U.S. Department
of Transportation
**Federal Railroad
Administration**

# Certain Railroad Employee Fatalities Investigated by the Federal Railroad Administration Calendar Year 1986

Office of Safety

DOT/FRA/RRS

August 1988

TABLE OF CONTENTS


| | Page |
|---|---|
| INTRODUCTION . . . . . | i |
| CAUSE DIGEST . . . . . | ii |
| SUMMARY OF ACCIDENTS INVESTIGATED. . . . . | iv |
| ACCIDENT INVESTIGATION REPORTS . . . . . | v |

# INTRODUCTION

This report represents the Federal Railroad Administration's findings in its investigation of 45 railroad employee fatalities suffered during 1986. Not included are the employee fatalities that occurred as a result of train derailments, collisions, or rail-highway crossing accidents; these are reported in the 1986 Summary of Accidents Investigated by the Federal Railroad Administration.

The purpose of this report is to direct public attention to hazards that exist in the day-to-day operation of railroads, to guide the overall Federal program to promote the safety of railroad employees, and to supply rail management, rail labor, and all other interested parties with information and analysis for use in training and other action to prevent similar accidents.

J. W. Walsh
Associate Administrator
for Safety

CAUSE DIGEST


| | | REPORT NUMBER | PAGE |
|---|---|---|---|
| 1. | Accidents related to switching and train operations | | |
| | a. Derailing equipment | 1 | 1 |
| | b. Improperly lined switch | 2 | 3 |
| | c. Crossing track in front of or going between trains and/or equipment | 5 | 10 |
| | | 6 | 12 |
| | | 37 | 94 |
| | d. Failure to clear for approaching train | 11 | 23 |
| | | 16 | 38 |
| | | 22 | 54 |
| | | 26 | 67 |
| | e. Loss of secure handhold/or footing | 15 | 35 |
| | | 27 | 69 |
| | | 30 | 76 |
| | f. Use of switches | 17 | 41 |
| | g. Fall from bridge | 24 | 61 |
| | h. Electrocution | 29 | 74 |
| 2. | Accidents related to maintenance-of-way inspections and operations | | |
| | a. Loss of a secure handhold and/or footing | 3 | 5 |
| | b. Falling from structure | 10 | 21 |
| | | 23 | 57 |
| | c. Fire | 7 | 14 |
| | | 36 | 91 |
| | d. Collision between hi-rail and train | 13 | 28 |
| | e. Failure to provide blocking protection | 14 | 32 |
| | f. Turning rail | 18 | 43 |
| | g. Shifting load | 21 | 51 |

CAUSE DIGEST


| | | REPORT NUMBER | PAGE |
|---|---|---|---|
| h. | Failure to clear for approaching train | 25<br>41<br>44 | 64<br>105<br>114 |
| i. | Struck by ballast regulator | 31 | 79 |
| j. | Shot by sniper | 33 | 85 |
| k. | Lightning striking wayside phone | 34 | 87 |
| l. | Trench cave-in | 43 | 110 |
| m. | Electrocution | 19 | 45 |
| 3. | Accidents related to inspection, servicing and maintenance of motive power, passenger, and freight equipment | | |
| a. | Electrocution | 9 | 18 |
| b. | Loss of a secure handhold and/or footing | 12 | 26 |
| c. | Use of a mobile repair vehicle | 20<br>38 | 48<br>98 |
| d. | Falling freight car body | 28 | 71 |
| e. | Going between equipment | 39 | 100 |
| f. | Falling plug-type car door | 45 | 117 |
| g. | Close clearance | 32 | 82 |
| h. | Use of hi-rail crane | 40 | 102 |
| 4. | Automobile, highway, and truck accidents | | |
| a. | Rail-highway crossing accident | 4<br>8 | 7<br>16 |
| b. | Automobile accident | 35<br>42 | 89<br>108 |

SUMMARY OF ACCIDENTS INVESTIGATED
INVOLVING ONE OR MORE FATALITIES

| RAILROAD | ACCIDENTS |
|---|---|
| ATSF | 3 |
| BO | 1 |
| BN | 5 |
| CBL | 1 |
| CR | 10 |
| CSSR | 2 |
| CSX | 2 |
| DWP | 1 |
| ICG | 2 |
| LI | 1 |
| MKT | 1 |
| MNCW | 1 |
| MP | 1 |
| NJTR | 1 |
| PATH | 1 |
| SBD | 1 |
| SOU | 2 |
| SP | 2 |
| UP | 7 |

## Accident Investigation Reports


| | | Page |
|---|---|---|
| 1. | Union Pacific Railroad Company<br>Thorton, ID | 1 |
| 2. | Seaboard System Railroad, Incorporated<br>Lakeland, FL. | 4 3 |
| 3. | Missouri Pacific Railroad Company<br>Mercedes, TX. | 5 |
| 4. | The Atchison, Topeka and Santa Fe Railroad Company<br>Oklahoma City, OK | 7 |
| 5. | Burlington Northern Railroad Company<br>Inverness, MT | 10 |
| 6. | Long Island Rail Road<br>Babylon, NY | 12 |
| 7. | Southern Pacific Transportation Company<br>Wheatland, CA | 14 |
| 8. | New Jersey Transit Rail Operations<br>Harrison, NJ. | 16 |
| 9. | Southern Pacific Transportation Company<br>Houston, TX | 18 |
| 10. | Illinois Central Gulf Railroad Company<br>Wamac, IL | 21 |
| 11. | The Baltimore and Ohio Railroad Company<br>Connellsville, PA | 23 |
| 12. | Consolidated Rail Corporation<br>Cleveland, OH | 26 |
| 13. | Union Pacific Railroad<br>Cricket, AR | 28 |
| 14. | Burlington Northern<br>Galesburg, IL | 32 |
| 15. | Union Pacific Railroad Company<br>Durand, KS | 35 |
| 16. | Consolidated Rail Corporation<br>Camden, NJ | 38 |
| 17. | Illinois Central Gulf Railroad Company<br>Carrier Mills, IL | 41 |

18. Southern Railway Company
Irondale, AL. . . . . 43

19. The Atchison, Topeka and Santa Fe Railway Company
Clovis, NM. . . . . 45

20. Burlington Northern Railroad
Jamestown, ND . . . . . 48

21. Consolidated Rail Corporation
East Brunswick, NJ. . . . . 51

22. Consolidated Rail Corporation
Elyria, OH. . . . . 54

23. Consolidated Rail Corporation
Pittsburgh, PA. . . . . 57

24. Southern Railway Company
Lunchburgh, VA. . . . . 61

25. Consolidated Rail Corporation
National Railroad Passenger Corporation
Rome, NY . . . . . 64

26. Consolidated Rail Corporation
National Railroad Passenger Corporation
Cheektowaga, NY . . . . . 67

27. Duluth, Winnipeg and Pacific Railway
Ranier, MN . . . . . 69

28. The Atchison, Topeka and Santa Fe Railway Company
Barstow, CA . . . . . 71

29. Union Pacific Railroad Company
Crockett, TX . . . . . 74

30. Connemaugh and Black Lick Railroad
Johnstown, PA. . . . . 76

31. Metro North Commuter Railroad
Fordham, NY. . . . . 79

32. Union Pacific Railroad Company
North Platte, NB . . . . . 82

33. Port Authority Trans Hudson
Kearny, NJ . . . . . 85

34. CSX Transportation, Inc.
Cooling, GA. . . . . 87

35. Union Pacific Railroad Company
Crowley, LA. . . . . 89

36. Consolidated Rail Corporation
Astabula, OH . . . . . 91

37. Missouri-Kansas-Texas Railroad
Houston, TX. . . . . 94

38. Chessie System Railroads
Cincinnati, OH . . . . . 98

39. CSX, Transportation, Inc.
Erwin, TN. . . . . 100

40. Union Pacific Railroad Company
Idaho Falls, ID. . . . . 102

41. Burlington Northern Railroad Company
Nashau, MT . . . . . 105

42. Consolidated Rail Corporation
Chicago, IL. . . . . 108

43. Burlington Northern Railroad Company
North Kansas City, MO. . . . . 110

44. Chessie System Railroads
National Railroad Passenger Corporation
St. Albans, WV . . . . . 114

45. Consolidated Rail Corporation
Selkirk, NY. . . . . 117

REPORT: 1

RAILROAD: Union Pacific Railroad Company (UP)

LOCATION: Thornton, Idaho

DATE, TIME: January 2, 1986, 6:05 p.m.

PROBABLE CAUSE: Derailed freight car caused by snow accumulation on track.

EMPLOYEE:

| | |
|---|---|
| Occupation | Conductor |
| Age | 37 years |
| Length of Service | 10 years |
| Last Rules Training | February 24, 1985 |
| Last Safety Training | November 22, 1985 |
| Last Physical Examination | March 16, 1984 |

## Circumstances Prior to Accident

At 3 p.m., on January 2, 1986, after a proper off-duty period, a crew consisting of an engineer, a conductor, and two brakemen went on duty in Idaho Falls, ID. The crew was performing local switching operations at stations on the Yellowstone Branch of the Idaho Division of the UP. Although the Yellowstone Branch extends northeastward from Idaho Falls, the timetable direction is west, and it will be followed throughout this report.

The evening of the accident was dark; the weather clear and cold; about 12 inches of snow covered the ground.

The train left Idaho Falls at 5:20 p.m. and arrived in Thornton, about 20 miles west, at about 6 p.m. In Thornton, an auxiliary track called Track No. 3 parallels the main track to the north. A grain storage facility and two agricultural warehouses are located to the north, adjacent to Track No. 3. On each end of the track there are warning signs reading, "DANGER NOT SUFFICIENT CLEARANCE" in 3-inch black letters on a white background.

The rear portion of the train was detached on the main track. The locomotive and the first three cars backed eastward onto Track No. 3 where they were coupled to UPFE 452383, a mechanical refrigerator car spotted for loading at the Benchmark Potato Company warehouse. Although members of the crew were given electric lanterns, train movements were controlled by the rear brakeman who used a portable radio to talk to the engineer.

## The Accident

At approximately 6:05 p.m., the conductor and the rear brakeman walked to the eastern end of UPFE 452383, and the rear brakeman instructed the engineer to slowly back up. The conductor was riding on the north side of the car, between the car and the potato warehouse; the rear brakeman was walking on the opposite side of the car. After moving eastward for about 20 feet, the leading truck of the car derailed toward the warehouse. The rear brakeman told the engineer to stop, and the movement was halted almost immediately; the conductor was crushed between the side of the car and the warehouse building. He died instantaneously and was pronounced dead on the scene.

## Post-accident Investigation

Post-accident investigation disclosed a 17-inch accumulation of snow under the east end of UPFE 452383, which derailed the leading truck toward the warehouse. Clearance between the building and the stile-mounted side handholds at the leading end of the car (normally, 36 inches) was reduced to about 6 inches as a result of the derailment.

## Applicable Rules

. . . . . .

K. Employees must inform themselves as to the location of structures or obstructions where clearances are close.

. . . . . .

REPORT: 2

RAILROAD: Seaboard System Railroad, Inc. (SBD)

LOCATION: Lakeland, Florida

DATE, TIME: January 7, 1986, 2:10 a.m.

PROBABLE CAUSE: Failure to stop short of an improperly lined route.

EMPLOYEE:

| | |
|---|---|
| Occupation | Hostler |
| Age | 38 years |
| Length of Service | 11 years 2 months |
| Last Rules Training | October 22, 1985 |
| Last Safety Training | No record |
| Last Physical Examination | October 14, 1974 |

## Circumstances Prior to the Accident

Winston Yard, a north-south classification yard in Lakeland, Florida, consists of 31 tracks with a locomotive-service facility at the southern end. At the northern end, tracks No. 1 through No. 6 and the rip track are connected to No. 1 lead. Switch stands with targets are located on the east side of the lead. The targets are not illuminated but are covered with a light reflective material. The yard descends slightly southward, and illumination at the northern end is provided by a bank of seven floodlights.

On January 6 at 10 p.m., a hostler and a hostler helper went on duty after the required off-duty period. At about 1:45 a.m., the hostler and his helper left the locomotive servicing facility with Locomotive SBD 1901 (assigned to the Wauchula turn on Track No. 5) and Locomotive SBD 260 (assigned to a work train on Track No. 6). Permission to occupy the tracks was given by the yardmaster prior to departure. The locomotives headed north with the short hood forward, and the helper was operating the lead locomotive (SBD 1901).

