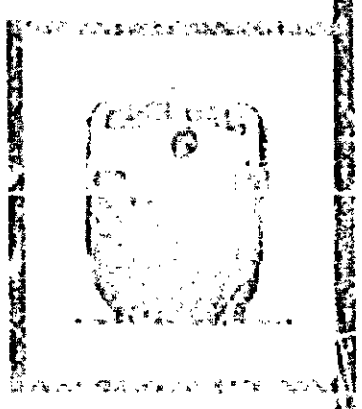
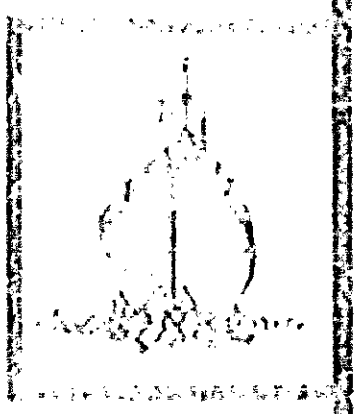
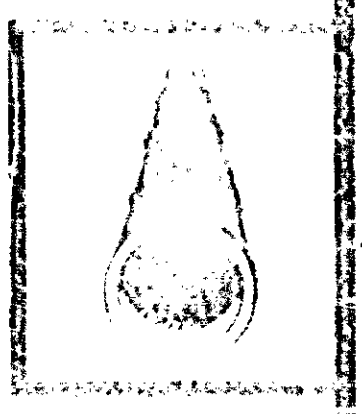
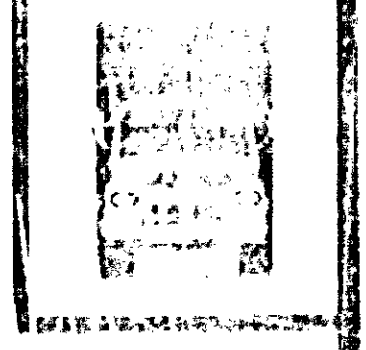
PB84-916202









NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

HIGHWAY ACCIDENT REPORT

SAMUAL CORALUZZO COMPANY, INC.,
TRACTOR CARGO TANK SEMITRAILER
MECHANICAL FAILURE, OVERTURN, AND FIRE
INTERSTATE 76 (SCHUYLKILL EXPRESSWAY)
PHILADELPHIA, PENNSYLVANIA
OCTOBER 7, 1983

NTSB/HAR-84/02

UNITED STATES GOVERNMENT

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NTSB/HAR-84/02	2. Government Accession No. PB84-916202	3. Recipient's Catalog No.
4. Title and Subtitle Highway Accident Report—Samuel Coraluzzo Company, Inc., Tractor Cargo Tank Semitrailer Mechanical Failure, Overturn, and Fire, Interstate 76 (Schuylkill Expressway), Philadelphia, Pennsylvania, October 7, 1983		5. Report Date April 3, 1984 6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
9. Performing Organization Name and Address National Transportation Safety Board Bureau of Accident Investigation Washington, D.C. 20594		10. Work Unit No. 3884A 11. Contract or Grant No. 13. Type of Report and Period Covered Highway Accident Report October 7, 1983
12. Sponsoring Agency Name and Address NATIONAL TRANSPORTATION SAFETY BOARD Washington, D. C. 20594		14. Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract

At 11:35 a.m., e.d.t., on October 7, 1983, a Mack 3-axle tractor, Model No. R685ST, which was pulling an MC306 (AL) cargo tank semitrailer loaded with 8,600 gallons of gasoline, was traveling in the right lane of westbound I-76 (Schuylkill Expressway) in Philadelphia, Pennsylvania, when it veered leftward, crossed the left lane, and collided with a concrete New Jersey-type median barrier. The combination vehicle overturned on the barrier, and gasoline, which spilled from the tank, was ignited. Three eastbound vehicles, which were caught in the area of the fuel spill, subsequently burned. Two persons were fatally injured, and one person was seriously injured.

After firefighters arrived onscene and extinguished the fire, smoldering fire caused the reignition and explosion of excess fuel trapped beneath the westbound access ramps. Two firefighters and a news media person were injured during the subsequent explosion.

The National Transportation Safety Board determines that the probable cause of this accident was the fatigue induced fracture and separation of the two main leaves on the right bogie leaf spring assembly of the tractor which permitted the right end of the rear bogie axle to rotate rearward and caused the tractor cargo tank semitrailer to steer uncontrollably toward the left. Contributing to the loss of life and injury severity were the rupture of the cargo tank and the ignition of the released gasoline immediately following the impact with the 32-inch-high New Jersey barrier.

17. Key Words		18. Distribution Statement This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161	
19. Security Classification (of this report) UNCLASSIFIED	20. Security Classification (of this page) UNCLASSIFIED	21. No. of Pages 16	22. Price

NTSB Form 1765.2 (Rev. 9/74)

CONTENTS

NATIONAL TRANSPORTATION SAFETY BOARD
Washington, D.C. 20594

HIGHWAY ACCIDENT REPORT

Adopted: April 3, 1984

SAMUEL CORALUZZO COMPANY, INC.
TRACTOR CARGO TANK SEMITRAILER MECHANICAL FAILURE, OVERTURN, AND FIRE
INTERSTATE 76 (SCHUYLKILL EXPRESSWAY)
PHILADELPHIA, PENNSYLVANIA
OCTOBER 7, 1983

SYNOPSIS

At 11:35 a.m., e.d.t., on October 7, 1983, a Mack 3-axle tractor, Model No. R685ST, which was pulling an MC306 (AL) cargo tank semitrailer loaded with 8,300 gallons of gasoline, was traveling in the right lane of westbound I-76 (Schuylkill Expressway) in Philadelphia, Pennsylvania, when it veered leftward, crossed the left lane, and collided with a concrete New Jersey-type median barrier. The combination vehicle overturned on the barrier, and gasoline, which spilled from the tank, was ignited. Three eastbound vehicles, which were caught in the area of the fuel spill, subsequently burned. Two persons were fatally injured, and one person was seriously injured.

