the school bus from 587 feet away.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the truckdriver's poor judgment in failing to stop when he saw the stopped vehicles and the flashing school bus lights.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 6

Investigation No.:	WRH-92-F-H003
Type of Accident:	Rollover
Accident Location:	Palm Desert, California
Lanes:	Two, asphalt-paved, 10-foot-wide; two-way roadway
Shoulders:	Soft dirt, varying widths
Median:	None
Features:	Rural; 1,539-foot left curve
Date and Time:	January 31, 1992, 4 p.m. local
Ambient Conditions:	Clear and dry
Vehicles:	1985 International/Thomas Bus Body 66-passenger (school-bus-type) vehicle
Occupants:	30 passengers and 1 busdriver
Injuries:	31 minor

Description of the Accident

About 10:30 a.m. on January 31, 1992, a group of three chartered buses carrying 106 children left the Coast Hills Community Church in Laguna Niguel, California, for the approximately 75-mile drive to Pathfinder Ranch, a church retreat near Palm Desert, California. The charter service--ATE Management and Service Company, Inc., a subsidiary of Ryder Systems (ATE Ryder)--provided the drivers and vehicles. Prior to departure, the counselors gave the busdrivers a handwritten map giving directions to the ranch. Shortly after departing, one of the busdrivers took a wrong turn near the Interstate 5 and State Route 74 interchange, and that bus became separated from the other two in the group. The bus later rejoined the group in Hemet at lunchtime, but afterwards again became separated from the rest of the group on the winding mountain roads. The busdriver missed the turn for Pathfinder Ranch and traveled approximately 20 miles past the correct turn-off before the accident occurred.

The bus was traveling slowly east on State Route 74 when it departed the travel lane to the right onto the soft shoulder. The bus rolled to the right 1 1/4 turns before coming to rest on its right side against an outcropping of boulders. The bus sustained substantial damage on the right side and roof. Ten seat cushions were displaced from the seat frameworks and thrown about during the rollover. The seat cushions and baggage cluttered the bus interior, slowing the passengers' exit from the bus. The driver kicked out the right side front windshield, and many of the students exited the bus through this opening.

Thirty of the occupants were treated at local hospitals and released. One adult remained in the hospital overnight for observation of a head injury. The bus was equipped with lapbelts but none of the children on the bus had been restrained at the time of the accident.

The busdriver stated that he was reading a map while driving when he inadvertently ran off the road onto the soft shoulder and lost control. However, he also admitted to investigators that he had not slept the night before and that he felt tired on this trip. Also, the counselors aboard the bus reported that the busdriver was concerned about being lost, and they confirmed that he was looking at his map while driving. Witnesses following the bus stated that the bus was weaving back and forth from the east to the westbound lanes across the double yellow center stripe.

When questioned about his duty hours, the busdriver gave the following account: On the day before the accident he worked from 6 a.m. until 10 a.m. and then was off until 7 p.m. At that time, he took a charter of college students to a party in Los Angeles and worked until 2 a.m. Next, he ate breakfast with coworkers and left for home around 3 a.m. He indicated that he inhaled "three or four lines" of cocaine while at home and then departed for work about 5 a.m. He arrived at work about 6 a.m., inspected his bus, and was given a briefing on the trip to the mountains. About 7 a.m., the three buses left the ATE Ryder terminal and arrived at the church about 8:15 a.m. to pick up the youth group.

Toxicological testing of the busdriver's blood and urine specimens showed that the blood specimen contained 3.5 ng/ml of cocaine and 281 ng/ml of benzoylecgonine and the urine specimen tested positive for cocaine.

An investigation into the driver's background showed that he had been terminated from his previous bus driving job because of drug abuse. The busdriver began driving for Laidlaw Transit, Inc., on February 10, 1988. In February 1991, the busdriver tested positive for cocaine during a random drug-screen test. Laidlaw sent the driver to a drug rehabilitation school, and he returned to work on April 4, 1991. On June 1, 1991, the driver failed a re-test during random drug screen testing and was terminated on June 4, 1991.

The driver came to work with ATE Ryder on August 14, 1991. An employee of ATE Ryder had given the busdriver a recommendation with the company, and when ATE Ryder performed a background check on the applicant, Laidlaw also provided a positive recommendation on the applicant. Laidlaw never mentioned that the driver had been terminated for illegal drug use. ATE Ryder did not request verification of the Laidlaw recommendation in writing, and Laidlaw never offered it.