## The Accident

When the hostler and the hostler helper reached the northern end of the yard, a reverse -- or southward -- movement was made on No. 1 lead toward Track No. 6 where SBD 260, now the leading locomotive, was to be placed on the work train. The hostler, standing on the platform step at the east side of the left leading end of SBD 260, was directing the engineer (now at the left rear) with a trainman's lantern. The locomotive headlight was not displayed. At the Track No. 2 switch, the hostler displayed a stop signal. While stopped,

the hostler asked the conductor of yard job Y-302 if the work train was on Track No. 6 and the Wauchula turn on Track No. 5, and was told that they were.

Then the hostler reboarded the locomotive and signaled the helper to back up. The hostler's helper placed the throttle in No. 1 position to get the locomotives moving and shut off at Track No. 4 to let the locomotives drift. According to the hostler's helper, he was "fanning" the independent brake to control the speed -- which he estimated to be 6 to 8 mph -- when they approached the Track No. 6 switch. As the leading end of SBD 260 neared Track No. 6 switch, the hostler's helper said that he could see the switch lined for the rip track but not for Track No. 6, and so he looked for a stop signal. The hostler did not signal and the hostler's helper said that before he could stop the movement, the locomotive collided with cars on the rip track. The hostler was crushed between the locomotive and IMCX 9470, a hopper car.

## Post-accident Investigation

Approximately 30 minutes before the accident, car inspectors had prepared to inspect a work train on Track No. 6. Before the inspection, the switch at the north end was lined for the crossover to the rip track and locked. After the 11 cars and a caboose on the track had been inspected, the lock was removed from the switch (which remained lined for the rip track).

Investigation failed to reveal why the hostler did not signal the helper to stop short of the improperly lined switch. Although the victim had a lantern, the failure to display the locomotive headlight could have contributed to the hostler's inability to determine the switch position.

## Applicable Rules

Seaboard System Railroad Operating Rules

105. Trains using other than main tracks or controlled signaled sidings must proceed prepared to stop within one-half the range of vision, short of train, engine, car, obstruction, stop signal, derail or switch not properly lined except sidings may be used expecting to find switches lined in accordance with Rule 104.

### Headlights

17. DISPLAY - On front and rear of yard and other engines by night, and by day when weather conditions impair visibility.

REPORT: 3

RAILROAD: Missouri Pacific Railroad Company (MP)

LOCATION: Mercedes, Texas

DATE, TIME: January 6, 1986, 1:30 p.m.

PROBABLE CAUSE: Loss of secure handhold and/or footing.

EMPLOYEE:

| | |
|---|---|
| Occupation | Signalman |
| Age | 32 years |
| Length of Service | 12 years |
| Last Rules Training | April 22, 1985 |
| Last Safety Training | November 15, 1985 |
| Last Physical Examination | December 2, 1974 |

## Circumstances Prior to the Accident

On January 6, 1986, in Harlingen, TX, a Missouri Pacific signal gang consisting of one foreman and three signalmen loaded two cantilever signal masts on a trailer and two cantilever signal arms and walkways on a MP-owned 1982 GMC stake-bed truck equipped with a hydraulic crane. The masts, arms, and walkways were chained in place and the gang drove to Mercedes.

At about 1:30 p.m., the signal gang arrived at the intersection of Texas Street and the MP railroad tracks and was unloading one signal mast, arm, and walkway in the southeast quadrant of the crossing. The truck was facing north on the north side of the tracks. (The track is tangent and level as is the street crossing.)

The three signalmen had climbed atop the stake-bed truck and unchained the signal arms and walkways. Then, two of them climbed down from the bed of the truck. The first signalman was told to operate the hydraulic crane from the controls on the east side of the truck; the second signalman was expected to climb on the crew cab of the truck to support the masts. The foreman stood on the ground on the east side of the truck.

## The Accident

The third remaining signalman, on the west side of the truck, was standing with his left foot on the topmost longitudinal piece of the stake-bed truck and his right foot perched on the walkway, which was supported by the "headache rack" of the truck. He placed his weight on his right foot and removed his left foot from the top of the stake bed. Then, he tried to replace his

left foot on the top of the stake bed, but lost his balance and fell face forward on the pavement, pulling the 350-lb aluminum signal arm so that it also fell directly on top of him, striking his head and killing him instantly.

## Post-accident Investigation

The first two signalmen said that all the members of the signal gang wore safety hats. But, when the signalman fell from the truck, he struck the pavement face down, which probably knocked off his safety hat. At the time of the accident, the two other signalmen were positioned so that they could not see the fall.

The Mercedes Police Department was notified of the accident and arrived on the scene at 1:35 p.m; an ambulance arrived shortly thereafter. A Justice of the Peace came at 1:45 p.m. and pronounced the signalman dead on the scene.

## Applicable Rules

Missouri Pacific Railroad Company

Safety, Radio and General Rules for All Employees.

. . . . . .

4008(B) Lifting and moving: When necessary for two or more persons to handle heavy or bulky material or objects by hand, the following precautions must be taken:

(a) Remove slipping or tripping hazards when practicable, exercise care to prevent slipping or tripping.

. . . . . .

REPORT: 4

RAILROAD: The Atchison, Topeka and Santa Fe Railway Company (ATSF)

LOCATION: Oklahoma City, Oklahoma

DATE, TIME: February 10, 1986, 10:05 a.m.

PROBABLE CAUSE: Failure to stop a motor vehicle at a rail-highway grade crossing.

Contributing to the accident were icy pavement conditions at the scene.

| EMPLOYEE: | | |
|---|---|---|
| | Occupation . . . . . | Special Agent |
| | Age . . . . . | 48 years |
| | Length of Service . . . . . | 19 years |
| | Last Rules Training . . . . . | June 19, 1985 |
| | Last Safety Training . . . . . | December 11, 1985 |
| | Last Physical Examination . . . | March 15, 1984 |

## Circumstances Prior to the Accident

On February 10, 1986, a on duty ATSF special agent was driving a company-owned 4-door sedan north on South Santa Fe Avenue in Oklahoma City. At about 10:05 a.m., he approached the intersection of South Santa Fe Avenue and the Oklahoma-Kansas-Texas (OKT) Railroad, a planked-road crossing at milepost 486.86. The US DOT/AAR National Rail-Highway inventory number for the crossing is 596950R. There are advance warning signs and crossbuck signs in each direction of the approach, and the track is tangent and level with no obstruction to visibility on the east. The weather was cloudy with blowing snow and below freezing temperatures, causing an icy road surface.

Extra 308 West, a Missouri-Kansas-Texas Railroad Company (MKT) train, consisting of two locomotives and one car (89 tons), left Harter Yard in Oklahoma City at 10 a.m. Its crew, after a proper off duty period, had reported for duty at 2:30 a.m. on February 10, 1986, in Chickasha, OK, and was making the return trip westward to Chickasha.

## The Accident

The train approached South Santa Fe Avenue at about 20 mph, the locomotive headlight was lighted, the bell was ringing, and the horn was sounding. The engineer saw the brake lights of the special agent's vehicle as the auto neared the crossing, and made

an emergency application of the brakes when he realized a collision was imminent.

The train struck the right rear of the special agent's vehicle. The vehicle spun 270 degrees and was dragged by the lead locomotive through an ATSF underpass, coming to rest 109 feet west of the railroad crossing and west of the underpass. As the vehicle was dragged through the underpass, it became crushed between the lead locomotive and the side of the underpass.

The Oklahoma City Police and an ambulance/rescue unit arrived at the scene at approximately 10:30 a.m. The special agent was taken to the Oklahoma City Presbyterian Hospital emergency room, where, at 11:35 a.m., he was pronounced dead.

## Post-accident Investigation

At the time of the accident, the ATSF special agent was performing his assigned duties by traveling to Nowers Yard, approximately 4 miles north of the accident site.

The icy condition at the crossing probably prevented the agent from stopping short of the crossing.

## Applicable Rules

OKLAHOMA VEHICLE LAWS:

Article VII Special Stops Required

S11-701 Obedience to Signal Indicating Approach of Train -

(a) Whenever any person driving a vehicle approaches a railroad grade crossing under any of the circumstances stated in this section, the driver of such vehicle shall stop within fifty feet but not less than fifteen feet from the nearest rail of such railroad, and shall not proceed until he can do so safely. The foregoing requirements shall apply when:

. . . . . .

3. A railroad train approaching within approximately one thousand five hundred feet of the highway crossing emits a signal audible from such distance and such railroad train, by reason of its speed or nearness to such crossings is an immediate hazard;

4. An approaching railroad train is plainly visible and is in hazardous proximity to such crossing.

REPORT: 5

RAILROAD: Burlington Northern Railroad Company (BN)

LOCATION: Inverness, Montana

DATE, TIME: February 10, 1986, 8:45 p.m.

PROBABLE CAUSE: Failure to take precautions before entering between cars about to be moved.

EMPLOYEE:

| | |
|---|---|
| Occupation | Conductor |
| Age | 33 years |
| Length of Service | 6 years |
| Last Rules Training | August 25, 1985 |
| Last Safety Training | February 8, 1986 |
| Last Physical Examination | December 1983 |

## Circumstances Prior to the Accident

After the required off-duty period, a crew consisting of an engineer, a conductor, and two brakemen went on duty in Cutbank, MT, at 12:45 p.m. Switching was performed en route, and the train, Extra 2271 East, consisting of 8 locomotives and 44 cars, arrived on the main track in Iverness, MT, about 81 miles east, at 8:05 p.m. The rear locomotive was dead in tow, and the rear headlight was inoperative. Radios on the control locomotive and the caboose were functioning as intended, but crew members did not have portable radios.

It was dark with a light fog; the temperature was about $-13^0$ F; and about 6 inches of snow covered the ground.

The tangent single main track at Inverness is parallel to two auxiliary tracks on the south. An auxiliary track north of the main track is known as the NFO track.

A car with shifted lading was set onto the second auxiliary track south of the main track. The train was then pulled forward and stopped beyond the east switch of the first auxiliary track south of the main track. The switch was aligned to enter the auxiliary track, and the conductor, using the caboose radio, directed the movement as the rear of the train was shoved westward into the track. The locomotives did not clear the main track.

## The Accident

In order to clear the main track for other traffic, it was decided to move the locomotives onto the NFO track. In order to do this, it was necessary to couple to and shove westward six empty covered hopper cars standing at the eastern end of the NFO track. The front brakeman detached the locomotives from the train and positioned himself on a tank car to relay hand signals from the rear brakeman to the engineer. The rear brakeman lined the NFO track switch and derail for entrance to the NFO track and signaled the engineer to move the locomotives west.

After the locomotives were coupled to the cars on the NFO track, the rear brakeman saw the conductor's lantern lying on the ground. He investigated and saw that the conductor had been run over by the equipment and was on the ground, south of the fifth car on the NFO track. He was pronounced dead upon arrival at the Liberty County Hospital, Chester, MT.

## Post-accident Investigation

Crew members stated that they were unaware of the conductor's presence near the equipment on the NFO track prior to the accident. The post-accident investigation indicated that the conductor had closed the west angle cock on the sixth car on the NFO track; he then coupled the air hoses between the fifth and sixth cars and was subsequently run over by the leading wheel on the south side of the fifth car, NAHX 46229, when the force of the coupling moved the equipment.

Toxicology tests for alcohol or drugs were negative for all crew members.

## Applicable Rules

The Consolidated Code of Operating Rules

GENERAL RULES

. . . . . .

M. Employees must expect the movement of trains, engines, cars or other movable equipment at any time, on any track, in either direction.

. . . . . .

REPORT: 6

RAILROAD: Long Island Rail Road (LI)

LOCATION: Babylon, New York

DATE, TIME: February 6, 1986, approximately 6:30 a.m.

PROBABLE CAUSE: Failure of a conductor to clear for an approaching train.

| EMPLOYEE: | | |
|---|---|---|
| | Occupation | Conductor |
| | Age | 48 years |
| | Length of Service | 21 1/2 years |
| | Last Rules Training | May 3, 1983 |
| | Last Safety Training | May 3, 1983 |
| | Last Physical Examination | October 21, 1985 |

## Circumstances Prior to the Accident

In the accident area, there are two main tracks and a station track running east and west between Babylon Station (milepost 35.9) and Babylon Yard (milepost 36.8). The accident occurred on Track No. 2 at milepost 36.3. From the east, Track No. 2 is tangent for distance of 2,000 feet to the point of accident. The grade is 0.8-percent ascending westward. The maximum authorized speed for passenger trains is 60 mph, and interlocking rules prevail.