After firefighters arrived onscene and extinguished the fire, smoldering fire caused the reignition and explosion of excess fuel trapped beneath the westbound access ramps. Two firefighters and a news media person were injured during the subsequent explosion.

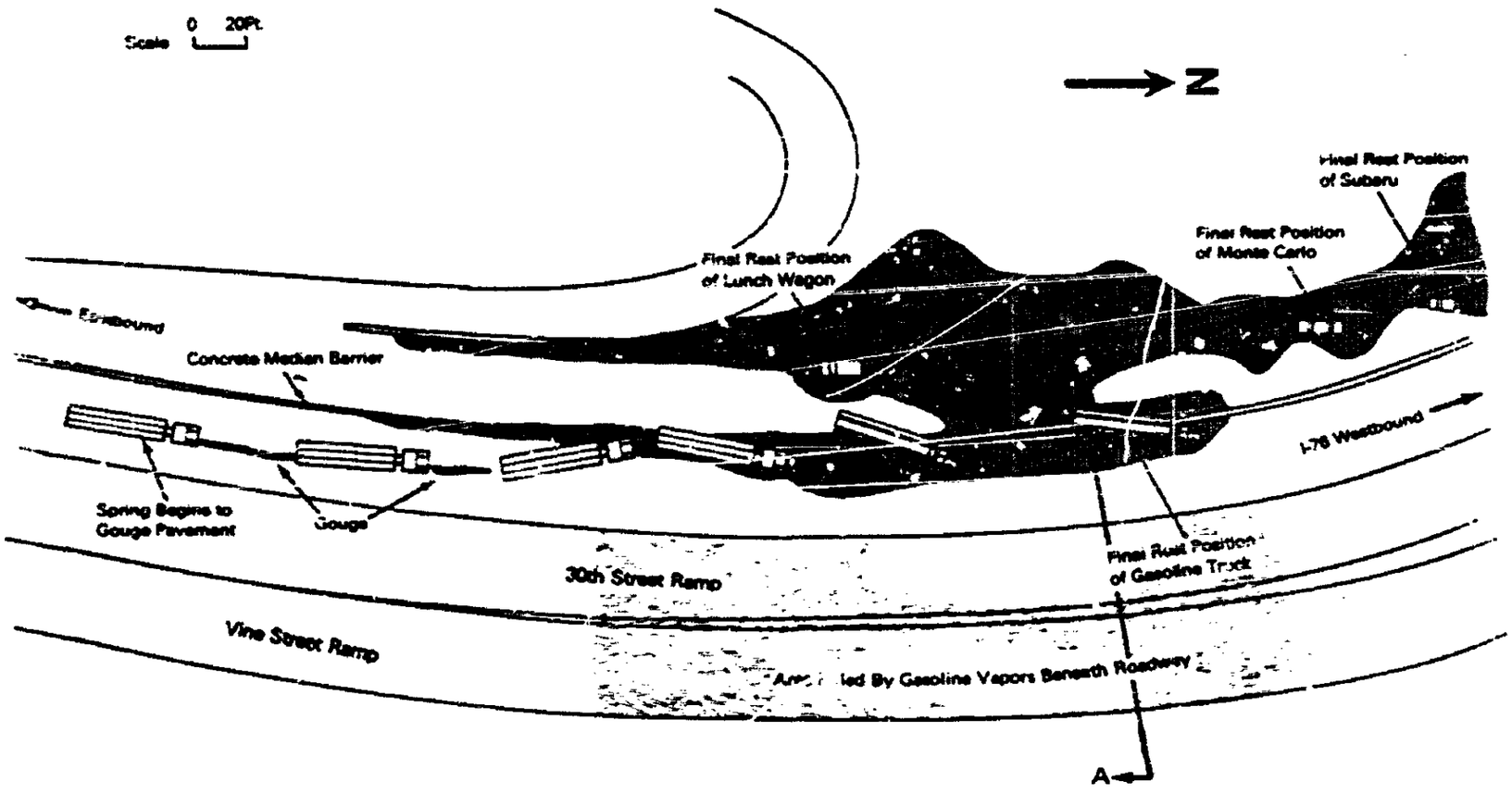
The National Transportation Safety Board determines that the probable cause of this accident was the fatigue induced fracture and separation of the two main leaves on the right bogie leaf spring assembly of the tractor which permitted the right end of the rear bogie axle to rotate rearward and caused the tractor cargo tank semitrailer to steer uncontrollably toward the left. Contributing to the loss of life and injury severity were the rupture of the cargo tank and the ignition of the released gasoline immediately following the impact with the 32-inch-high New Jersey barrier.

INVESTIGATION

The Accident

About 11:35 a.m., e.s.t. on October 7, 1983, 1/ a tractor-cargo tank semitrailer (combination vehicle 2/) was traveling westbound in the right lane of Interstate 76 (Schuylkill Expressway) in Philadelphia, Pennsylvania. It veered into the inside traffic lane, struck the concrete median barrier and overturned onto its left side. (See figure 1.) The weather was clear and the pavement was dry.