Additionally, the California Vehicle Code regulations require that a motor carrier notify the Department of Motor Vehicles (DMV) within 5 days if a driver is dismissed for cause. Laidlaw Transit did notify the local California Highway Patrol Office of the driver's dismissal but neglected to notify the DMV until after the accident had occurred.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the school busdriver's failure to keep the bus on the roadway due to the effects of sleep deprivation and cocaine use.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 7

Investigation No.: CRH-92-F-H007
Type of Accident: Tank truck overturn and fire
Accident Location: U.S. Highway 71 near Forth Smith, Arkansas
Lanes: Two, asphalt-paved, 10.5-to-11-foot wide;
two-way roadway
Shoulders: Paved, 6-foot-wide
Median: None
Features: Rural; 674-foot-radius left curve
Date and Time: February 6, 1992, 8:10 p.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1988 Freightliner tractor/cargo tank semitrailer (truck)
Occupants: One passenger and one driver
Injuries: Two fatal

Description of the Accident

About 7:40 p.m., February 6, 1992, a truckdriver and an unauthorized passenger departed the Sun Pipeline Company facility in Fort Smith, Arkansas, after loading 8,826 gallons of gasoline and diesel fuel onto a tractor/cargo tank semitrailer truck. The truck was owned and operated by Ligon Oil Company (Ligon) of Norman, Arkansas. According to a witness, about 8:10 p.m. the truck was traveling in excess of 70 mph southbound on U.S. Highway 71 about 14.5 miles south of Fort Smith. As the truck entered a 674-foot-radius left curve, the driver lost control and the truck overturned onto its right side, struck an embankment, caught fire, and burned. Calculations indicate that the truck had been traveling between 70 and 75 mph when it overturned. The 55-mph highway speed limit was posted for several miles before the accident curve, and a 45-mph warning sign was posted approximately 550 feet before the curve. The truck was destroyed, and both occupants were killed.

The driver's record revealed that he had been arrested in California for Driving While Intoxicated (DWI) in January 1985. The truckdriver was again arrested in California for DWI and driving with a suspended license in October 1985. As a result, he received a 3-year probationary sentence. In October 1987, the driver was arrested a third time in California for DWI but failed to appear for a hearing concerning this charge. Consequently, a warrant for the driver's arrest was issued in November 1987, but in 1988 the driver moved to Arkansas and obtained an Arkansas regular commercial chauffeur's license after making several false statements

on his application. Further, he was cited for and convicted of four speeding violations between 1988 and 1989. Although the State of Arkansas ran a 50-State check when he applied for a Commercial Driver's License (CDL) in December 1991, the driver's California DWI convictions were more than 3 years old and thus no longer appeared on his driving record. Therefore, on January 31, 1992, 6 days before the accident, the driver was issued an Arkansas CDL. Current CDL requirements specify that all DWI convictions remain permanently on driving records.

Toxicological analysis of the driver's and passenger's blood specimens by the Arkansas State Police Crime Lab showed that both contained .10 percent ethanol W/V (.10 BAC). Additionally, the driver's blood specimen was examined at the Center for Human Toxicology at the University of Utah. This analysis showed that the specimen contained 27 nanograms/milliliter of carboxylic acid metabolite of delta-9-tetrahydrocannabinol (THC); however, no parent THC was found in the blood. THC is the psychoactive component found in marijuana. Based on this toxicology report, it was determined that the driver was impaired from alcohol use and also possibly impaired from marijuana use. In addition, two cans of beer were found in the truck wreckage following the accident.

The driver's wife indicated that he was in good health and was not taking any medications. She also indicated that he had slept in his truck on the two preceding evenings and had received less than 5 hours of sleep on the evening before the accident.

The driver had previously been employed in California for several years as a truckdriver and had worked in Arkansas as a truckdriver since 1989. Ligon had not obtained references from previous employers and had failed to make an inquiry concerning the driver's record to driver licensing authorities as required by 49 CFR 391.23. The truckdriver had passed a pre-employment drug screen when working for another Arkansas motor carrier in February 1991, but Ligon had not required him to be tested for drugs.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the drug-impaired truckdriver's failure to reduce speed for the accident curve. Contributing to the accident was the motor carrier's failure to review the driver's record and make appropriate reference checks on the truckdriver.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 8

Investigation No.: NRH-92-F-H005
Type of Accident: School bus/pedestrian collision while unloading
Accident Location: Newark, Delaware
Lanes: Two, asphalt-paved, undelineated;
30-foot-wide two-way roadway
Shoulders: None
Median: None
Features: Rural; straight and level; residential street
with concrete curbing
Date and Time: March 19, 1992, 3:39 p.m. local
Ambient Conditions: Clear and dry
Vehicle Involved: 1987 72-passenger school bus
Occupants: 25 student passengers and 1 driver
Injuries: One fatal

Description of the Accident

A school bus carrying elementary school students children ages 6 to 10 had departed school about 3:30 p.m. to return children to their homes. As the bus stopped to unload passengers, a 6-year-old girl and her 8-year-old brother exited from the forward entrance door. From that exit position, the children walked forward and began to cross the street in front of the bus, toward their home located on the opposite side of the street.

The busdriver stated that, following the children's exit from the bus, he watched as they crossed the street by looking in the mirrors mounted at each front corner of the bus. The boy walked first, followed by the girl. He further stated that he did not begin to drive away from the stop until the children were safely away from the bus. However, in a subsequent statement, the driver stated that he only saw the boy walk to the other side of the street. He checked the area around the bus before proceeding, but never saw the little girl. As the bus pulled forward from the stop, the driver felt a "thump." The bus was stopped, the driver exited, and the child was found lying in the street fatally injured.