At the time of the accident, the weather was clear and the temperature was 30° F.

The day before the accident, a conductor provided flag protection for a maintenance-of-way project in Brooklyn, NY. His tour of duty extended from 8:30 p.m., February 5th, until 5:14 a.m., February 6th.

At 5:30 a.m., the conductor and another employee boarded the fifth rear car of Train No. 90, at Jamaica Station, en route to Babylon. Train No. 90 consisted of six multiple-unit electric cars, with the third and fourth cars in revenue service. At about 6 a.m., the other employee left the train at Wantagh Station and later stated that the sleeping conductor was traveling on to the Babylon Station, where his automobile was parked. Train No. 90 arrived at Babylon, the last station stop at 6:25 a.m. Shortly thereafter, it departed en route to Babylon Yard. Between the station and the yard, Train No. 90 briefly stopped at Signal 43 (within Babylon Interlocking) to wait for another train to clear, and then proceeded into the yard. The

engineer stated that during the stop at Babylon Interlocking, he got an indication on the control panel in the cab that at least one of the car doors had opened momentarily. But the train crew was unaware of any employees riding in the train.

Train No. 1011, a regularly scheduled passenger train between Babylon Yard and Brooklyn, makes local stops. On the day of the accident, it consisted of 10 multiple-unit electric cars. Train No. 1011 left Babylon Yard shortly before 6:49 a.m. and moved westward toward Babylon Station on Track No. 2.

## The Accident

There were no witnesses to the accident. At about 8 a.m., an employee who was riding in the rear of a westward train through Babylon Interlocking saw a body lying between the south rail of Track No. 2 and the third rail. The body was identified as that of the conductor.

## Post-accident Investigation

At about 6:30 a.m., an assistant trainmaster riding in the locomotive cab of a westward train observed a white male walking westward on the south side of Track No. 2, in the vicinity of the accident area. Investigation revealed that westward Train No. 1011 was the last train to use Track No. 2 between 6:30 a.m. and 6:49 a.m.

The engineer of Train No. 1011 stated that when his train was moving through the accident area he heard an unusual noise. He suspected an electrical problem, so he stopped the train, but when he looked out the window on the south side of the train he saw nothing unusual. The engineer stated that his train was moving between 15 and 25 mph when he heard the noise. Train No. 1011 then proceeded westward on its scheduled route, without further incidents. A later examination of Train No. 1011 disclosed human tissue on the three west cars.

The Suffolk County Medical examiner advised that toxicological tests for drugs and alcohol were negative.

## Applicable Rules

### Long Island Rail Road Safety Rules

Rule 1010 - Use authorized path or route while going to or from work.

Rule 1279 - Walk against current of traffic and keep a sharp lookout in both directions for approaching trains. Walk clear of track when duties permit.

REPORT: 7

RAILROAD: Southern Pacific Transportation Company (SP)

LOCATION: Wheatland, California

DATE, TIME: February 22, 1986, 11 a.m.

PROBABLE CAUSE: A fire forced a welder to jump from a work platform attached to a bridge pier and he drowned.

Possible contributing causes were: Lack of coordination between the work crews. Failure to equip welders with life jackets.

EMPLOYEE:

| | |
|---|---|
| Occupation | Welder |
| Age | 41 years |
| Length of Service | 6 years |
| Last Rules Training | November 25, 1985 |
| Last Safety Training | February 10, 1986 |
| Last Physical Examination | January 1, 1980 |

## Circumstances Prior to the Accident

On February 18, 1986, about 110 feet of a 350-foot open deck section of the Bear River Railroad Bridge at milepost 126.65 was damaged by flood water and debris. As a result of this pier damage, three spans of the deck plate girder section collapsed into the river. In addition to railroad track, the bridge carried an 8-inch aviation gasoline pipeline over the Bear River, and the pipeline (owned by the Southern Pacific-Santa Fe Pipeline Company) sagged, intact, into the river when the bridge collapsed.

On February 19, 1986, pipeline workers disconnected the pipeline at the south bank of the river and attempted to vacuum the residual gasoline out of the pipe onto a truck. On February 20th, SP bridge and track crews began restoring the bridge and track structure. On February 22nd, three bridge welders were assigned to work on the bridge, standing on a 6-by-20-foot platform 14 feet above the river, supported by a temporary scaffolding between the north bank and the first pier in the river. The pipeline crew disconnected the pipe on the north bank of the river prior to pulling approximately 110 feet of damaged pipe clear of the work area. Because of the danger that a welder could be knocked off the platform, the crew supervisor suggested that the welders leave the work platform while the pipe was being

dragged clear, and bridge welders left the work platform for their lunch break.

The pipeline supervisor was on the north bank of the river near the bridge welders' platform at the end of the disconnected pipeline. After two attempts to pull the pipe clear of the work area, the pipeline supervisor noticed a small amount of gasoline drain from the open end of the disconnected pipe. He moved to the opposite bank in a further effort to direct the movement of the disconnected pipe.

(Unknown to the pipeline supervisor,) when their lunch break was over, the welders were instructed by their foreman to return to the temporary platform to continue welding. After another pull was made on the damaged pipe, the welding foreman on the north bank saw gasoline pouring out of the open end of the disconnected section of pipe.

## The Accident

The welding foreman was walking toward the work platform to warn his crew of the gasoline in the river under their scaffolding when the gas burst into flames. The three welders jumped into the river to escape the flames immediately beneath their work platform. Soon after, two of the welders were rescued but the third was last seen alive about 300 yards downstream.

The third welder's body was found floating downstream a week after the accident; he had apparently drowned in the Bear River.

## Post-accident Investigation

An investigation revealed that the pipeline supervisor did not plug the disconnected pipe after he saw the escaping gasoline.

The welders were not equipped with life jackets or safety belts because the welder's foreman stated that he believed the work platform was sufficiently large to eliminate the need for life jackets and safety belts.

## Applicable Rules

SOUTHERN PACIFIC TRANSPORTATION COMPANY

Rules
Maintenance of Way and Structures

General Rule - H: Employees must wear proper clothing, including appropriate equipment, for work being performed.

REPORT: 8

RAILROAD: New Jersey Transit Rail Operations (NJTR)

LOCATION: Harrison, New Jersey

DATE, TIME: March 4, 1986, 8:55 a.m.

PROBABLE CAUSE: An employee ignored a grade crossing warning device and failed to keep his automobile clear of an approaching train.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation | General foreman, mechanical |
| | Age | 61 years old |
| | Length of Service | 12 years |
| | Last Rules Training | Not required |
| | Last Safety Training | Not required (Conducted safety rules training) |
| | Last Physical Examination | August 3, 1984 |

## Circumstances Prior to the Accident

In the accident area, the Port Authority Trans-Hudson Corporation (PATH) operates over a single main track that extends in an east-west direction. This track is used for eastbound commuter service between Newark, NJ, and New York, NY. The track traverses a grade crossing at milepost 7.3, in Harrison, NJ. The grade crossing is used solely for access to the New Jersey Transit Rail Operations (NJTR) mechanical shops. The grade crossing warning system consists of gates, flashing lights, and bells on both the north and south sides of the crossing. In addition, signs indicate that the gates are down permanently during the commuter peak hours from, 7 a.m. to 9:30 a.m., and from 4 p.m. to 6:30 p.m., daily and also indicate the crossing is closed during those hours.

The NJTR mechanical shops are north of PATH's main track. The operating speed for trains through the area is 25 mph.

## The Accident

At 8:51 a.m., an eastward PATH commuter train left Newark enroute to New York with seven electrically self-propelled rapid transit cars. The train crew consisted of a motorman and a conductor. The motorman noted that prior to the crossing, as the train was traveling a left-hand curve, he had reduced the speed, as required, to 25 mph at Signal 778.

Approximately 300 feet west of the crossing, the motorman saw an automobile and a person standing next to the north crossing gate. As the train was about 150 feet west of the crossing, the person raised the gate, and the automobile proceeded southward onto the track.

The motorman immediately sounded the train whistle and placed the brake into emergency. Before the train could come to a stop, the right-front portion of the lead commuter car struck the right rear portion of the automobile. The automobile turned over and spun striking the last commuter car of the train and bursting into flame causing fire damage to the commuter car and to the automobile. The driver of the automobile, a general foreman with the NJTR Mechanical Department was fatally injured.

## Post-accident Investigation

Investigation revealed that the general foreman had driven his automobile across the track earlier to his office adjacent to the main track and west of the grade crossing. At the time of the accident, the general foreman was enroute to Hoboken, NJ, to attend a staff meeting.

The general foreman's visibility from the north approach to the grade crossing was limited because of the curve alignment on the main track and the location of the Mechanical Department shop buildings. In addition, the automobile's angular approach to the crossing further restricted the general foreman's ability to see the approaching train.

Investigation did not disclose who had raised the north crossing gate.

The grade crossing warning system was inspected by the carrier and the Federal Railroad Administration, and the warning system operated as intended.

## Applicable Rules

New Jersey Transit Rail Operations
Safety Rules for Maintenance of
Equipment Employees.

Rule 4111 - Look in both directions for approaching train, self-propelled equipment, machinery or vehicle, before performing any of the following acts associated with track, driving lane or highway:

(d) Driving . . . across.

REPORT: 9

RAILROAD: Southern Pacific Transportation Company (SP)

LOCATION: Houston, Texas

DATE, TIME: March 11, 1986, 6:30 p.m.

PROBABLE CAUSE: Failure to use a proper testing procedure and remain clear of a high-voltage circuit.

Contributing factor: Inadequate equipment used in high voltage testing.

EMPLOYEE:

| | |
|---|---|
| Occupation | Electrician |
| Age | 53 years |
| Length of Service | 11 years |
| Last Rules Training | December 22, 1975 |
| Last Safety Training | March 10, 1986 |
| Last Physical Examination | December 22, 1975 |

## Circumstances Prior to the Accident

On the day of the accident, an electrician was assigned to test Locomotives 8546, 7818, and 8544 for grounded circuits. The SP method of testing uses an alternating current (a.c.) Dielectric Test Machine, commonly called a "Hi-Pot Tester," or a high-potential tester. This machine -- with a maximum potential of 1,500 volts, 1.5 amps -- is connected to an external a.c. power source; the ground wire is connected to the metal frame of the locomotive; and the positive probe wire is placed on the circuit that is to be tested. When the machine is turned on, if the circuit is grounded, the machine will "trip," and all power will be cut off. The positive probe wire of this machine is not sufficiently long to reach all test points in the cab of a locomotive, so it has been the practice to place the positive probe inside the locomotive door on the engineer's side and to use a 12-gauge flex jumper wire for testing the circuits. However, if the testing is being done by one person, the machine should be turned off when the tester is on the locomotive.

The electrician had tested Locomotive 8546 and moved the Hi-Pot Tester to a position on the walkway under the cab of Locomotive 8544. He was last seen at about 5:50 to 6 p.m., when he declined the ramp supervisor's offer of help in testing Locomotive 8544.

## The Accident

At 6:35 p.m., a temporary foreman found the electrician lying on the cab floor of Locomotive 8544, his head resting between the brakeman's seat and the fireman's seat and his body extended so that his feet rested near the rear door. A length of 12-gauge wire with Mueller clips on each end was near his right side. The positive probe cable of the Hi-Pot machine had been pushed through the rear door handle, leaving about a foot hanging in the clear.

The Hi-Pot machine was "on" in the "tripped" condition. Using cardiopulmonary resuscitation (CPR), another employee attempted to resuscitate the electrician until the paramedic team arrived at 6:44 p.m. and moved the electrician to Saint Joseph Hospital, where he was pronounced dead on arrival.

## Post-accident Investigation

There were no witnesses to the accident. However, investigation revealed the employee was probably using the 12-gauge flex wire jumper for testing and was attempting to move the wire to another test point while the machine was still activated, when he inadvertently came into contact with the 750-volt conductor and a ground. The employee was not wearing insulated gloves at the time of the accident, but they were not required.

The medical examiner's preliminary report confirmed that the electrician was electrocuted.

Following the accident, the Hi-Pot machine was tested and found to be in proper working order.