1/ All times stated herein are eastern standard time.
2/ A vehicle with power pulling another vehicle without power.



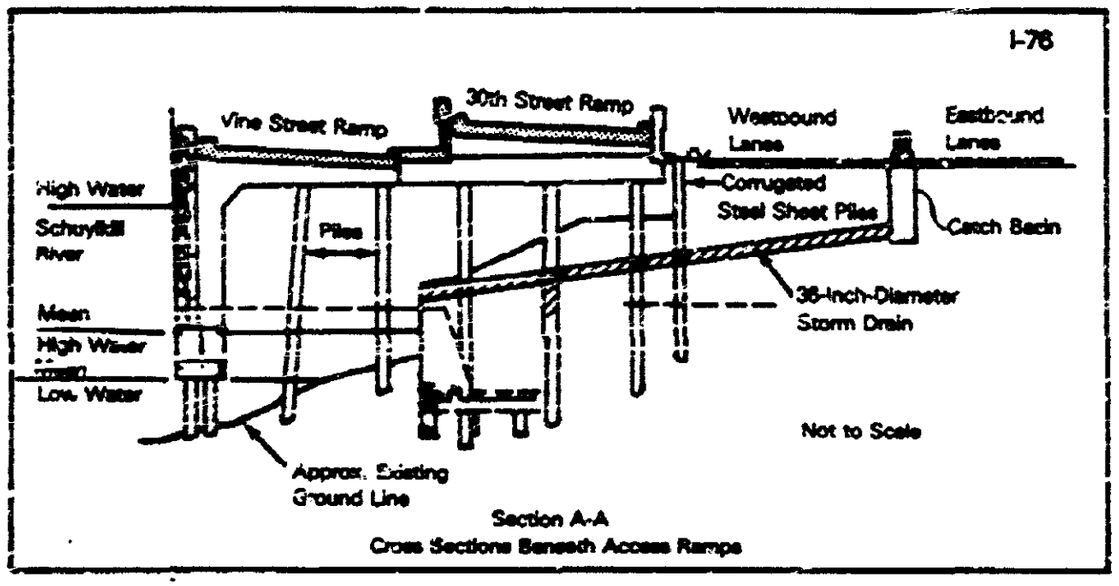


Figure 1.—Overall scene diagram of accident sequence.

The cargo tank of the combination vehicle, which was transporting 8,800 gallons of gasoline, ruptured during the impact. Gasoline spilled, and a fire ensued. Burning gasoline flowed across the eastbound traffic lanes, engulfing a 1970 lunch wagon truck, a 1974 Monte Carlo, and a 1982 Subaru station wagon. The combination vehicle and the three eastbound vehicles were destroyed in the fire.

All of the catch basins at the scene of the accident drained into a large cavernous area 3/ beneath the westbound access ramps adjacent to the I-76 expressway. (See figure 1.) The burning gasoline entered the drains for the eastbound lanes, flowed eastward into the cavernous area, and exploded. A concrete sidewalk adjacent to the westbound lanes and several expansion joints in the adjacent expressway ramps were destroyed during the explosion.

Fire After the Accident

Firefighters extinguished the fire engulfing the vehicles on the surface of the highway within 45 minutes after the accident. However, during the following 2 hours, smoldering fires caused the reignition and explosion of excess fuel trapped beneath the westbound access ramps. Gasoline vaporized beneath the ramps and filled an area 720 feet long, 50 feet wide, and 7 to 30 feet deep. Emergency response personnel and equipment could not easily enter the cavity beneath the ramps. Timbers and plywood used to build forms for the highway construction burned for 2 3/4 days after the initial surface fire was extinguished. Two days after the accident a Pennsylvania Department of Transportation maintenance crew cut an access hold into the 16- to 18-inch thick concrete deck to permit firefighters to extinguish the remaining fire. A Safety Board investigator inspected the concrete superstructure beneath the access ramps after the fire was extinguished and found no apparent structural damage to the highway on adjacent access ramps. Traffic was not permitted to use the westbound lanes until the fire was extinguished completely.

Injuries to Persons

Injuries	Vehicle Drivers	Fire Fighters	Others	Total
Fatal	2	0	0	2
Serious	1	0	0	1
Minor	0	2	1	3
None	1	0	0	1
Totals	4	2	1	7

The drivers of the combination vehicle and the Monte Carlo were fatally injured. The driver of the lunch wagon truck was seriously injured with third degree burns over 20 percent of his body. The driver of the Subaru was not injured.

Driver Information

The 30-year-old male driver of the combination vehicle had been employed by the Samuel Coraluzzo Company, Inc., in Vineland, New Jersey, since March 1983. He held a valid New Jersey chauffeur's license and had driven hazardous material vehicles for about

3/ The cavernous area was the enclosed concrete superstructure for the I-76 access ramps. The super structure was bordered by concrete retaining walls which extended vertically from the ground to the access ramp deck. Open storm drains from the I-76 expressway were also channeled through the cavernous area.

3 months and heavy commercial vehicles for about 6 years. A driving record check indicated that he was involved in one previous accident in 1982 for which he was not charged and that he had one speeding violation in 1981. His previous employers and his current supervisor indicated that he was a good driver. An interview with the driver's roommate revealed that he had separated recently from his spouse, but otherwise had no other pressing family or emotional problems.