Witnesses related that the bus started forward movement before either child cleared the front of the bus. Two witnesses, located at different vantage points, stated that the girl had dropped her lunchbox and was attempting to retrieve it when she was struck by the bus. Another

witness stated that the small boy ran across the front of the bus and was almost struck by the school bus as it pulled away from the stop.

The school bus was equipped with 8-inch-diameter convex mirrors at each front corner, mounted to provide the driver a clear view of the passengers' progress as they moved in front of the bus. The investigation found that the mirrors were in proper adjustment and should have provided the driver with an unobstructed view of the children's position as they crossed in front of the bus. Vision tests did reveal, however, that the girl could not have been seen by a driver simply looking forward over the front structure of the bus.

The bus was owned and operated by the school district. At the time of the accident, the school district owned 150 buses and contracted for an additional 75. The school district employed 72 full-time and 54 part-time drivers. An official of the school district related that safety meetings are held four times a year and that the busdriver involved in this accident had attended two of those meetings. In addition, each driver is required to be familiar with the State school busdrivers' handbook, which gives explicit instructions for the safe loading and unloading of children.

The busdriver had been employed for about 17 months as both a full- and part-time driver. He was licensed by the State as a school busdriver and had passed the State-mandated school busdriver training course. Consequently, the Safety Board determined that he was probably familiar with safe procedures for the loading and unloading of children.

As a direct result of the Safety Board's investigation, the Christina School District implemented a structured instructional safety program for the children of the district regarding loading, unloading, and school bus evacuation. The program will be conducted by the Supervisor of Transportation (or designee) and building principals.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the school busdriver's failure to ensure that an exiting child had cleared the bus before proceeding.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 9**

Investigation No.: SRH-92-F-H018
Type of Accident: Run off the roadway
Accident Location: New Jersey Turnpike, Deptford, New Jersey
Lanes: Four, asphalt-paved, 12-foot-wide; two-way roadway
Shoulders: Asphalt-surfaced, 10-foot-wide
Median: Concrete, New Jersey barrier
Features: Rural; slight curve; posted speed limit of 55
Date and Time: May 21, 1992, 1:50 a.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1988 TMC-96A3, 49-passenger intercity bus
Occupants: 18 passengers and 1 driver
Injuries: 4 serious and 15 minor

Description of the Accident

About 11:45 p.m., two chartered buses departed Yankee Stadium in New York City on an approximately 170-mile trip to Baltimore, Maryland. The lead bus carried 18 passengers, all members of the California Angels baseball team. The buses were provided by Kevah Konner, Inc., of Pinebrook, New Jersey, an interstate motor carrier.

About 1:50 a.m., the southbound lead bus, while moving through a slight curve to the left, departed the travel lanes of the New Jersey Turnpike at a shallow angle. The bus entered the paved shoulder and traveled forward for 180 feet. Then, the bus mounted the buried end of a w-beam guardrail that was installed along the outside edge of the shoulder. The bus traveled on the guardrail for another 48 feet, crossed over, and then continued forward and parallel to the guardrail for another 220 feet. With the driver still seatbelted and attempting to control the bus, the bus moved forward on a 45-degree slope and struck several small trees and then hit a large tree at its right front, finally coming to rest against a row of trees. No fire ensued, and the bus occupants, helped by persons from the following bus, exited the vehicle through open windows. The trailing bus was not involved in the crash.

Eight of the passengers and the driver sustained minor injuries. Four passengers received moderate to serious injuries. Those with minor injuries were treated and released; the others were admitted to a local hospital.

The busdriver awoke on the day before the accident at 11:00 a.m. After eating, he left his home at 2:00 p.m., and at 2:30 p.m. he drove the bus to New York City. He arrived at a local hotel at 3:15 p.m. to pick up and transport the team to Yankee Stadium. The driver remained at the stadium until the bus departed at 11:45 p.m. for Baltimore; the accident occurred about 2 hours later. No evidence suggested that the driver had consumed either alcohol or other drugs. Although the driver was not in violation of 49 CFR 395.3 (Hours of Service), it is reasonable to assume that being on duty over 11 hours may have adversely affected his alertness. The driver told the investigating police that he steered the bus away from an object in the roadway. No object was found, nor did any of the passengers recall an evasive steering maneuver.

Motor carrier files revealed that the busdriver was appropriately licensed with a New Jersey Commercial Driver's License. His Federal Highway Administration Medical Certificate was current, and no exceptions were noted.

The busdriver's traffic record indicated that he had participated in the New Jersey insurance surcharge program for excessive traffic violations. He had been cited on several occasions from 1990 through 1992 for failing to comply with the surcharge and had had his license suspended four times for noncompliance.