## Applicable Rules

Southern Pacific Transportation Company - "Diesel Maintenance Procedure" DMP.2203-B.

## Procedure

(j) To make the Hi-Pot test, place one electrode (the one with control button) on the high voltage circuit to be tested. Place the other electrode (without button) on the steel frame of the locomotive. Make sure there is good contact at this point.

(k) Place circuit breaker to ON position and slowly increase test voltage to the predetermined setting. Hold this voltage for one minute.

(1) Slowly reduce voltage to zero, place circuit breaker to OFF position and remove electrodes.

All high potential tests must be made by placing electrodes on the circuit to be tested before closing the switch and by opening switch before removing electrodes.

REPORT: 10

RAILROAD: Illinois Central Gulf Railroad Company (ICG)

LOCATION: Wamac, Illinois

DATE, TIME: March 12, 1986, 11:45 a.m.

PROBABLE CAUSE: A fall from a powerline electrical "H"-section pole.

EMPLOYEE:

| | |
|---|---|
| Occupation | Electrician |
| Age | 53 years 10 months |
| Length of Service | 37 years 1 month |
| Last Rules Training | Not required |
| Last Safety Training | November 4, 1985 |
| Last Physical Examination | October 31, 1985 |

## Circumstances Prior to the Accident

On the day of the accident two ICG electricians went on duty at 7 a.m., in Wamac, IL. The electricians were assigned to find the cause of a power failure at the car repair facilities in Wamac and make the necessary repairs. They determined that an early morning thunderstorm had caused the electrical damage, and decided to replace and splice three feeder lines atop a 65-foot high "H" section pole.

An "H"-section pole consists of two 65-foot poles, positioned 8 feet apart, supported by two cross-braces, and connected at the top by cross-arms that support the electrical wires. The poles are equipped with metal climbing rungs placed 15 1/2 inches apart on alternating sides of each pole. The first rung is approximately 14 feet from the ground, continuing to the top of each pole. At about 9:45 a.m., the first electrician began climbing the "H"-section pole, and at about 10 a.m., the first electrician and the second electrician began replacing and splicing the three damaged 4,160-volt feeder lines atop the pole. At about 11:45 a.m., repairs were completed and the second electrician descended the pole without incident. After he reached the ground, the first electrician began his descent.

## The Accident

When the first electrician climbed down about 25 feet, he complained that his arms were tired. He stopped and rested for about 5 minutes on a guy wire. He then descended about 8 more feet and rested a second time on an electrical conduit about 31 feet from the bottom of the "H"-section pole. He again

complained of arm fatigue. After resting a short time, he continued his descent. He was last observed reaching with his right foot for a climbing rung located under the cross-brace. The electrician then fell to the ground approximately 31 feet below.

## Post-accident Investigation

The investigation revealed that the employee had worked the Illinois Central Gulf Railroad for 35 years. For the past 14 years, until December 16, 1985, he was employed as an assistant electrical supervisor. He then bid on his present position. Because a reduction in force, he was forced to exercise his seniority. During his 14 years as assistant electrical supervisor, he did very little climbing. In addition, when he climbed down the pole, he did not wear a safety belt. The ICG safety rulebook does not require the use of safety belts during a climb or descent on a stepped pole. The employee died as a result of a cardiopulmonary arrest due to multiple rib fractures and lung lacerations caused by blunt trauma from the fall.

Toxicology tests were performed by the coroner, and results were negative.

## Applicable Rules

None.

REPORT: 11

RAILROAD: The Baltimore and Ohio Railroad Company (BO)

LOCATION: Connellsville, Pennsylvania

DATE, TIME: March 25, 1986, 4:40 a.m.

PROBABLE CAUSE: Failure to clear for approaching train.

EMPLOYEE:

| | |
|---|---|
| Occupation | Fireman |
| Age | 29 years |
| Length of Service | 5 years |
| Last Rules Training | May 17, 1984 |
| Last Safety Training | Unknown |
| Last Physical Examination | August 28, 1985 |

## Circumstances Prior to the Accident

Connellsville Yard contains 18 tangent and parallel tracks connected at both ends by a series of switches in the westward receiving yard, where trains are assembled and disassembled. These tracks run in an east-west direction and the terrain is level. The accident occurred between tracks 103 and 29.

### Extra 4160 East

Extra 4160 East (the "Alleghenian") was called at 4:10 a.m. and assigned locomotives, BO 4160, CO 4823, CO 4083, and CR 6598 located on three separate, ready tracks at the locomotive servicing facility. The crew consisted of an engineer, fireman (victim), conductor and two brakemen. The yardmaster gave the crew permission to move these locomotives from the various ready tracks and assemble them on Track No. 103. The engineer moved locomotives BO 4160 and CO 4823 from the No. 5 ready track to No. 103 track. The fireman moved Locomotive CR 6598 from No. 3 ready track and coupled it to CO 4083 on No. 10 ready track and then coupled these two locomotives to the other two locomotives already on No. 103 track. The fireman assisted in coupling air hoses, connecting electrical jumper cables, and connecting safety chains between locomotives CO 4823 and CO 4083. While the engineer took his position in the operating compartment of the east lead locomotive BO 4160, the fireman walked westward toward the west locomotive along the 6-foot-wide walking span between Track No. 103 and Track No. 29.

Crew Run No. 6 (Extra 4076)

Crew Run No. 6 consisted of a yard foreman, engineer and two yard helpers. After proper off-duty periods, the crew reported for duty at 11:55 p.m. on March 24, and was assigned Locomotive CO 4076. At about 4:20 a.m., the crew assembled four cars and a caboose on the west end of Track No. 29 to be taken in a transfer movement east to an industry track 2 miles east of Connellsville Yard. The train consist from west to east contained: CO 4076 locomotive, four covered hoppers, and a caboose.

After the train received a transfer train air brake test from the car inspector, the yardmaster at the switches instructed the crew to shove east on Track No. 29.

## The Accident

Extra 4160 East

The engineer at the controls of Locomotive BO 4160 looked westward and received a flashlight signal to release and apply the locomotive brakes and "rev" the locomotives from the fireman, who was standing between tracks 103 and 29. After "revving" the locomotives, the engineer looked westward again and saw a yard helper from Crew Run No. 6 signaling him with a lantern to either apply the brakes or to stop.

Crew Run No. 6 (Extra 4076)

According to the yard helper who was seated by the bay window on the northern side of the caboose, the fireman stepped back (southward) from the locomotives on Track No. 103 and into the path of the eastward movement on Track No. 29, when the caboose was about 3 or 4 feet from the fireman. The yard helper estimated the speed of Extra 4076 East at about 5 mph when it struck the fireman. The yard helper immediately radioed the engineer to stop the train, and the engineer placed the brakes in emergency. The injured fireman was taken to Allegheny General Hospital, where he died from his injuries at 5:04 p.m. the same day.

## Post-accident Investigation

A mechanical inspection and testing of equipment on Tracks No. 103 and 29 failed to disclose any condition that could be considered a contributing factor to the accident.

Investigation disclosed that the caboose being shoved eastward on track 29 was equipped with and displaying an approved flashing rear end marker and red marker lamps.

Under the circumstances, FRA toxicological testing was not required.

## Applicable Rules

Chessie System Railroads Operating Rules

2045. Expect movement of equipment on any track, at any time, in either direction. Always look in both directions before crossing or getting close to any track. Crossing tracks immediately in front of moving trains, locomotives, or cars is prohibited. When crossing tracks near standing equipment, always allow sufficient room to avoid injury in case of sudden or unexpected movement.

2046. Employees on or about any tracks, whether in the open, in shops, on bridges, or in tunnels, must move to a place of safety upon the approach of rolling equipment on the track. Employees must always position themselves at a safe distance from moving equipment, and be alert for falling or protruding equipment.

REPORT: 12

RAILROAD: Consolidated Rail Corporation (Conrail)

LOCATION: Cleveland, Ohio

DATE, TIME: April 25, 1986, 10:35 p.m.

PROBABLE CAUSE: Loss of secure handhold and/or footing.

EMPLOYEE:

| | |
|---|---|
| Occupation | Mechanical foreman |
| Age | 34 |
| Length of Service | 9 years and 7 months |
| Last Rules Training | June 14, 1985 |
| Last Safety Training | September 30, 1980 |
| Last Physical Examination | November 28, 1983 |

## Circumstances Prior to the Accident

On April 25, 1986, at approximately 2:45 p.m., a foreman (victim) reported for duty as a Shop Running Repair Foreman at Conrail's Collinwood Yard in Cleveland, Ohio. As a result of a vacancy, the foreman was assigned instead as a Fuel Pad Foreman responsible for the preparation of locomotives for outbound trains.

Later that evening, Locomotives 6711 and 6736 (coupled in multiple) arrived, hauling a train from the east. The train halted on Track No. 18 in the westbound yard. At approximately 9:00 p.m., a relay crew (consisting of an engineer and trainman) was instructed by the foreman to move the locomotives from No. 18 to the service area known as Station X for servicing prior to departure on an outbound ore train. This movement began at approximately 10:22 p.m., and required the locomotives to travel 1 mile westward, utilizing track 241, through an interlocking, and then travel 1 mile eastward, terminating on Main Track No. 2 at the Station X service area.

## The Accident

Shortly after 10:30 p.m., the locomotives were moving westward on Track No. 241, by the north side of the fuel pad area. The foreman, carrying a telemetry device for the locomotives and a clip board, apparently attempted to board the passing locomotives at the south rear stairway of Unit 6711, the lead locomotive. He evidently lost his handhold and fell between the two locomotives and died instantly.

## Post-accident Investigation

There were no witnesses to the accident. The end of the foreman's shift was near; therefore, his absence was not noted by his fellow employees. Darkness prevented the accident's discovery until 6:30 a.m., April 26, 1986.

At 9:01 a.m., Conrail began interviewing all employees who might have been working with the foreman or who might have knowledge of the circumstances. The last person to see the foreman was a pipefitter, who was in the foreman's office at the time the foreman left to board the locomotives. The pipefitter stated that at approximately 10:33 p.m., the foreman rose from his desk chair saying "I have to put a telemetry on the ore set." He then was observed picking up a telemetry device and a clip board and walking out the door northward toward Track No. 241 where the relay crew was moving westward by the area. Records of train movements placed the locomotives in the vicinity of the accident at the time of the foreman's departure. Inspection of the locomotives at the next destination revealed evidence of the accident on the locomotive wheels.

Toxicological tests of the foreman for drugs or alcohol were negative.

## Applicable Rules

### Conrail Safety Rules for Maintenance of Equipment Employees

Safety Rule 4116. Get on and off train, turntable, transfer table, movable bridge, elevator, self-propelled or other equipment or machinery or vehicle that moves on wheels, only when it is stopped and on the side away from live track when practicable.

Safety Rule 4375. Place feet firmly and have secure handhold when:

(a) Getting on or off equipment.

* * * * * * *

REPORT: 13

RAILROAD: Union Pacific Railroad Company (UP)

LOCATION: Cricket, Arkansas

DATE, TIME: April 27, 1986, 8 a.m.

PROBABLE CAUSE: A track foreman failed to remove his hi-rail truck from the track.

EMPLOYEE:

| | |
|---|---|
| Occupation | Track Foreman |
| Age | 31 years |
| Length of Service | 10 years |
| Last Rules Training | April 17, 1986 |
| Last Safety Training | April 6, 1986 |
| Last Physical Examination | 1975 |

## Circumstances Prior to the Accident

### Track foreman

At 4:18 a.m., April 27, 1986, a track foreman in Aurora, MO, telephoned a train dispatcher and requested a motor car lineup between Carthage, MO and Cotter, AR. The track foreman was told the "general lineup" would not be available until 8 a.m.

After checking that the track foreman had adjusted his watch for a time change (central daylight saving time), the dispatcher gave him an "additional lineup" stating the expected departure times for a southbound train from Carthage (5 a.m.) and a northbound train from Cotter (not before 7:15 a.m.). The dispatcher warned the track foreman that this information would be valid only until 8 a.m., and that he should not occupy the track beyond that hour without "talking to somebody." The track foreman said he (the foreman) would reach someone at about 7:45 a.m. He then placed his UP vehicle No. 62736 (a 1985 Chevrolet, 1 ton, 4-door, crew cab truck, with Fairmont hi-rail equipment) on the track and proceeded southward. He was performing his routine duties, which were to inspect track for rock and mud slides from 4 a.m. to 12:30 p.m., Thursday through Monday.