On the morning of the accident, the truckdriver reported for duty about 6 a.m. and was on his second delivery run when the accident occurred. About 11:05 a.m., he departed the Texaco depot in Westville, New Jersey, en route to the Purolator carrier facility in Plymouth Meeting, Pennsylvania. He was driving his assigned vehicle and had made this trip before.

Vehicle Information

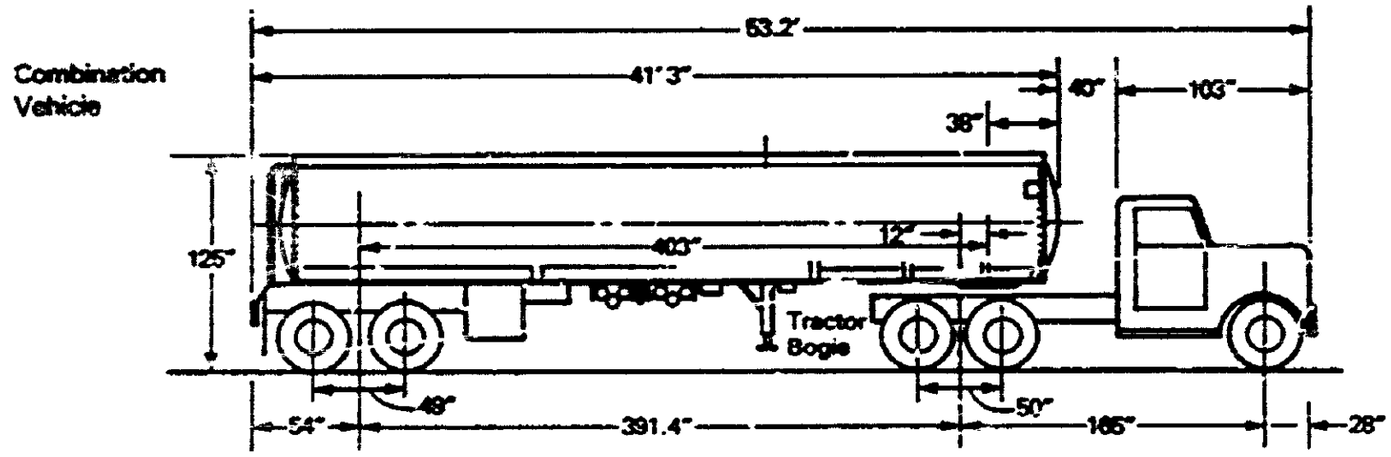
Combination Vehicle.—The 1970 Mack, 3-axle, conventional tractor, model R685ST, and the 1982 Fruehauf MC 306 (AL) cargo tank semitrailer were owned and operated by Samuel Coraluzzo Co., Inc. The combination vehicle probably weighed about 75,820 pounds at the time of the accident. The tractor was equipped with a diesel engine and a 5-speed manual transmission. The transmission was found in the neutral position. Both tractor and semitrailer were equipped with air-mechanical service brakes.

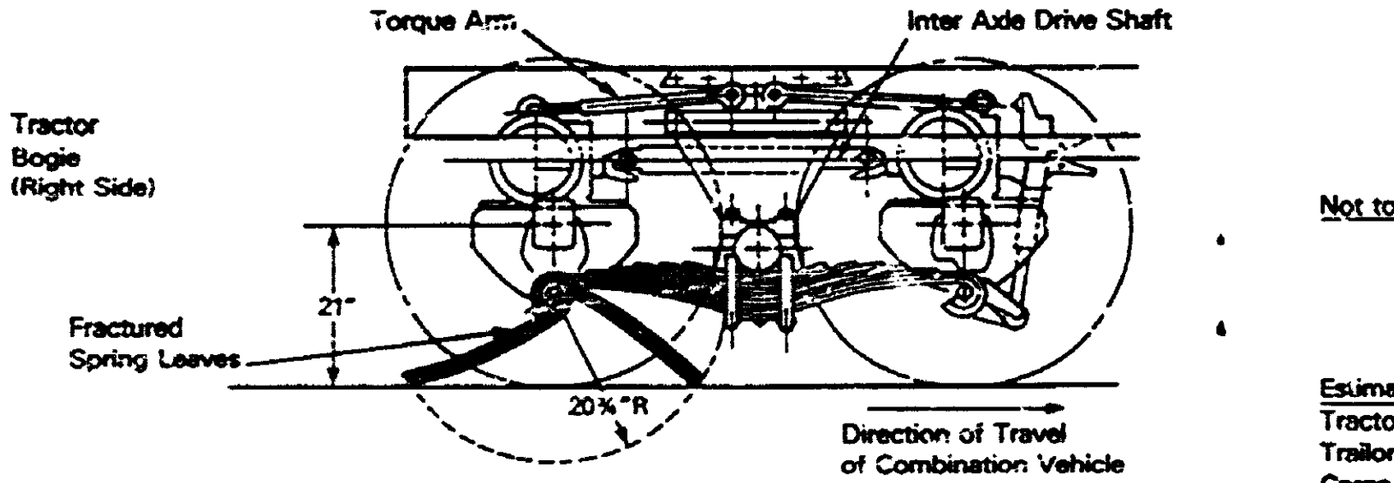
The cargo tank semitrailer was constructed of aluminum under the MC-306 specification. It had five compartments and a maximum capacity of 9,200 gallons. There was no evidence of spill or leakage from the dome covers of the cargo tank plumbing hardware before impact with the median barrier. The cargo tank semitrailer was not designed to withstand any external impact loading.