A postcrash inspection of the bus showed no mechanical deficiencies. The right front of the bus was substantially damaged, and interior components sustained minor damage as the result of contact made by passengers dislodged during the crash sequence.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the failure of the fatigued intercity busdriver to keep his vehicle on the roadway.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 10**

Investigation No.: CRH-92-F-H012
Type of Accident: Two-vehicle collision and fire
Accident Location: Near Mineola, Texas
Lanes: Two, asphalt-paved; two-way roadway with center turn lanes
Shoulders: Paved, 2.5-foot-wide
Median: None
Features: Rural; 3.5-percent downgrade on U.S. Highway 69
Date and Time: June 8, 1992, 12:17 p.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1981 Crane Carrier three-axle cement mixer
1988 E-350 15-passenger Ford van
Occupants: 14 passengers and 1 driver
Injuries: Five fatal, nine serious, and two minor

Description of the Accident

About 10 a.m. on June 8, 1992, a youth group of approximately 50 students from the Dallas Chinese Bible Church in Richardson, Texas, departed on a 120-mile trip to a retreat camp near Hawkins, Texas. The group was traveling in three 15-passenger vans and two passenger cars. About 12:17 p.m., as the caravan approached U.S. Highway 69 (U.S. 69) from Farm to Market Road 564, the first van in line stopped at the intersection. At the same time, the cement mixer truck was southbound on U.S. 69 approaching the intersection. According to the truckdriver, the lead van proceeded to make a left turn onto northbound U.S. 69. He indicated there was no danger of collision with the lead van; however, the second van did not stop and followed the lead van into the intersection. The truckdriver forcefully applied his brakes, but when the rear brakes locked he released braking pressure and then reapplied the brakes less forcefully. Subsequently, the truck lost directional control and crashed into the left side of the second van, which was turning left onto U.S. 69. During the impact, the rear fuel tank was separated from the van, and fire ensued. The driver and four children in the van were killed. Ten other van passengers and the truckdriver were injured.

A postaccident inspection revealed that 33 percent of the truck's brakes were deficient. Calculations indicate that the truck was traveling between 55 and 57 mph when the driver initially braked to avoid the accident and approximately 40 mph when the collision occurred. If the truck brakes had been fully adjusted and the driver had braked continuously, the truck

could have slowed to 26 mph, and the injuries may have been less serious. Further, had the brakes been adjusted, the driver probably could have maintained directional control, and the accident may have been avoided.

The truckdriver had 10 years of truck driving experience, but he had only been driving cement mixer trucks for 2 months. The van driver had been driving 15-passenger vans for 4 to 5 years. Toxicological tests showed that neither driver's blood specimens contained alcohol or drugs.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the van driver's failure to yield the right-of-way and the degraded condition of the cement mixer truck's brakes. Contributing to the severity of the injuries was the postcollision fire.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 11**

Investigation No.: SRH-92-F-H021
Type of Accident: Grade crossing collision
Accident Location: Orange Park, Florida
Lanes: Two, asphalt-paved, 11-foot-wide; two-way roadway
Shoulders: Earthen, 3-foot-wide
Median: None
Features: Urban; elevated-profile grade crossing; residential area
Date and Time: June 30, 1992, 12:20 p.m. local
Ambient Conditions: Sunny and dry
Vehicles Involved: CSX freight train No. N00129, a 4-unit locomotive with 94 loaded coal cars
1988 GMC tractor/semitrailer (truck)
Occupants: Three (in truck) and traincrew members
Injuries: None

Description of the Accident

At 11:45 a.m., a tractor/semitrailer truck loaded with furniture approached the Woodland Drive elevated grade crossing, which was equipped with operational active warning devices and railroad crossing warning signs at both approaches but had no signs warning of the elevated profile. As the truckdriver attempted to drive eastbound across the grade crossing, the underside of the van trailer contacted the roadway, and the vehicle became lodged across the track.

The three occupants of the truck exited and called the Clay County Sheriff's Office. Personnel from the sheriff's office arrived at 11:59 a.m., confirmed the hazard, and advised CSX Transportation, Inc., of the situation. CSX halted all rail traffic until such time that the truck could be cleared.

At 12:02 p.m., the Orange Park Police Department telephoned CSX to advise that a citizen had reported a truck "hung up" on the tracks at the Kingsley Avenue crossing, 2.4 miles north of the actual location at Woodland Drive. Orange Park police responded to the Kingsley Avenue crossing and at 12:08 p.m. reported to CSX that the track at that location was clear. CSX communications mistakenly interpreted the report as an indication that the tracks had been cleared of the truck at Woodland Drive and issued a "clear signal" for the entire track.

At 12:15 p.m., the freight train continued south on a "clear track" signal at approximately 40 mph and collided with the eastbound truck that remained lodged on the elevated grade crossing. The unoccupied truck was severed by the impact, and the train came to rest 1,080 feet south of the collision area.

The Safety Board's investigation revealed that the vertical curve of the elevated grade crossing did not conform with American Railway Engineering Association guidelines, which recommend no more than a 6-inch drop within 30 feet of the crest of the vertical curve. The east and west approaches at the accident site dropped 26.2 and 19 inches, respectively.

The State of Florida had approved a standard sign warning motorists of the hazards of elevated grade crossings. However, Clay County officials stated that although they possessed the *Florida Roadway and Traffic Designs Standards Manual*, they were not aware of the sign.