Between 5:30 and 5:40 a.m., a train dispatcher called the clerk in Branson, MO, and asked him to contact the track foreman to tell him Extra 3184 South had departed Carthage at 5:30 a.m. The clerk reached the track foreman via radio and relayed this information. The clerk and a trainmaster saw the track foreman's hi-rail truck pass the depot in Branson, milepost 447.3, between 6:30 and 6:45 a.m. At about 6:50 a.m., the train dispatcher

called the clerk again and asked him to radio the track foreman and tell him that a scheduled "meet" of the two trains had been changed from Davis, AR, milepost 434.3, to Bergman, AR, milepost 416.1. The clerk immediately notified the track foreman of the change.

Extra 3184 South

The 5-man crew (engineer, fireman, conductor, and 2 brakemen) of Extra 3184 South, KCNO-26, reported for duty at 4:15 a.m. after required off-duty periods. Extra 3184 South left Carthage, MO, at 4:21 a.m. and proceeded to Pearl Yard, 2 miles south of Carthage. At 5:30 a.m., the train departed Pearl en route to Cotter, AR. At 7:23 a.m., the train passed Branson, MO (15 miles north of the accident point.) The train moved through a series of curves in mountainous terrain and through a tunnel approaching the accident site. The fireman on Extra 3184 South, a promoted engineer, was operating the locomotive.

## The Accident

As Extra 3184 South exited the tunnel at 30 mph and rounded a 7-degree 58-minute curve south of Cricket, the fireman-engineer saw the hi-rail truck on the track about 325 feet ahead heading south. Prior to this point, vision is obstructed by the adjacent embankment and vegetation. The fireman said the truck appeared stopped, and he did not see anyone in the truck. He immediately applied the brakes in emergency. When the truck and the train collided, the truck traveled 912 feet after impact, the locomotive 652 feet. Neither truck nor train was derailed.

After the accident, the head brakeman left the train and ran to the hi-rail truck where he found the track foreman lying unconscious across the back seat, his head in the left corner of the cab. His lower body and legs extended across the front seat backrest, which had been bent backwards against the rear seat cushion. Realizing the track foreman was seriously injured, the brakeman returned to the train and notified the engineer, who called the clerk at Branson.

A hi-rail vehicle transported paramedics to the scene. They removed the injured foreman from his truck and transported him to the main highway, where he was taken by helicopter to St. Johns Hospital in Springfield, MO. He reached the hospital at 9:55 a.m.; but at 10:57 a.m., he was pronounced dead from head injuries; he never regained consciousness.

## Post-accident Investigation

The accident occurred at milepost 431.6, 1.1 miles south of Cricket, less than 1 mile south of a hand-activated motor car signal switch for signals approaching the Cricket tunnel. This switch, when activated, results in red signals on both sides of the tunnel for 8 minutes. When the signal circuitry was tested,

red signals were displayed for 7 minutes, 55 seconds after the button was pushed. The train crew said the signals were green (proceed) before the accident.

Within 1 1/2 miles of the accident site, the track foreman had passed three switches and a road crossing, where he could have removed his vehicle from the main track and allowed the train to pass.

When the hi-rail truck was examined, the automatic gear-shift lever was in "drive" position. Investigators found a piece of paper on which the track foreman had written train location information. There was no notation on the hour Extra 3184 South had left Carthage. No evidence was present indicating the foreman had protected the hi-rail with prescribed signal appliances (flagging equipment).

Post-accident toxicological tests on blood and urine taken from the body of the track foreman revealed the presence of alcohol. However, a variety of technical questions related to administration of medical treatment prior to the foreman's death and the preservation of the specimens prevented FRA from determining conclusively that the alcohol was present as a result of voluntary ingestion prior to the accident. Under these circumstances, and in the absence of corroborating evidence to support use of alcohol, FRA is unable to draw inferences from this data.

The crewmembers of Extra 3184, the dispatcher and operator were also tested under FRA regulations. All tests were negative.

## Applicable Rules

### Union Pacific System

### MAINTENANCE OF WAY RULES

### RULES FOR ON TRACK OPERATION OF TRACK CARS, ROADWAY OR WORK EQUIPMENT

1402. LINE-UPS: Before occupying main track with a track car, track car operator must, if possible, obtain written line-up of train movements.

1403: GENERAL LINE-UPS: General line-ups will be issued by the train dispatcher at specified times. Additional line-ups will be issued by the train dispatcher when requested.

1420. PROTECTION AGAINST TRAINS AND OTHER CARS: In the operation of cars, foreman and others must move at all

times with care and caution necessary for safety, protecting when necessary, using prescribed signals. Care must be exercised to avoid collision with trains or other cars.

Union Pacific Railroad Company - System Timetable No. 3

Effective 12:01 a.m., Sunday, April 27, 1986.

Tunnels - Automatic block signals are located at Reeds Spring, Crest and Cricket Tunnels. When signals display "stop then proceed at restricted speed" trains must wait 8 minutes and then proceed at restricted speed through tunnel, unless signal changes to proceed. Track car operators must operate push button on signal masts at entrance before moving through tunnels. Operation of pushbuttons sets signals in each direction in stop position for 8 minutes.

REPORT: 14

RAILROAD: Burlington Northern (BN)

LOCATION: Galesburg, Illinois

DATE, TIME: April 26, 1986, 9:20 p.m.

PROBABLE CAUSE: Failure of a yardmaster to provide blocking protection.

EMPLOYEE:

| | |
|---|---|
| Occupation | Roadmaster |
| Age | 39 |
| Length of Service | 14 years |
| Last Rules Training | January 25, 1986 |
| Last Safety Training | January 25, 1986 |
| Last Physical Examination | No record |

## Circumstances Prior to the Accident

Galesburg Yard is a hump-switching yard consisting of 32 parallel tracks in a bowl; the tracks are arranged in four groups with eight tracks in each group. Each group has a secondary retarder position on its lead track, and cuts of cars are moved by force of gravity, from the crest of the hump northward through a master retarder to one of four group leads. All retarders are air operated. Three light towers, with 11 high-pressure sodium lights on each tower, illuminate the accident area.

Automatic computerized switching is controlled by a yardmaster in the hump tower. From the control center, the yardmaster can reroute cars originally programmed in the computer to any one of the four groups of tracks. He can also block out any group lead or individual bowl track.

If tracks are not blocked out, the computer will automatically classify a car and allow it to move to a previously designated track. Changes in car routings and blocking out of particular tracks are displayed on a video screen and recorded on a printout sheet.

At about 6:15 p.m., a crewmember from Job No. 202 notified the yardmaster of a possible sun kink on Group 3's lead. The terminal trainmaster (who has a desk adjacent to the yardmaster's and who is in direct communication with him) decided to continue the humping operation. At about 8:30 p.m., the terminal trainmaster inspected the track in the area of the reported sun kink; he returned to the hump tower at about 8:45 p.m. and telephoned the roadmaster at his home to report the situation. The roadmaster then went to the yard to inspect the track.

At 9:05 p.m., the roadmaster called from his office and told the yardmaster that Group 3's lead was out of service. At this time, the yardmaster rerouted cars previously programmed for tracks 17-24 that would use Group 3's lead. The terminal trainmaster went to the roadmaster's office to learn when the track could be placed in service. He returned a short time later and told the yardmaster, "Group 3 is definitely out of service."

## The Accident

At 9:20 p.m., Yard Job No. 202 was humping Train No. 144, a train with 124 cars. The 51st car (BN248846) was uncoupled and rolled down Group 3's lead destined for Track No. 18, where it struck and ran over the roadmaster. The roadmaster was found lying face down across the east rail, 236 feet north of Group 3's lead switch. He was pronounced dead on the scene by the Knox County Coroner.

A 36-year-old section foreman accompanying the roadmaster was also hit by the car and was seriously injured when thrown clear of the track.

## Post-accident Investigation

An inspection of the freight car which struck the employee disclosed no defects or unusual conditions which would have contributed to the accident. An inspection of the computer by the carrier also disclosed no defects.

The yardmaster had not applied "blocking" to the Group 3 lead to prevent cars from entering Tracks 17-24. The yardmaster had initially rerouted cars destined for those tracks from his list of cars and track destinations. However, he evidently overlooked a car destined for Track 18 when he was re-programming the computer through his keyboard entries. The car, consequently, rolled onto the Group 3 lead and into Track 18.

Toxicological testing of the roadmaster revealed a blood alcohol concentration of .034% and his urine also tested .034%. The identical results for blood and urine indicate a likelihood that the alcohol was recently ingested. However, the investigation indicated no performance failure on the part of the roadmaster; and, accordingly, the presence of alcohol is not deemed a factor in this accident.

## Applicable Rules

Burlington Northern Maintenance of Way Department rules:

725(B) Employees governed by the Rules of the Maintenance of Way Department must, before working on or near tracks in a yard, obtain authority from yardmaster or employee in charge. Remotely controlled switches must be lined against movement to the affected tracks and locking, blocking or reminder devices applied by employee controlling such switches and maintenance of way employee so notified. Such protection shall be maintained until notified by the maintenance of way employee that work is completed and protection is no longer required by Rules 14 and 725(A) of the Rules of Maintenance of Way Department.

## General Rules

G. The use of alcoholic beverages, intoxicants, narcotics, marijuana or other controlled substances by employees subject to duty, or their possession or use while on duty or on Company property, is prohibited.

Employees must not report for duty under the influence of any alcoholic beverage, intoxicant, narcotic, marijuana or other controlled substance, or medication, including those prescribed by a Doctor, that may in any way adversely affect their alertness, coordination, reaction, response or safety.

REPORT: 15

RAILROAD: Union Pacific Railroad Company (UP)

LOCATION: Durand, Kansas

DATE, TIME: May 4, 1986, 9:40 p.m.

PROBABLE CAUSE: Loss of a secure handhold or footing.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation | Rear brakeman |
| | Age | 37 years |
| | Length of Service | 13 years 10 months |
| | Last Rules Training | April 5, 1985 |
| | Last Safety Training | No record |
| | Last Physical Examination | July 1972 |

## Circumstances Prior to the Accident

After the required off-duty period, a four-man UP crew, consisting of an engineer, a conductor, a front brakeman, and a rear brakeman, went on duty at 6 p.m., May 4, 1986, in Coffeyville, KS. Their freight train, Extra 3285 North, consisting of four diesel electric locomotives coupled together in multiple-unit operation with 79 cars, left Coffeyville, milepost 467.8, at 6:30 p.m., after the crew performed the required initial terminal train air brake test. Extra 3285 North arrived in Durand, milepost 398.5, a distance of 69.3 miles, without incident, at 9:15 p.m.

In Durand after various train switching movements, 15 cars remained behind the four locomotives. Crewmembers used radios to communicate; the rear brakeman had a standard walkie-talkie and was carrying a switch lantern.

## The Accident

The front brakeman lined the switch for entrance into the east main track to pick up 18 cars and called the rear brakeman on the walkie-talkie to make sure that he was standing in the right place at the west end of the cars to be picked up. The rear brakeman answered that he was in position and told the front brakeman to shove back. The engineer shoved east on the main track, made the coupling, and started pulling ahead. After a forward movement of about 15 carlengths, the rear brakeman told the engineer to stop--only 15 of the 18 cars had been coupled.

The rear brakeman told the engineer to shove back for the remaining three cars. There were no witnesses; however, the rear brakeman apparently mounted the side of the car at the east end of the leading tank car, GATX 94176. After shoving eastward for about 30 carlengths, the rear brakeman radioed: "easy" and told the engineer to stop. The engineer stopped the train within 1 carlength.

After 2 or 3 minutes without any further radio communication with the rear brakeman, the engineer and front brakeman called him but received no response. Immediately, the front brakeman began walking toward the rear of the train. As he neared the rear car, he saw the rear brakeman's lantern lying between the rails, then he saw the rear brakeman also lying between the rails.

While the train was making an eastward switching movement, the rear brakeman apparently had fallen from the east end or from the side of tank car GATX 94176, and he died almost instantly from massive head trauma.

## Post-accident Investigation

The accident occurred in darkness without witnesses, at a private oil field rail-highway crossing about 3,350 feet from the west switch.

As a result of agreement between the railroad and the oil company, the UP was precluded from leaving its cars blocking the oil field rail-highway crossing, thus the three cars remaining to be picked up were sited east of the crossing.