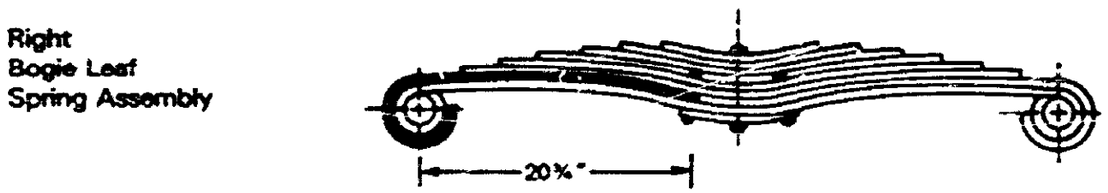
The combination vehicle was destroyed by fire after it came to rest on its left side. The cab roof of the tractor was deformed downward 40 inches on the left side, and the tractor frame was displaced downward and leftward 22 and 13 inches, respectively. The tractor fifth wheel remained attached to the semitrailer during the collision and fire. A detailed inspection of the tractor revealed that two 4-inch-wide main spring leaves on the bottom of the right bogie 4/ leaf spring 5/ assembly were completely separated, and the rear bogie axle had rotated rearward about 6 1/2 inches on the right side. (See figure 2.) Representatives of Samuel Coraluzzo Company, Inc., indicated that the fractured spring leaves were obtained from an after-market supplier 6/ rather than the original equipment manufacturer, Mack Truck, Inc. The leaves had been installed on the tractor 9 months (60,394 service miles) before the October 7, 1983, accident.

The postimpact inspection also revealed that the left front axle king pin boss had fractured. The front axle king pins were replaced 2 months (12,358 service miles) before the accident. At the time of the accident, the front axle had accumulated a total of 747,911 service miles since new; and 171,000 service miles since the tractor was involved in a rollover accident in 1979. There was no indication that the previous rollover accident was a factor in this accident.

4/ Bogie axles are the two rear drive axles on the tractor of the combination vehicle.
5/ A leaf spring is a device which deflects or distorts under load and will recover its original shape when unloaded.
6/ Aftermarket supplier -- A person/entity which distributes, manufactures, or sells replacement or service parts.







Not to Scale

Estimated Weights
Tractor - 12,500
Trailor - 10,000
Cargo-53,320
(8500 x 6.2)
GCW-75,820 (lbs)

Distribution
Front Axle - 9,820
Bogie - 33,000
Tandem-33,000
GCW - 75,820 (lbs)

Figure 2.—Detail view of right side of tractor bogie and leaf spring assemblies.

Eastbound Vehicle Information.--A general inspection of the three eastbound vehicles -- a 1970 Chevrolet Lunch Wagon (VIN-333B1G2408), a 1974 Chevrolet Monte Carlo (VIN-57H4B571278), and a 1982 Subaru station wagon (VIN-unknown) -- did not reveal any apparent mechanical discrepancies. All flammable and low melting point materials on the vehicles were destroyed during the postimpact fire. Accident induced physical damage was observed only on the right front wheel of the 1982 Subaru station wagon which was displaced leftward and rearward. The Subaru station wagon slid on the gasoline soaked pavement into the guardrail bordering the eastbound lanes after the cargo tank ruptured.

Highway Information

Near the accident site, Interstate 76 (Schuylkill Expressway) is a four-lane, east-west divided highway with two 14-foot-wide lanes in the westbound direction and numerous side ramps which are supported by a concrete structure. (See figure 1.) The posted speed limit is 50 mph. The opposing traffic lanes are separated by a 32-inch-high concrete New Jersey barrier with an 8-inch barrier curb adjacent to the inside lanes. In 1982, the estimated average daily traffic was reported to be 82,848 vehicles, of which about 48 percent was westbound traffic. At the time of the accident, traffic was light to moderate.

The westbound left curve at the accident site was an overpass which had an uphill grade of 0.5 percent and a superelevation of 0.08 foot/foot. The tire-to-pavement friction coefficient for a passenger car measured 0.7, which is considered to be fair for dry pavement conditions. The westbound overpass did not have a shoulder lane and was bordered by a 4-foot-wide walkway.

A 205-foot gouge in the asphalt overlay started on the right side of the right westbound lane, extended over the left westbound lane to within 66 inches of the median barrier, and increased in width from 1 to 4 inches. Scrape marks extended westbound along the concrete median barrier for 120 feet. The combination vehicle came to rest about 70 feet west of the scrape marks.

The pavement surface preceding the accident site in the right westbound lane was fairly smooth. The pavement surface in the left westbound lane had patching and numerous small holes in the asphalt overlay; however, these irregularities would not have affected the combination vehicle approaching the accident scene in the right westbound lane.

Test and Metallurgical Findings

A metallurgical examination of the fractured parts at the Safety Board's laboratory in Washington, D.C., revealed that the two main spring leaves from the right bogie leaf spring assembly contained preexisting fatigue cracks which had initiated along the tension surfaces of the leaves. The outer surface hardness of the fractured spring leaves was below the requirements specified by Mack Truck, Inc. The spring leaves did not conform to the material requirements specified on the engineering drawing for chemistry and final surface finish (shot peening 7/ followed by an aluminum coating).

7/ Shot peening is a process which cold works the outer surface, resulting in a compressive residual stress layer. Compressive stresses inhibit fatigue initiation. Thus, if the part is properly shot peened, it is more resistant to fatigue cracking at the outer fibers.