As a direct result of the Safety Board's investigation, the Clay County Department of Transportation installed high-profile warning signs at the Woodland Drive grade crossing and at four additional grade crossings within the county road system.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this collision was the miscommunication of information concerning a track obstruction. Contributing to the accident was the lack of appropriate warning signs at the elevated grade crossing.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 12**

Investigation No.:	CRH-92-F-H013
Type of Accident:	Passenger van loss of control and overturn
Accident Location:	Kerrville, Texas
Lanes:	Four, asphalt-paved; two-way roadway
Shoulders:	Outside shoulder--paved, 10-foot-wide; Median shoulder--paved, 4.5-foot-wide
Median:	Earthen, 65-foot-wide
Features:	Rural; 1.5-degree left curve
Date and Time :	July 8, 1992, 4:30 a.m. local
Ambient Conditions:	Cloudy and dry
Vehicle Involved:	1991 Ford Aerostar Minivan
Occupants:	Six passengers and one driver
Injuries:	Five fatal and two serious

Description of the Accident

About 1 a.m. on July 8, 1992, a 1991 Ford Aerostar minivan carrying six passengers left Alice, Texas, for the 1,435-mile trip to Las Vegas, Nevada. About 4:30 a.m., the van was traveling west on Interstate Highway 10 near Kerrville, Texas, at a Safety Board-calculated speed of 65 to 68 mph. The posted speed limit for this area was 65 mph. The van was negotiating a 586-foot-long, 1.5-degree curve to the left when it began to drift to the right and off the roadway. The driver stated that she "swerved to avoid something." The van traveled approximately 250 feet on the paved shoulder before departing the pavement edge at a 2.3-degree angle and then continued forward, struck a sign, re-entered the paved shoulder, rotated clockwise 56 degrees, yawed back across the roadway into the center median, overturned 3 1/2 times, and came to rest on its roof.

During the accident, the door latch on the right sliding door was forced off the striker, and the door came open and slid to the rear. It dislodged from the van and was found approximately 48 feet east from where the van had stopped. Before the van came to rest, an unrestrained passenger seated next to the right sliding door was ejected through the opening created when the door dislodged, and the remaining three unrestrained passengers seated on the rear seat of the van were also ejected. The middle and right-rear passengers were ejected through the right-rear window, and the left-rear passenger was ejected through the opening created by the dislodging of the rear tailgate.

Four of the passengers died at the scene. The right-rear passenger was transported to Sid Peterson Hospital in Kerrville, Texas, where she died. Also, the investigating State trooper indicated that the right-front passenger restrained by a lap/shoulder belt had been partially ejected through the window area and sustained massive head injuries.

The driver possessed a valid Texas driver license requiring that corrective lenses be used. License file records showed that the driver had not been convicted of any traffic violations nor had she been involved in any other accidents in the preceding 5 years. The records also showed that she had taken a driving safety course in September 1989.

A driver interview by the Texas Department of Public Safety (DPS) revealed that the van driver had taken a nap on the day before the accident and had several hours of sleep before the trip. No evidence indicated that the driver was fatigued or otherwise impaired.

The left-side passenger on the middle bench seat indicated to the investigating State trooper that she was the only person in the rear area that was wearing a seatbelt. Medical records showed that she received a closed head injury and extensive lacerations and abrasions on her left forearm.

The van was inspected by the DPS and the Safety Board, with assistance from Ford Motor Company. The driver indicated the vehicle had no mechanical problems, and the tire marks did not show any unusual irregularities. No defects were found in the locking system of the dislodged side door; the lock failed because of the severe forces generated during the collision.

Ford Motor Company investigators stated that this was the first time that the door had been dislodged from an Aerostar minivan in a noncollision rollover. One other Aerostar in Canada lost its door after an impact with a large truck.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the van driver's failure to keep her vehicle on the roadway because of a momentary lapse of attention. Contributing to the severity of injuries was the opening of the right-side and rear tailgate doors during the accident.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 13

Investigation No.:	WRH-92-F-H008
Type of Accident:	Charter bus downhill loss of control and overturn
Accident Location:	Las Vegas, Nevada
Lanes:	Two, asphalt-paved, 12-foot-wide; two-way roadway
Shoulders:	Asphalt-surfaced, 6-to-12-inch wide
Median:	None
Features:	Rural; winding roadway on a 6-percent downgrade
Date and Time:	July 21, 1992, 12 p.m. (noon) local
Ambient Conditions:	Clear and dry
Vehicles Involved:	1973 MCI MC-7 Challenger, 47-passenger coach bus
Occupants:	44 passengers and 1 driver
Injuries:	7 serious and 38 minor

Description of the Accident

About 11:20 a.m., a charter bus operated by Western Coach Service, Inc. (WCSI), of Las Vegas, Nevada, left the Fox Trail Girl Scout Camp northwest of Las Vegas to return to the city. Besides the driver, 43 girls, ages 8-15, and a counselor were on board the bus. During a steep descent on the dirt road leading to the paved highway, the busdriver had to stop because the low-air warning buzzer was sounding. The driver remarked to the counselor about the problem. About a minute later he continued the trip and entered the paved highway traveling east, where the posted speed limit is 55 mph.