When the four locomotives and the 30 cars stopped, the rear tank car, GATX 94176, was on the crossing about 45 feet from the remaining three cars.

The track in this area is tangent, and the grade is level. The speed of the movement was about 5 to 6 mph.

Tank car GATX 94176 had no defects on its sill steps, handholds, safety railing, and running board that could have contributed to the accident.

Drug and alcohol tests of the crew of Extra 3285 North were performed, and the results were negative.

SAFETY, RADIO AND
GENERAL RULES
FOR ALL EMPLOYEES

4052. DESIGNATED RIDING PLACES: When riding on cars, engines or other equipment employees must ride on steps, ladders or platforms provided for that purpose. EXCEPTION: Employees must not ride on side ladders leading to engine cabs.

Employees must not ride on ends of moving cars except when operating handbrakes or where side clearances are close.

When riding on side of engine, car or other equipment employees must face direction of movement.

4054. PROTECT AGAINST SUDDEN MOVEMENT: When riding moving equipment, employees must protect themselves from injury which may be caused by rough starts or stops, slack action, curve motion, couplings or any other unexpected motion.

REPORT: 16

RAILROAD: Consolidated Rail Corporation (Conrail)

LOCATION: Camden, New Jersey

DATE, TIME: May 20, 1986, 1:30 a.m.

PROBABLE CAUSE: A brakeman failed to remain clear of moving equipment.

EMPLOYEE:

| | |
|---|---|
| Occupation | Brakeman |
| Age | 56 |
| Length of Service | 34 years |
| Last Rules Training | October 28, 1985 |
| Last Safety Training | March 11, 1986 |
| Last Physical Examination | November 12, 1985 |

## Circumstances Prior to the Accident

The accident occurred in Conrail's Pavonia class yard in Camden, NJ, where 32 tracks extend east to west. The tracks from south to north are numbered 1 through 32, respectively. Approaching thealmost level site from the east, there is a 10-degree 30-minute curve to the left for 316 feet to the point of the accident and then it is tangent for 1,384 feet.

At 10:59 p.m. on May 19, 1986 after a required off-duty period, a brakeman reported to Pavonia Yard for his regular assignment, YPCA-60. He worked as part of a yard crew consisting of a conductor, an engineer, and himself.

After being assigned to Locomotives CR 9619-9401, the crew proceeded west to the class yard to begin its tour of duty. The crew first switched cars out of Tracks 2 and 3 and then proceeded to the east end of Track No. 21. While walking west on the north side of Track 21, the conductor radioed the brakeman to couple the locomotives to the east car on Track No. 21 and shove west to make another coupling. The conductor then instructed the engineer to shove west 3 additional carlengths to make another coupling. The conductor next instructed the engineer to shove west for half a carlength for a final coupling. As the conductor released the hand brake on the westend car on Track No. 21, he called the yardmaster for permission to shove the cars to the end of the track. Receiving permission, the engineer shoved west to the end of the track. The conductor then directed the engineer to tell the brakeman to uncouple the locomotives from the east end and proceed to Track No. 26, where the conductor would meet them.

While the crew of YPCA-60 was performing these duties, the crew of YPCA-69, also with permission from the yardmaster, was shoving 18 cars east on Track No. 22. These cars were shoved 6 carlengths in order to spot the eastend car at the yard air plant. After this, the YPCA-69 crew proceeded to Track No. 14.

## The Accident

The initial transmission from the conductor to the engineer of crew YPCA-60 to proceed to Track No. 26 was unclear, so the conductor had to repeat the message. The engineer radioed that the brakeman was not responding. The engineer repeated the transmission, but again, no response.

The conductor then walked to the east end of Track No. 26 and walked to the east end of Track No. 21, where he met the engineer. They both began looking for the brakeman in that general area. The conductor met a car inspector who said he saw a light that seemed to be on the ground near the east end of Track No. 22. Both men then proceeded west to the north side of Track No. 22, where they saw the brakeman lying motionless on the ground. The conductor immediately notified the yardmaster, who called an ambulance.

At 2 a.m., Camden City Rescue Unit No. 1 arrived on the scene, and by 3:30 a.m., the Camden County Medical Examiner had arrived. The brakeman was taken to Cooper Medical Center in Camden by Rescue Unit No. 1, where he was pronounced dead, of multiple traumatic injuries at 4:19 a.m., May 20, 1986.

## Post-accident Investigation

Distinct footprints identified as the brakeman's were in the gage of Track No. 22 near his body. These footprints indicate the conductor stepped into the path of the cars being shoved on the adjacent track. The carrier's inspection of the equipment revealed blood on the northeast wheel of MONX 20117, the east car on Track No. 22. The carrier took no exceptions to the condition of the equipment on Track No. 22 or to the radios used by both crews.

An autopsy performed by the Office of the Medical Examiner in Camden revealed the body to be unremarkable other than the injuries sustained as a result of the accident.

Post-accident toxicological testing was performed on both crews, and the results were negative.

## Applicable Rules

CONSOLIDATED RAIL CORPORATION
SAFETY RULES

### RESPONSIBILITIES OF EMPLOYEES

1004 - When it can be avoided, employees must not rely on the watchfulness of others. They must protect their own safety.

### WALKING

1304 - Expect equipment to move on any track, in any direction at anytime. Therefore, employees must look in both directions before:
a. Fouling or crossing track;
b. Perfcrming any other applicable operation.

REPORT: 17

RAILROAD: Illinois Central Gulf Railroad Company (ICG)

LOCATION: Carrier Mills, Illinois

DATE, TIME: May 21, 1986, 12:05 p.m.

PROBABLE CAUSE: A flagman's failure to stop equipment before it fouled the switch.

EMPLOYEE:

| | |
|---|---|
| Occupation | Flagman |
| Age | 53 years 10 months |
| Length of Service | 27 years 9 months |
| Last Rules Training | August 7, 1985 |
| Last Safety Training | August 7, 1985 |
| Last Physical Examination | December 12, 1984 |

## Circumstances Prior to the Accident

On May 21, 1986 at 8:50 a.m., the Illinois Central Gulf called a pool freight crew consisting of an engineer, a conductor, a front brakeman, and a flagman and assigned it to operate Extra ICG 9818 South from Bluford, IL, to Fulton, KY.

The crew was notified after completing its required off-duty period; its duties consisted of switching, blocking cars, and making the required train air brake test. The cabooseless train, which included six locomotives, 28 loads, and 79 empties, left Bluford at 10:50 a.m.

The crew received a message as they left Bluford (milepost 41.6), instructing them to set 22 head cars on the Sahara Lead at Sahara Mine (milepost 83.9). The train arrived at Sahara Mine without incident at approximately 11:50 a.m. As the locomotives passed the south wye switch on the main track, the front brakeman and the flagman dismounted. The front brakeman unlocked the electrically locked, hand-operated switch that provided access to the Sahara Mine from the main track. The flagman removed the derail from the south leg of the Sahara Mine wye, uncoupled the 22 cars to be set off, and radioed the engineer to pull south beyond the switch. The flagman rode the trailing car to the switch and radioed the engineer to stop when he had cleared the switch. The front brakeman then lined the switch for movement to the east into Sahara Mine, then radioed the engineer to make the reverse movement shoving the cars into Sahara Mine. The flagman, riding the lead hopper car, was instructed to protect the shoving movement. After shoving a distance of approximately 800 feet,

the last communication heard by the crew from the flagman was "three carlengths" and then "that'll do."

## The Accident

After 1 1/2 to 2 minutes had passed without communication from the flagman, the rest of crew tried to radio him, with no success. Then the front brakeman began walking to the last car of the 22-car setout, and found the flagman lying face down in 18 inches of water in a ditch, about 10 feet south of the inside wye switch. The rear car had stopped approximately 20 feet east of the switch.

## Post-accident Investigation

Although there were no witnesses, a reenactment of the accident showed that the fatally injured flagman had apparently dismounted the rear car to throw the switch before he stopped the movement by radio. He went to the inside wye switch and stepped on the foot latch and released the switch-throw handle to line the switch as the movement on the south leg entered the switch. As the flagman stepped on the foot latch, the cars entered into the switch points, causing the throw handle to rotate with force striking the flagman on the right side of the head. The force of the blow threw the flagman into the ditch, and led to his death from brain trauma.

Reenactment of the accident by ICG officials showed that when someone steps on the foot latch release pedal while cars are entering the switch point, the switch throw-handle will rotate with great force.

Toxicological tests for alcohol and controlled substances were negative.

## Applicable Rules

Illinois Central Gulf Railroad Company
Operating Rules:

104c - A track must not be fouled until switches connected with the movement are properly lined ....

Illinois Central Gulf Railroad Company
Safety Rules

Operating Track Switches

270 - When operating switches

* * * * * * *

REPORT: 18

RAILROAD: Southern Railway Company

LOCATION: Irondale, Alabama

DATE, TIME: May 29, 1986, 12:50 p.m.

PROBABLE CAUSE: The employee was struck by a claw bar while turning a rail.

The contributing factor was the use of an improper tool to turn the rail.

EMPLOYEE:

| | |
|---|---|
| Occupation | Track laborer |
| Age | 25 years |
| Length of Service | 5 years 10 months |
| Last Rules Training | June 26, 1984 |
| Last Safety Training | May 29, 1986 |
| Last Physical Examination | May 2, 1980 |

## Circumstances Prior to the Accident

The accident occurred in a level, weeded area in the northern part of Norris Yard, approximately 45 feet east of the Pull Back Track and 300 feet north of the North Yard Tower.

A track laborer belonged to a track gang consisting of a track foreman and two other laborers. He was told to disassemble a track panel that had been removed from the Pull Back Track. The 39-ft panel, with 132-lb rail, had one rail secured to its east side and the other rail unattached. The end of the rail was lying across the ties at about a 45-degree angle. At the time of the accident, the laborer was working alone; his foreman stood about 60 feet away with the other laborers.

## The Accident

Using a claw bar, the track laborer was moving the rail from the track panel. He had turned the rail from its side to an upright position and had placed the claw bar on the base of the rail to roll it over. The base of the rail was inserted into the "U" shaped jaws of the claw bar. As the track laborer rolled the rail, the jaws clung to the rail, and the momentum of the top-heavy 132-lb. rail caused the claw bar to swing and strike the laborer on the right side of his head. He was transported to Baptist Medical Center, Montclair, Birmingham, Alabama, where he was pronounced dead at 1:52 p.m.

## Post-accident Investigation

The foreman stated that he saw the laborer using the wrong tool to turn the rail and tried to stop him. He reached the laborer just in time to catch the man and sit him down on the east rail. The laborer gasped and fell over backward.

Examination of the laborers' hard hat, which was knocked off during the accident, revealed a nick on one side which appeared to be of recent origin.

The accident was reenacted by the track supervisor under the direction of the track foreman. The location of the rail was determined by the discoloration of the vegetation. The Track Supervisor, using a claw bar in place of a proper rail fork, reenacted the scene and was apparent that improper tool caused the accident. A rail fork, the correct tool, was found in the toolbox of the truck used by the track gang.

## Applicable Rules

The carrier does not have a rule pertaining to this type of work.

REPORT: 19

RAILROAD: The Atchison, Topeka and Santa Fe Railway Company (ATSF)

LOCATION: Clovis, New Mexico

DATE, TIME: June 9, 1986, 9:55 a.m.

PROBABLE CAUSE: Failure to de-energize electrical equipment before working on it.

EMPLOYEE:

| | |
|---|---|
| Occupation | Maintenance electrician |
| Age | 41 years |
| Length of Service | 13 years |
| Last Rules Training | None |
| Last Safety Training | June 3, 1986 |
| Last Physical Examination | March 1973 |

## Circumstances Prior to the Accident

The accident took place on a power pole located 9 feet west of Building No. 232, the Mechanical Temperature Cars Building, on the south side of the car repair shop and the ATSF switching yard in Clovis, New Mexico. A 45-foot long pole is set into the ground with three distribution transformers mounted 5 feet from the top. The pole has climbing steps beginning 7 feet off the ground which are thereafter staggered 2 feet apart for the next 16 feet. Below each of three high-voltage lines are three distribution fuses and holders. The weather on the day of the accident was partly cloudy with a light southerly breeze; temperature was 71° F.

Two days before the accident, a lightning storm caused a blowout of two outside 30-amp distribution fuses on the pole.