Decarburization, which was produced during the heat treatment of the leaf spring material, was found on the outer surface of the spring leaves. Decarburization occurs before the material is quenched. If the furnace atmosphere is not controlled, the exposed surfaces will lose carbon and decarburization will result. The surface will also oxidize and produce an iron oxide layer. Since carbon is the major element added to strengthen steel, the outer surface will be substantially weakened when decarburization occurs.

The outer fibers of the fractured spring leaves were pure ferrite (totally decarburized) with a hardness of about 00 on the Rockwell 15-T scale. This hardness indicates that the ultimate surface tensile strength was about 90,000 pounds per square inch, which was less than half the minimum core strength required by Mack Truck, Inc., engineering drawings. The drawings specified a 388 Brinell hardness (or an ultimate tensile strength of about 190,000 pounds per square inch).

Because the outer fibers of the accident vehicle spring leaves were decarburized and were not properly shot peened, they would have been susceptible to fatigue initiation if the stresses were high enough to promote cracking. For most steels having a hardness below 400 Brinell, the fatigue limit is about half that of the ultimate tensile strength. Thus, the outer fibers were susceptible to fatigue crack initiation at stress levels above approximately 45,000 pounds per square inch. The normal loads applied to the spring leaves at the location of fatigue cracking found would produce stresses around 60,000 pounds per square inch, which is high enough to produce fatigue initiation.

A metallurgical examination of the fractured axle boss revealed preexisting fatigue cracks around the king pin hole location. However, the chemistry and hardness of the fractured sample were in conformance with the OEM's engineering requirements.

Medical and Pathological Information

Autopsies conducted by the Medical Examiner's office, city of Philadelphia, attributed the cause of death for both the combination vehicle driver and the Monte Carlo driver to thermal burns received during the postimpact fire. Blood samples taken after the accident from both fatally injured drivers were negative for drugs and alcohol. No other medical problems were detected for either driver.

Hazardous Material Information

The carrier (Coraluzzo) preselects the routes for transporting hazardous materials on the basis of the distance to be traveled and its experience with the roads. All drivers are provided with a route card for each trip. At the time of the accident, there were no specific routes designated for the transportation of hazardous material in the Philadelphia area. However, a proposed ordinance to regulate the transportation of hazardous material cargo is currently being evaluated by the Council of the City of Philadelphia.

ANALYSIS

General

There was no evidence that medical or other physiological problems influenced the performance of the driver of the combination vehicle or that he lacked vehicle handling experience. The weather and the roadway surface also were not factors in this accident. The three eastbound vehicles were caught in the ensuing fire and were not involved in the collision and overturn of the combination vehicle. The fracture of the king pin boss on the left front axle of the tractor probably occurred when the combination vehicle impacted

the concrete median barrier. Heavy fatigue cracking at the king pin boss area promoted the fracture during the impact sequence. However, the axle failure resulted from excessive overload, and thus, was not causal to this accident.

The Accident

The failure and separation of the two main spring leaves on the right bogie leaf spring assembly were precipitated by fatigue cracking and occurred before the combination vehicle contacted the concrete median barrier. The maximum width of the 205-foot gouge mark matched the 4-inch width of the fractured spring leaves, and its point of initiation on the right side of the right lane corresponded to the position of the right bogie spring assembly at the beginning of the accident sequence. The termination of the gouge mark to within 66 inches of the concrete median barrier closely approximated the lateral distance between the outer left tire and the right bogie leaf spring assembly on the rear axle of the tractor with the tractor almost against the concrete median barrier.

The separation of the main spring leaves permitted the rear bogie axle to rotate rearward approximately 6 1/2 inches on the right side, altered the steering alignment of the bogie axles (see figure 3), and caused the combination vehicle to veer leftward, impact the concrete median barrier, and overturn onto its left side about 120 feet west of the initial point of impact. Normally, tractor bogie axles are in a fixed position parallel to each other, provide little or no input into the vehicle steering, and track in the directional path established by the front steering axle. However, the rearward rotation of the right side of the rear bogie axle caused the rear axle to lose its alignment integrity and induced a leftward steering moment on the combination vehicle.

The large percentage of total vehicle weight carried by the rear tractor axles significantly increased the leftward steering moment. The truckdriver may have attempted to overcome the sudden directional change of the combination vehicle by steering the front axle rightward; however, his efforts would have been futile. The front axle wheels could not have provided sufficient cornering capability to counter the effect of the misaligned bogie axle. Therefore, the front axle could no longer establish the turning center for the combination vehicle, and it steered uncontrollably toward the left.

At the beginning of the accident sequence, the combination vehicle was probably traveling near the 50-mph posted speed limit. There was no evidence of braking skidmarks preceding the 205-foot gouge at the accident scene. Based on the physical evidence, the tractor probably traveled against the concrete median barrier for a short period of time before overturning. The angle of impact between the tractor and median barrier was small. During the accident sequence, the cargo tank semitrailer remained attached to the fifth wheel on the tractor. This relationship induced a counterclockwise turning moment into the cargo tank semitrailer, causing the fuel cargo to surge leftward. Ultimately, this movement caused the cargo tank semitrailer to overturn to the left onto the top of the 32-inch-high New Jersey median barrier.

This accident illustrates the importance of proper maintenance and inspection of all suspension components. Particular attention must be directed to those parts, and their respective attachments, that insure proper axle continuity. In this case, the accident was caused by the loss of the rear bogie axle alignment. Misalignment of any axle (front, drive, or trailer) that occurs because of a suspension part failure can result in loss of vehicle control. Springs, equalizer beams, spring shackles, U-bolts, torque arms, radius rods, and their respective attachments must be properly maintained and inspected at frequent intervals to insure operational safety.