After the bus had traveled 4 miles, it topped a hill and began traversing a 6-percent downgrade. The busdriver stated that he tried to downshift from third to second gear as he topped the hill but was unable to because the transmission was "hung" in neutral. The bus traveled 6 miles down the grade, gathering speed. The busdriver estimated that the bus was traveling 60 to 70 mph and also indicated that the bus' brakes had lost air pressure and become ineffective. Near milepost 10, the driver intentionally swerved left to enter a turn-out area on the north side of the road; he intended to strike a large gravel mound in an attempt to stop the bus. The bus collided with the gravel mound at a slight angle and became airborne. It landed on its lower-right-front corner, 86 feet east of the mound and 15 feet north of the roadway. The bus continued to roll onto its roof and slid 65 feet before coming to rest, lying diagonally across both lanes of the highway on its roof.

The bus sustained extensive frontal crush in the structure above the headlamp area, and the front axle was displaced rearward. The roof structure was skewed to the left about 45 degrees with approximately 20 inches of lateral displacement. Of the five exit windows on the left side, the forward window was broken and the front section of the fifth window was broken. On the right side, the first four windows were broken and the fifth window was completely displaced from its framework. The bus was not required to be equipped with seat belts at the passenger seating positions. Three passengers were reportedly ejected from the bus.

A postcrash inspection of the accident bus showed that four of the six brakes were improperly adjusted. The adjustment of the right front brake could not be measured because of damage. When air was applied to the No. 3 left brake, the lining failed to make contact with the drum. Also, the right-front brake lining was worn below the wear indicator. Moreover, the air lines and air reservoirs were contaminated with oil. A technical examination of the air compressor by Bendix Corporation and witnessed by Safety Board investigators showed that the compressor was pulling 38 cubic centimeters of oil per hour past the cylinders. This oil was then carried through the air lines into the air reservoirs. The presence of this contaminant lowered the volume of air available for the braking system.

During the removal of the bus transmission, it was noted that the U-joint on the transmission end of the drive shaft was badly worn and could be moved by hand. The internal inspection further disclosed that all four forward gear edges were worn to the extent that they were round from side to side.

The busdriver had been working part-time for WCSI since May 1991. He also worked as a skycap at the Las Vegas International Airport and part-time for the Clark County School District as a campus monitor. He had 20 years of commercial truck and bus driving experience and possessed a class B commercial driver's license. Additionally, from July 6-10, 1992, the busdriver had attended school busdriver training at the school district. The busdriver's record indicated that since 1983, he had five traffic violation convictions: three for speeding and two for other minor violations from which traffic accidents resulted.

WCSI first operated as Westside Charter Service, Inc., in 1974. It began doing business as WCSI in 1986. The company operated 11 coach buses and 9 minivan buses and employed one mechanic with two helpers to maintain the buses. As of the date of this accident, the Nevada Public Utilities Commission (PUC) had 61 actions listed against WCSI. These actions included public complaints, court orders, violation citations, and file responses.

WCSI was an interstate carrier for which the Office of Motor Carriers (OMC) had performed a safety review and two compliance reviews. On October 20, 1988, WCSI had an OMC safety review and received a satisfactory rating. On August 29, 1991, the OMC performed an on-site compliance review. The auditor found 89 violations of the Federal Motor Carrier Safety Regulations, and as a result, WCSI received a conditional rating. On December 16, 1991, WCSI sent a letter to the OMC listing its corrective actions and requested that the satisfactory safety rating be reinstated. Less than a month before the accident, on June 25,

1992, the OMC conducted the reinspection and found 95 violations of the Federal Motor Carrier Safety Regulations; consequently, the conditional rating was left intact. As a result of this prior compliance review and violations related to this accident, the OMC issued an Operation Out-of-Service Order to WCSI. The order stated that WCSI's safety rating was unsatisfactory and that the motor carrier was unfit to conduct highway transportation without endangering public safety.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the poor condition of the airbrake system and failure of the driver to respond to an audible alarm by the low-air warning device indicating that the bus airbrake pressure was dangerously low. Contributing to the accident was the failure of Western Coach Service, Inc., to maintain its vehicles in compliance with Federal Motor Carrier Safety Regulations.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

Highway Accident Brief
Case No. 14

Investigation No.: SRH-92-F-H024
Type of Accident: Grade crossing collision
Accident Location: Crowley, Louisiana (DOT crossing No. 767887A)
Lanes: Two, asphalt-paved, 11-foot-wide; two-way roadway
Shoulders: Earthen, 3-foot-wide
Median: None
Features: Rural; elevated-profile grade crossing
Date and Time: July 28, 1992, 4:42 p.m. local
Ambient Conditions: Sunny and dry
Vehicles Involved: Amtrak train No. 2 (three-unit locomotive with one baggage car and seven passenger cars)
1981 Peterbilt tractor/semitrailer (truck)
Occupants: 133 passengers, 4 traincrew members, 14 service workers, and 1 truckdriver
Injuries: 1 serious (truckdriver) and 14 minor (passengers)

Description of the Accident

About 4:40 p.m., on July 28, 1992, a northbound Peterbilt truck operated by Dynasty Transportation, Inc., transporting flammable liquids and hydrochloric acid in portable containers was struck by an eastbound Amtrak train near Crowley, Louisiana. After impact two fires ensued, one in the truck and one on the train locomotive. Both fires were extinguished and all passengers were evacuated within 15 minutes. As a result of the accident, the truckdriver sustained moderate injuries, and 14 Amtrak passengers sustained minor injuries.