## The Accident

When the maintenance electrician was notified of the power loss at 9:35 a.m., he climbed the pole and removed the two blown fuses, leaving the center fuse in its holder. The electrician then climbed down the pole with two fuse holders. On the ground, he assembled two new fuses in the holders he had taken down from the pole. He then reclimbed the pole and inserted the bottom of the fuse in the left fuse holder and tried to insert the bottom of the fuse in the holder on the right side. He damaged the fuse

in the attempt so he again dismounted the pole and rebuilt the fuse. He returned to the pole and climbed to a position where he could insert the bottom of the fuse into the holder--using his hot stick to close the fuses into the top part of the fuse holders. He unhooked his safety belt to be in a better position to close the top part of the fuses. He climbed between the three transformers and tried with his left hand to pass his safety belt around the pole. At 9:55 a.m., his left arm, two inches above the elbow, came into contact with a hot wire (2,400 volts) from the middle distribution fuse to the middle transformer that the electrician had neglected to pull. The maintenance electrician fell away from the pole, and his back touched a ground wire several feet below which rolled him face down. He fell to the ground in that position. An ambulance was called at 10:04 a.m. and arrived at 10:09 a.m., but the electrician was pronounced dead at 11 a.m. by the New Mexico State Medical Examiner.

## Post-accident Investigation

Investigation revealed that at the time of his death the electrician was wearing the proper safety belt, pole climbers, rubber gloves under long-leather gloves, hard hat and other required equipment. Records furnished by the ATSF indicated that the only formal training the electrician received was in the Navy; EM "A" School, January to April 1964. He also worked as a routine maintenance person, doing electrical, welding, and plumbing chores at a beef packing plant from November 1971 until the time he was hired by the carrier in March 1973. There were no other training records.

The electrician was hired as a diesel electrician and performed these duties until he was assigned as a maintenance electrician, on which he bid and was assigned on January 28, 1986. The electrician had signed up to receive general instructions for electricians and agreed to complete the portions checked and take a closed book test on December 10, 1982. However, he did not complete the course nor did he take the test. The job description read: "Maintenance Electrician, Building No. 232, Position 7510, duties consist of line and pole work, general electrical maintenance and/or any other duties as assigned by foreman."

## Applicable Rules

The Atchision, Topeka and Santa Fe Railway Company, Safety Rules for Santa Fe Employees.

Pole Line and Electrical Equipment

293. Only qualified employees are permitted to replace electric

fuses on pole lines or transformers.

296. Employees must consider wires to be alive unless positively known that they are not energized.

315. Where practicable, work on high-voltage lines must be protected by open sectionalizing switches or open fuse cutouts at each end of the section of line to be worked on.

REPORT: 20

RAILROAD: Burlington Northern Railroad Company (BN)

LOCATION: Jamestown, North Dakota

DATE, TIME: June 30, 1986, 11:10 a.m.

PROBABLE CAUSE: Failure to properly maintain safety warning equipment on a mobile repair truck.

A contributing factor was leaving the vehicle in reverse.

EMPLOYEE:

| | |
|---|---|
| Occupation | Carman |
| Age | 59 years |
| Length of Service | 42 years |
| Last Rules Training | Not required |
| Last Safety Training | February 28, 1986 |
| Last Physical Examination | June 30, 1983 |

## Circumstances Prior to the Accident

Two carmen who were working with a mobile repair vehicle went on duty in Dilworth, MN, at 7 a.m. on the day of the accident and operated the vehicle from Dilworth to Jamestown, a distance of about 100 miles.

The repair vehicle, a 1985 Chevrolet 2 1/2 ton truck, was equipped with an automatic transmission. Repair equipment mounted on the truck included a hydraulic boom and a winch. Operation of these devices was controlled by hydraulic pressure which varied according to the speed of the truck engine. In Jamestown, the carmen repaired the brake rigging of a railcar standing on Track No. 15 in a train yard. Then one of the carmen noticed that one of the sill steps on the car was bent inward. He backed the truck to a point adjacent to the side of the car and attached the winch cable to the sill step. The hand brake was applied on the railcar, and the wheels were blocked. The emergency brake was applied on the repair truck, and the truck engine was running on "high idle" to provide the hydraulic pressure needed to operate the winch. When the winch was in motion and tension placed on the cable, the truck moved backward slightly.

## The Accident

The carman who drove the truck stopped the winch and walked to the truck cab to check the emergency brake. The second carman remained standing between the rear of the truck and the freight car. The driver released the emergency brake, intending to reapply it immediately. However, the truck suddenly moved backward and crushed the second carman between the rear of the truck and the side of the freight car. The accident occurred at approximately 11:10 a.m.

The injured employee was transported to the Jamestown Hospital where cardiopulmonary resuscitation was attempted, but the carman was pronounced dead at the hospital from a multiple, massive thoracic injury.

## Post-accident Investigation

A mechanical inspection of the truck at a local commercial facility revealed the backup lights and the backup warning horn were both inoperative because the fuse controlling their common circuit was missing.

Tests were made at the scene in an attempt to determine why the truck moved when the emergency brake was released, and conditions that existed at the time of the accident were recreated. The truck engine was on "high idle," emergency brake was applied, and tension was placed upon the winch cable. When the emergency brake was released with the automatic transmission selector lever in neutral position, the truck did not move. But when the emergency brake was released with the transmission in reverse position, the truck moved backward suddenly and struck the adjacent railcar. Thus, it appears that when the driver backed the truck and stopped adjacent to the railcar, the transmission selector lever was left in reverse instead of being returned to neutral position. When the driver later released the emergency brake with the engine running in "high idle," the truck moved backward and struck the employee who was standing between the rear of the truck and the freight car.

Had the backup warning horn been working, the continuous warning sound would have made it unlikely that the driver would forget that the transmission was in reverse rather than in neutral when he left the truck.

## Applicable Rules

Burlington Northern Safety Rules and General Rules:

336. Drivers must:

* * * * * * *

c. Inspect vehicle's equipment and safety devices before operating and not operate vehicle unless in a safe operating condition.

567. Employees must:

a. Not incur risk which can be avoided by exercise of care and judgment.

b. Take time to work safely.

c. Exercise care to prevent injury to themselves and others.

REPORT: 21

RAILROAD: Consolidated Rail Corporation (CR)

LOCATION: East Brunswick, New Jersey

DATE, TIME: July 5, 1986, 10:05 a.m.

PROBABLE CAUSE: A failure to avoid a shifting load while preparing parts of panel turnout for unloading.

A contributing factor was the lack of any written instruction on proper panel unloading procedures.

EMPLOYEE:

| | |
|---|---|
| Occupation | Track Foreman |
| Age | 50 years |
| Length of Service | 19 years |
| Last Rules Training | August 9, 1985 |
| Last Safety Training | July 5, 1986 |
| Last Physical Examination | February 14, 1986 |

## Circumstances Prior to the Accident

The accident occurred at milepost 7.8 on the Sayreville Running Track. The weather was clear, and the temperature was 80°F. A single track runs east to west in the accident area; the track is tangent and the grade is practically level. In the vicinity, the terrain is wooded, and there is a short runaround track on the south side of the Sayreville Running Track.

On the day of the accident, the track foreman, a crane operator and a trackman reported for duty at Elizabeth, NJ, at 7 a.m. Their assignment was to unload parts of a paneled turnout (i.e., ties and rails already assembled). The crane and loaded cars were already located at the site.

After reviewing the carrier's safety rule of the day, they departed in a carrier owned hi-rail truck, traveling by highway to the work site.

Upon arrival at East Brunswick, the hi-rail truck was placed on the track with the rail wheels down. While the foreman and crane operator discussed where to put the various panels that were to be unloaded, the trackman was sent to buy coffee for all of them. He returned in about twenty minutes. While he was gone, the crane operator and foreman unloaded one panel and placed it on the ground next to the switch at the east end of the runaround track. This panel had been loaded the day before and was not

secured to the car. When the trackman returned, all three men took a break and drank their coffee.

Just before 10 a.m., an assistant track supervisor arrived at the scene and joined the three men standing by the hi-rail truck. Their conversation concerned where to put the last panel section that remained in the car. The crane operator and assistant supervisor were facing east with their backs to the truck and the panel car. The foreman and the trackman had moved toward the rear of the truck.

## The Accident

At approximately 10:05 a.m., the assistant supervisor and crane operator heard the foreman scream. They turned, climbed up into the panel car, and saw the foreman pinned against the center support structure of the car by a panel that had fallen over. The crane operator and assistant supervisor immediately attached a line from the crane to the panel and moved it aside to free the foreman. Emergency medical personnel were summoned, and the foreman was removed to Middlesex General Hospital. He was pronounced dead at 11:20 a.m.

## Post-accident Investigation

There were no witnesses to the accident. The trackman stated that while the crane operator and assistant supervisor were talking, he and the foreman walked to the rear of the truck. The foreman then climbed aboard the west end of the panel turnout car and walked along the bottom rail of the panel that was standing vertically on the north side of the car. Upon reaching the middle of the car, he leaned with his back against the center support section; he then told the trackman to pass a cutting torch and lighter to him from the truck so he could cut the two bolts that secured the panel to the outside of the car. When the foreman started cutting the bolts, the trackman turned away to avoid being burned by molten metal. When the second bolt had been cut, the panel fell and crushed the foreman against the center support causing fatal injuries.

Track measurements taken, where the panel car stood, revealed that one rail was 1 1/2 inches lower than the opposite rail. This tilted the car in the direction that the panel fell. (This does not represent a violation of Track Safety Standards.)

This type of panel turnout car has been in use by the carrier for ten years and also by its predecessor, the Penn Central Transportation Co. Other than some general safety rules, there were no written instructions and no training courses offered by the carrier about how to unload panels from these cars. Normally, the bolts that secure the panels for shipment are cut off from the outside of the car. It is unknown why the foreman decided to work from the inside of the car, thus placing himself in jeopardy.

## Applicable Rules

Consolidated Rail Corporation Safety Rules for Maintenance-of-Way Employees (effective June 1, 1981)

Rule 3374 - Keep self in location on...car...that will prevent any part of body being caught between any object and...any other object likely to shift.

REPORT: 22

RAILROAD: Consolidated Rail Corporation (CR)

LOCATION: Elyria, Ohio

DATE, TIME: July 10, 1986, approximately 7:05 a.m.

PROBABLE CAUSE: The conductor failed to stand clear of moving equipment.

EMPLOYEE:

| | |
|---|---|
| Occupation | Conductor |
| Age | 53 years |
| Length of Service | 2 years and 2 months |
| Last Rules Training | March 3, 1986 |
| Last Safety Training | March 3, 1986 |
| Last Physical Examination | January 27, 1986 |

## Circumstances Prior to the Accident

In the accident area at Elyria, the terrain is level. There are four tangent tracks extending east and west. These tracks, from south to north, are called No. 2 Main, No. 1 Main, North Controlled Siding, and Old No. 3 Main. A yard lead track extends from Old No. 3 Main Track to the east end of Elyria Yard. The accident occurred on a clear morning with a temperature of 80°F.

On the day of the accident, the conductor was a member of a train crew that also included an engineer and a brakeman. The crew reported on duty, after the proper off-duty periods, at 1:20 a.m. on Thursday, July 10, 1986. The crew was assigned to eastbound train PXSE-9X, consisting of four locomotives coupled in multiple and 85 cars located at Nasby Crossing, Ohio (Milepost 292.1.) The train departed Nasby Crossing at 3:22 a.m.

## The Accident

Train PXSE-9X operated on No. 1 Main Track with the engineer operating the locomotive, and the brakeman occupying the fireman's seat. The conductor was in the cab of the second locomotive. The train arrived at Elyria, Ohio, at 6:40 a.m., stopping at the west crossover switch to the North Controlled Siding. Ten gondolas were removed from the front portion of the train and placed on the North Controlled Siding. The locomotives were uncoupled from the gondolas and, reversing direction, traveled eastward on the Old No. 3 Main Track back to No. 1 Main Track. After aligning the switches, the brakeman boarded the lead locomotive and reoccupied the fireman's seat. The

conductor, using radio and hand signals, recoupled the locomotives to the train, and signaled the engineer that a proper coupling had been completed. At this time, the conductor was located at the trailing end of the locomotive, on the south side of No. 1 Main Track. The conductor was last seen stepping between the first car and the locomotive in order to couple in the train air brake system. Train PXSE-9X completed a required air brake test with the assistance of a carman who was at the rear of the train. Upon completion of the air brake test, the train departed from Elyria, Ohio, at 7:20 a.m. Since the conductor had previously ridden in the second locomotive, the crew assumed that he had re-boarded that locomotive.