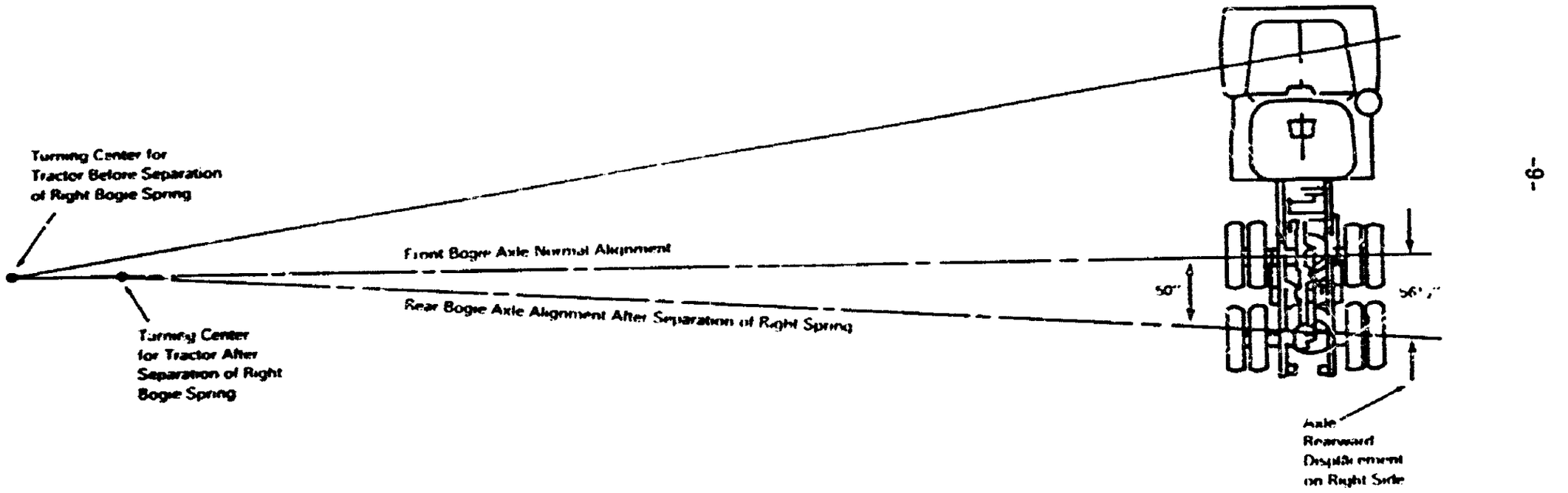


Figure 3.—Turning center for combination vehicle.

As part of its continuing effort to remove unsafe commercial vehicles and drivers from the Nation's highways, the Federal Highway Administration's Bureau of Motor Carrier Safety (BMCS) conducts roadside vehicle inspections at various sites throughout the United States. These roadside inspections are designed to identify defective equipment operating in interstate and foreign commerce, to remove vehicles whose conditions are unsafe to travel the highways, to place drivers out of service who may be fatigued due to driving in excess of the hours of service regulations, and to effect commercial motor carriers' awareness of safety requirements. 8/

The BMCS also periodically issues "On Guard" bulletins to advise owner/operators and the motor carrier industry of potential safety problems that may affect commercial vehicle operations engaged in interstate commerce. An "On Guard" bulletin dated September 24, 1982, was issued to advise the industry of a similar truck accident involving the failure of a front steering axle left spring. A postaccident inspection of the spring revealed that one main leaf had fractured and separated, and that the other had a 3-inch lateral crack across its width. Rust deposits were conspicuous in the cracked areas. As a result of the spring failure, the truckdriver lost vehicle steering control and was killed in the accident. The bulletin was issued to re-emphasize to motor carriers, drivers, and maintenance personnel that vehicle maintenance is a recurring safety problem and that they should continue to assure that their vehicles comply with all existing State and Federal standard pertaining to vehicle inspection and maintenance. (See appendix B.)

Emergency Response

The lack of safe access into the cavernous area beneath the access ramps adjacent to the I-76 expressway prevented fire and other emergency response personnel from expeditiously extinguishing the fire. Firefighters could not vent the gasoline vapors before ignition and the subsequent explosion occurred. A large hole had to be cut into the concrete ramp deck to provide firefighters access to the cavernous area. Proper access may have reduced the injuries which were sustained by the fireman and a member of the news media during the secondary explosion.

Route Selection

Although the city of Philadelphia had no approved hazardous material routes at the time of the accident, the route selected and followed by the driver was the most direct. The limited access interstate highway provided the driver with the least exposure to traffic risks compared to other available routes. Although the expressway routing ran through densely populated areas, the uniform speed of traffic and the lack of intersections on the expressway reduced the potential for traffic conflicts. Nationwide statistics also indicate that interstate highways in urban areas have lower accident rates than other highway systems in urban areas. 9/

In this accident, the spill and fire were confined to a small area. Thus, the risks to life and property associated with a potential spill were significantly reduced. The injury severity of this accident probably would have been significantly reduced if the combination vehicle had not been carrying a flammable hazardous material. However, the light to moderate traffic volume on the Schuylkill Expressway at 11:40 a.m. probably allowed the combination vehicle to change lanes without striking or being struck by other westbound vehicles, and may have limited the number of injuries in the eastbound direction.

8/ U.S. Department of Transportation, Federal Highway Administration BMCS National Roadside Inspection, May 12-14, 1982.