The truckdriver loaded his cargo 1/4 mile south of the crossing and traveled directly to the crossing. He had loaded cargo in this area several times previously and was familiar with the crossing. Although visibility was about 825 feet in the direction of the train and the train whistle was being sounded, the truckdriver stated to the police on-scene that he continued across the track because he saw no approaching train and heard no whistle. No toxicological specimen was obtained from the driver because the police found no reasonable cause to collect one.

No active warning devices were installed at the crossing, but railroad advance warning signs and crossbucks were in place on each approach. In addition, 49 CFR 392.10 requires all trucks carrying hazardous materials to stop at grade crossings, and truckdrivers must be familiar

with this regulation to pass the commercial driver's license (CDL) test. The truckdriver had a valid Louisiana CDL.

The train was slowing from its authorized 79-mph speed limit for a 30-mph restricted area ahead when the truck pulled onto the track. The fireman sounded the train whistle at the whistle post 1,350 feet from the crossing and put the train into an emergency stopping when it was 400 feet from the crossing. The locomotive event recorder indicated that the train was traveling 52 mph when the brakes were applied and 42 mph when the truck and the train collided. The train traveled 450 feet after impact before coming to rest.

The hazardous materials cargo was dislodged from the semitrailer at impact, and the truck was forced towards the northeast quadrant of the crossing. Some of the containers were breached and spilled their contents.

Parish Road 6-91 intersects the track at an 83-degree angle measured in the southwest quadrant and has an Average Daily Traffic Count (ADT) of 760 vehicles. Approximately 20 trains a day use this mainline railroad track. However, because it is not a high accident location, Louisiana has no plans to upgrade the crossing.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the failure of the truckdriver to stop for an approaching train.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 15**

Investigation No.:	NRH-92-F-H012
Type of Accident:	Grade crossing collision
Accident Location:	Wallingford, Connecticut
Lanes:	Asphalt-paved, 13-foot-wide; two-way roadway
Shoulders:	Earthen
Median:	None
Features:	Rural; grade private roadway crossing
Date and Time:	August 23, 1992, 10:21 a.m. local
Ambient Conditions:	Clear and dry
Vehicles Involved:	Amtrak passenger train 1989 Oldsmobile Delta 88 Royale, 4-door sedan
Occupants:	Two passengers and one driver
Injuries:	Three fatal

Description of the Accident

The automobile was traveling eastbound along a private roadway, exiting a cemetery and approaching a railway crossing. The engineer of the approaching train stated that when he saw the passenger car come to a full stop on the tracks, his train was traveling southbound at approximately 70 mph. The auto was struck and pushed southward, coming to rest on its roof along the west side of the tracks. The train braked to a stop approximately 1/2 mile south of the crossing. All three occupants of the automobile were ejected and killed; no injuries occurred on board the train.

The road that traverses the crossing is a dead-end, paved roadway servicing a cemetery and the rear entrance of a chemical plant. The only traffic controls at this location are a "dead end" sign and two railroad advanced warning signs (W10-1) posted on each side of the crossing within 25 feet of the track. The crossing had no crossbucks, but none were required at private crossings.

Motorists approaching the crossing westbound have an unobstructed view of approaching trains. However, motorists approaching eastbound from the cemetery or chemical plant have an obstructed view of trains approaching southbound. Sight obstructions on the northwest corner of the intersection include earth mounds, high weeds, and a 10-foot cyclone fence with privacy slats. Thus, the driver may not have seen the train approach until there was insufficient time and distance to stop short of the track.

Because this was a private crossing, the engineer initiated no audible signal. As a direct result of the Safety Board's investigation, the National Railroad Passenger Corporation (Amtrak) posted a whistle board on the approach to the crossing and currently is initiating audible warning signals to heighten motorist awareness and add to the crossing's safety.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the visual obstructions and the lack of warning signs for motorists at the accident site.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 16**

Investigation No.: WRH-92-F-H009
Type of Accident: Multiple-vehicle collision
Accident Location: Kingman, Arizona
Lanes: Two, asphalt-paved, 14-foot-wide; two-way roadway
Shoulders: Unimproved dirt
Median: None
Features: Rural; straight and level
Date and Time: September 7, 1992, 8 p.m. local
Ambient Conditions: Clear and dry
Vehicles Involved: 1977 Chevrolet Sportvan
1992 Pontiac Grand Am
1987 Ford F-150 Pickup
1992 Chevrolet Beauville 12-passenger van
Occupants: 19
Injuries: Seven fatal, eight serious, and four minor

Description of the Accident

U.S. Highway 93 is a north/south roadway linking Kingman, Arizona, and Las Vegas, Nevada. In the accident area, the posted speed limit is 55 mph, and the two travel lanes are separated by a dashed centerline.

A northbound Pontiac had successfully passed a Ford pickup truck when a Chevrolet Sportvan, traveling southbound in the same vicinity at a police-estimated speed of 60 mph, took evasive action by driving onto the unimproved shoulder of the roadway. This action was apparently prompted by the van driver's perception that the Pontiac's passing maneuver could not be completed in time to avoid a collision. During this evasive maneuver, the Chevrolet Sportvan went onto the soft gravel and cinder sloping shoulder. Subsequently, the driver overcorrected by steering sharply back on the roadway. This resulted in a loss of control, and the Chevrolet Sportvan crossed into the northbound lane and struck the left side of the Pontiac at an angle. This impact resulted in the Pontiac rotating counterclockwise into the northbound lane, and the Chevrolet Sportvan being redirected in a southerly direction in the northbound lane. A witness described the time duration between the Pontiac's completion of the pass and the collision with the Chevrolet Sportvan as "almost immediately, within a few seconds after the pass."

Following the collision between the Chevrolet Sportvan and the Pontiac, the Chevrolet Sportvan collided head-on with the northbound Ford pickup truck. Two of the Chevrolet Sportvan's occupants (the driver and his daughter) were fatally injured in this impact. The Pontiac, after rotating about 1/4 turn counterclockwise, was struck broadside by a southbound Chevrolet Beauville van with 9 occupants. It was this collision that killed all 5 occupants of the Pontiac. The 9 passengers in the Chevrolet Beauville van, the Ford pickup truck driver, and 2 small children (restrained in child seats) in the Chevrolet Sportvan all received injuries of varying severity.

All of the drivers involved had operators licenses valid for the vehicles being operated. Testing for blood alcohol content was negative for all of the drivers. An autopsy performed on the driver of the Chevrolet Sportvan failed to reveal any health problems that could be related to this accident. No evidence was found in the four involved vehicles of mechanical defects that could be viewed as causal or contributory to this accident.

A tractor-trailer driver who had witnessed some of the precollision events called the operation of the Pontiac "squirrelly." The truckdriver clarified his remark, explaining that when the Pontiac passed his vehicle, he believed that the driver had passed too rapidly and that the Pontiac driver also had to hit his brakes as he merged back into the northbound traffic. He further related that the Pontiac driver seemed to be in a hurry to pass again.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was a combination of the passing maneuver of the Pontiac and the steering overcorrection by the driver of the Chevrolet Sportsvan.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

**Highway Accident Brief
Case No. 17**

Investigation No.:	WRH-92-F-H010
Type of Accident:	Multiple-vehicle collision at intersection
Accident Location:	Santa Ana, California
Lanes:	Five on Flower Street and four on Civic Center Drive
Shoulders:	Curbs and sidewalks
Median:	None
Features:	City intersection with automatic traffic control signals and appropriate signs and pavement markings
Date and Time:	September 20, 1992, 6:00 p.m. local
Ambient Conditions:	Clear and dry
Vehicles Involved:	1984 Chevrolet pickup truck 1977 Ford Club Wagon van 1983 BMW 733i, 4-door automobile
Occupants:	25
Injuries:	8 fatal, 3 serious, and 10 minor

Description of the Accident

A Ford van, with 18 members of a local church aboard, was traveling eastbound on Civic Center Drive approaching Flower Street. The van was being driven by the church pastor en route to evening services from a church-sponsored birthday party. The van cargo area had been retrofitted with two bench seats, arranged longitudinally with the backs to the side windows and the occupants seated facing inward. No seatbelts had been installed for these seats. The van had insufficient seating for the number of occupants. Some were seated on the floor and others in the laps of other church members. Six of the occupants were 5 years old or younger.

A 1984 Chevrolet pickup truck and a 1983 BMW were traveling southbound on Flower Street approaching the intersection with Civic Center Drive. The pickup truck was traveling in the outside (right-hand) lane. The BMW was traveling in the inside lane, to the left and rear of the pickup truck.

All three vehicles entered the intersection at about the same time. The pickup truck struck the Ford van on the left side immediately forward of the left rear wheel. Both vehicles began to rotate counterclockwise from the impact. The rear cargo doors of the Ford van were forced open, and several passengers in the rear of the vehicle were propelled out of the vehicle and onto

the street. The Board investigation revealed that the rear-door locking mechanism of the van may not have been fully engaged at the time of the impact.

The BMW subsequently struck the driver's door of the pickup truck as the vehicle rotated into the BMW's lane of travel. The driver of the pickup truck, later identified as an illegal immigrant, fled the scene on foot. The driver of the BMW and the driver of the van stated that they entered the intersection on a green light. Witness testimony indicated that the van entered the intersection on the green light and that both the pickup truck and the BMW entered on the red.

Eight of the 18 van occupants sustained fatal injuries. The Orange County Coroner was of the opinion that all of these fatalities, except for a stillborn infant, were the result of blunt force trauma suffered upon ejection from the van onto the street and curb.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this collision was the failure of the pickup truck driver to stop his vehicle at a red traffic light. Contributing to the injury severity was the use of the Ford van (a cargo van) that was not designed to transport passengers and the opening of the Ford van's rear door due to occupant loading, vehicle body misalignment, and a weakened engagement of the rear-door locking mechanism.