9/ Fatal and Injury Accident Rates on Federal-aid and Other Highway/1981, U.S. D.O.T, Federal Highway Administration, Office of Planning, March 1983.

CONCLUSIONS

Findings

1. There was no evidence that medical or other physiological problems influenced the performance of the driver of the combination vehicle or that he lacked vehicle handling experience.

2. The fracture of the left front axle boss was not a causal factor in this accident.

3. The fatigue induced fracture and separation of the two main leaves on the right bogie leaf spring assembly initiated the accident sequence and occurred before the combination vehicle contacted the concrete median.

4. The two main leaves on the right bogie leaf spring assembly were purchased from an aftermarket supplier and did not conform to the original equipment manufacturer's requirements for surface hardness, chemical composition, and surface finish.

5. The lack of safe access into the cavernous area beneath the access ramps adjacent to the I-76 expressway prevented firefighters from expeditiously extinguishing the smoldering fire.

6. The hazardous material route selected by the carrier was the most direct and minimized the public's exposure to the cargo.

7. The injury severity of this accident would have been significantly reduced if the combination vehicle had not been loaded with a flammable hazardous material.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the fatigue induced fracture and separation of the two main leaves on the right bogie leaf spring assembly of the tractor which permitted the right end of the rear bogie axle to rotate rearward and caused the tractor-cargo tank semitrailer to steer uncontrollably toward the left. Contributing to the loss of life and injury severity were the rupture of the cargo tank and the ignition of the released gasoline immediately following the impact with the 32-inch-high New Jersey barrier.

RECOMMENDATIONS

As a result of its investigation, the National Transportation Safety Board made the following recommendations:

—to the Federal Highway Administration:

Issue an "On Guard" bulletin reporting the circumstances of the accident on October 7, 1983, in Philadelphia, Pennsylvania, and warn commercial motor vehicle operators that the use of after-market parts as replacements for critical suspension components can be a dangerous practice since the parts may not meet original equipment standards. Motor carriers should be advised to physically inspect all leaf spring suspension components, directing particular attention to the torsion side of all after-market leaves in the spring clip area. (Class II, Priority Action) (H-84-28)

Direct inspectors of the Bureau of Motor Carrier Safety to give particular attention to the examination of suspension components and axles for fatigue cracks during their conduct of roadside inspections and vehicle audits. (Class II, Priority Action) (H-84-29)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JIM BURNETT
Acting Chairman

/s/ PATRICIA A. GOLDMAN
Member

/s/ VERNON L. GROSE
Member

G. H. PATRICK BURSLEY and DONALD D. ENGEN, Members, did not participate.

April 3, 1984

APPENDIXES
APPENDIX A
INVESTIGATION AND HEARING

Investigation

The National Transportation Safety Board was notified of this accident through the news media at 1 p.m., e.s.t., on October 7, 1983. Investigators were dispatched from the National Transportation Safety Board's Headquarters in Washington, D.C., and from its Atlanta Field Office on the same day.

Investigators were assisted by representatives of the Samuel Coraluzzo Company, Inc.; Pennsylvania Department of Transportation; Philadelphia Police Department; Mack Truck, Inc.; and the Bureau of Motor Carrier Safety of the Federal Highway Administration.

Deposition

There were no depositions taken or public hearings held in conjunction with this investigation.

APPENDIX B
ON GUARD BULLETIN

Prepared by
Bureau of Motor
Carrier Safety

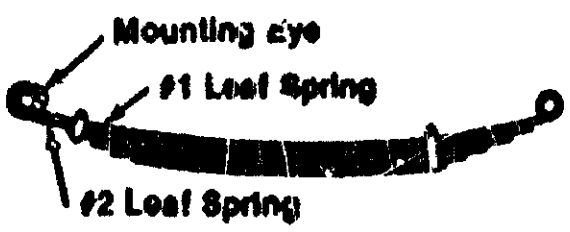
Vol. 13, No. 8
Washington, D.C.

September 24, 1982

On Guard

U.S.Department of Transportation
Federal Highway Administration

Take Moments for Safety...



On January 11, 1981, the left front steering axle suspension on a truck-tractor was rebuilt by replacing broken leaf springs and re-arching of the suspension system.

On August 11, 1981, while crossing an overpass the left steering axle suspension broke. The truck-tractor swerved left out of control, climbed a concrete bridge wall and fell 22 feet below onto another highway. Fire ensued. The truck driver was burned beyond recognition and property damage amounted to $185,000.

Post examination of the left steering axle suspension system on the truck-tractor disclosed the top leaf spring, number one, had a lateral three-inch crack across the surface of its four-inch width, and the second spring leaf from the top was cracked the entire width. Rust deposits were conspicuous in the cracked areas.

The failure of a motor carrier to systematically inspect, repair and maintain the vehicle subject to its control contributed to this accident. Pre-trip inspection by the responsible truck driver would have revealed the visible cracks in both the leaf springs.

The purpose of issuing this bulletin is to re-emphasize to motor carriers, its drivers and maintenance personnel, the need to consistently comply with Federal and State standards of inspection and maintenance of motor vehicles. This systematic inspection is intended to minimize the operation of mechanically unsafe motor vehicles on the Nation's highways.

... TAKE MOMENTS FOR SAFETY ... AND AVOID THE ... HOURS OF ... S-T-R-E-S-S ... AND ... S-T-R-A-I-N ... ASSOCIATED WITH IMMINENTLY HAZARDOUS EQUIPMENT. ...

U.S. GOVERNMENT PRINTING OFFICE : 1984 0-421-928/100