Investigation revealed that the conductor was killed instantly at about 7:05 a.m. when he apparently stepped in front of train TV-14 operating eastbound at 44 mph on No. 2 Main Track. The body was discovered by a carman at 8:15 a.m. while he was inspecting cars standing on Old No. 3 Main Track.

## Post-accident Investigation

None of the train crewmembers of either train was aware of this accident until they were notified by the carrier. Because there were no witnesses to the accident, the exact circumstances could not be determined. However, inspection of locomotive CR 3395, the leading locomotive on train TV-14, revealed evidence of the accident on the uncoupling lever on the left front corner of the locomotive at a point 60 inches above the rail, indicating the conductor was standing when struck.

The airbrakes, horn and bell were found to be functioning as intended on locomotive CR 3395. Also, the locomotive superstructure was free of any defects.

The track structure at the site of this accident was in good condition.

Drug and alcohol testing was performed on the crewmembers of PXSE-9X and TV-14. All tests were negative with one exception.

A brakeman on TV-14 tested positive for the marijuana metabolite in the urine at 80 ng/ml. This employee was located in the second locomotive unit and had no role in the cause of the accident.

## Applicable Rules

Conrail Safety Rules - Train, locomotive and other transportation employees
Effective July 1978

Rule 1304. Expect equipment to move on any track, in any direction at any time.

Therefore employees must look in both directions before:

(a) Fouling or crossing track

(b) Moving out from between or under equipment

REPORT: 23

RAILROAD: Consolidated Rail Corporation (CR)

LOCATION: Pittsburgh, Pennsylvania

DATE, TIME: July 10, 1986, 8:45 a.m.

PROBABLE CAUSE: A deteriorated and improperly secured section of walkway on a bridge.

A contributing factor was the failure to provide safety belts/lines or place a safety net under the bridge.

| EMPLOYEE: | |
|---|---|
| Occupation | Track Foreman |
| Age | 57 years |
| Length of Service | 40 years |
| Last Rules Training | March 5, 1986 |
| Last Safety Training | April 12, 1986 |
| Last Physical Examination | August 21, 1985 |

## Circumstances Prior to the Accident

The accident occurred on the Ohio Connecting Bridge at milepost 1.4 of the Mon Line, which extends from Pittsburgh to Ellsworth, PA. The railroad ascends southward passing over the Fort Wayne Line and several roadways before crossing the Ohio River.

In the vicinity of the accident, No. 1 and No. 2 main tracks are on separate open deck plate girder systems. The five-foot-wide walkway between the tracks is supported on both sides by the 10 inch x 10 inch x 120 inch bridge ties. The walkway is constructed in approximately 16-foot lengths, utilizing 2 inch x 6 inch treated longitudinal nailers and 2 3/4 inch x 12 inch x 60 inch treated lateral walkway boards.

At the time of the accident, a 13-man maintenance of way force was installing new bridge ties on No. 2 track. The work was done in the following manner. The guard and running rails were removed and placed on flatcars in a work train on No. 1 track. The tie plates and joint bars were piled on the walkway. The edge of the walkway that rested on No. 2 track was then raised and blocked to provide 8 inches of vertical clearance between the top of the bridge and the bottom of the longitudinal nailer of the walkway. Six old ties were removed, bundled and placed on

the flatcar. Then six new ties were installed and the walkway returned to its normal position.

When the section of the walkway in question was raised, the spacer blocks were placed 9 feet 8 inches apart. At that time, approximately 25 inches of the south end of the longitudinal nailer and one 12-inch walkway board broke off and fell to the ground. The one remaining unsupported walkway board was secured by placing a pinch bar longitudinally beneath the walkway board to bridge the gap where the nailer broke out. The work then continued as usual.

## The Accident

The walkway had been raised and blocked up. The old ties had been removed and placed on the work train. A Bridge and Building foreman, supervising the work, walked to the north over the raised walkway and stepped onto No. 2 track to begin placing the new ties on the girders. A track foreman then started walking to the south over the same raised walkway. The nailer then broke under the ninth board from the north end of the raised section. The ninth, tenth, and eleventh walkway boards broke downward, dropping the track foreman 53 feet to the ground.

## Post-accident Investigation

Examination of the broken nailer revealed that it was decayed. At the time of the accident, the raised portion of the walkway was supporting an estimated 630 pounds of various track materials and tools. The weight of the track material combined with the weight of the track foreman as he stepped on or near the decayed nailer caused the collapse of the walkway.

Interviews with workmen and officials revealed that the procedure of blocking up the walkway to remove and install ties has been a common practice for years, with no adverse occurrence until this incident. The manner in which the walkway was constructed indicates that the 2-inch by 6-inch nailer was not intended to provide load-bearing support since the walkway boards were nailed to the 6-inch surface of the nailer rather than to the 2-inch edge as they would be in a floor joist or stringer. Without the ends of the bridge ties to rest on, the walkway could not be expected to provide adequate load-bearing capability.

The carrier had provided safety belts and lines for the Bridge and Building employees only. However, none of the Bridge and Building employees were wearing safety belts or lines at the time of the accident. No safety belts or lines were provided for the track employees. The carrier also failed to provide safety nets under the work area on the bridge.

## Applicable Rules

Consolidated Rail Corporation Safety Rules
Maintenance of Way Employees

3630. When on elevated place look before stepping in any direction, stay clear of opening, slipping, tripping or stumbling hazard, skylight or other situation that is likely to cause losing balance.

Work on roof, platform or other elevated part of structure that is not properly secured, that is deteriorated, rotted or otherwise of questionable stability only after it has been inspected and if necessary tested by or while constantly supervised by immediate supervisor, who shall arrange for the necessary precautions, such as strengthening by guying, bracing, blocking or other suitable means.

3636. Use authorized body belt and safety strap in an untwisted position, with tongue or snap away from body, rope, or cable; adjusting the safety strap, rope or cable to allow only slack necessary for performance of work, unless scaffold or other suitable protection is provided, in the following situations:

(a) Working in drop bottom car on trestle or open floor bridge, unless otherwise authorized by the Division Engineer.

(b) Working outside elevated window.

(c) Working on steep pitched roof.

(d) Working on steep hillside, cliff or embankment.

(e) If practicable, when working in dangerous place on bridge or other structure.

(f) Any other operation or situation which involves unprotected falling hazard. (To be

determined by the immediate supervisor.)

3637. Safety nets shall be provided when work places are more than 25 feet above ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

REPORT: 24

RAILROAD: Southern Railway Company (SOU)

LOCATION: Lynchburg, Virginia

DATE, TIME: July 11, 1986, approximately 2 a.m.

PROBABLE CAUSE: For reasons unknown, a conductor fell from a caboose off a bridge 43 feet to the ground below.

EMPLOYEE:

| | |
|---|---|
| Occupation | Conductor |
| Age | 43 years |
| Length of Service | 24 years |
| Last Rules Training | March 7, 1986 |
| Last Safety Training | March 7, 1986 |
| Last Physical Examination | January 23, 1962 |

## Circumstances Prior to the Accident

On the day of the accident, the conductor was a member of a train crew that consisted of a conductor, engineer, head brakeman, and a rear brakeman. The train crew went on duty at Monroe, VA at 12:25 a.m., after completing their required off-duty periods. Their train, Southern train No. 155, consisted of two locomotives, 77 cars and a caboose. The crew was assigned to perform service from Monroe to Linwood, NC, a distance of 159.9 miles. The train departed at 1:23 a.m.

The incident occurred between Lynchburg and Monroe, VA on the southbound main (Track No. 2), at milepost 173.1. This is a section of double track main line over which trains operate under a traffic control system.

In the incident area, from the north there is a 4 degree compound curve to the right to the point of tangent track. The tangent track extends 30 feet to the beginning of an open-deck trestle, continues 400 feet to point of incident and 500 feet beyond. The grade is .06 percent ascending southward. The open-deck trestle is 552 feet in length.

## The Accident

Shortly after departing Monroe, the conductor reminded the head end crew of two existing slow orders that affected their train prior to arrival at Lynchburg, VA. At 1:43 a.m., the train stopped in Lynchburg to make delivery of 12 cars and then picked up nine cars at Kinney Yard (milepost 174). The conductor remained on the caboose located at milepost 173.1.

After the head end crew made the delivery and pickup at Kinney Yard, the crew returned to their train with nine cars. The brakeman called to the conductor, via radio, to notify him of the imminent coupling. There was no reply. After coupling the nine cars, the brakeman called to the conductor to inform him that the air was being restored to the train line. Again, there was no response. The crew waited a short time and then attempted to reach the conductor via radio, to no avail. The head end crew thought that some static pops they received over the radio were a reply from the conductor, and assumed that his radio had become inoperative.

At 2:50 a.m., the head end crew notified the operator on duty at Montview Yard, Lynchburg, VA, that they were unable to contact the conductor and since they (the train crew) were to receive train orders at this location, the operator could inform the conductor that his radio was not working.

After the rear of the train passed the train order hoops at Montview Yard, the operator notified the head end crew that the conductor had not received his train orders. At 2:55 a.m., the engineer stopped the train and asked the operator to see if the conductor was on the caboose. Shortly after this request, the mechanical supervisor and operator informed the engineer that the conductor was not on board. Further inspection of the caboose found the conductor's portable radio, waybills, hat, lantern, and other personal effects arranged in an orderly fashion inside the caboose.

At 3:16 a.m., the engineer requested that a search of the area begin in order to locate the conductor. The engineer suggested that the mechanical supervisor search in the area of the trestle located at milepost 173, beginning at the U. S. Highway 29 overpass, which is a ballast-deck trestle, and to proceed southward to the open-deck trestle at milepost 173.1.

The local authorities were notified, along with other railroad supervisors, that the conductor was not on board, and the search expanded.

At approximately 4 a.m., the conductor's body was found on the ground 43 feet below the west side of the open-deck threstle, at milepost 173.1.

## Post-accident Investigation

At the time of the incident, it was dark and cloudy and the temperature was approximately 78 degrees in the area. There was partial illumination just north of the incident scene. However, the lighting is for U. S. Highway 29, and is below the railroad right-of-way.

Post-accident inspection of Southern caboose No. X530 disclosed no condition or defect that might have contributed to the incident.

Toxicological tests of the conductor for drugs or alcohol were negative.

## Applicable Rules

None.

REPORT: 25

RAILROAD: Consolidated Rail Corporation (Conrail)
National Railroad Passenger Corporation (AMTRAK)

LOCATION: Rome, New York

DATE, TIME: July 21, 1986, 9:00 a.m.

PROBABLE CAUSE: The accident was caused by the failure of the employee to clear a track on which a train was approaching.

A probable contributing factor was the employee's use of alcohol.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation | Acting Track Foreman |
| | Age | 36 years |
| | Length of Service | 9 years |
| | Last Rules Training | October 24, 1986 |
| | Last Safety Training | July 15, 1986 |
| | Last Physical Examination | May 2, 1986 |

## Circumstances Prior to the Accident

In the accident area Conrail has a double track line running east and west. Trains operate in either direction by indications of a traffic control system. The tracks are numbered from north to south as Numbers 1 and 2 respectively. The accident occurred on Track No. 2 about 244 feet west of Milepost 251. Approaching the accident site from the west, there are a number of slight curves in Track No. 2. The maximum authorized speed for passenger trains is 79 mph.

At the time of the accident, the temperature was about 70 degrees. It was partly cloudy, and visibility was excellent.

On the day of the accident, a Conrail track gang reported for duty at 6:00 a.m. in Utica, New York. After performing work en route, members of the track gang, including an Acting Track Foreman, arrived at the accident site at about 8:50 a.m. in a carrier bus. The Acting Track Foreman alighted from the bus and was walking eastward along Track No. 2, apparently checking track material. The other members of the track gang remained on the bus, which was following the Acting Track Foreman on an adjacent access road.

Train No. 48 was a regularly scheduled eastward Amtrak passenger train operating from Chicago to New York City. On the day of the accident, it left Syracuse, New York, its last station stop at 8:27 a.m.--79 minutes late. It consisted of two locomotives and 17 cars.

## The Accident

Train No. 48 approached the accident site on Track No. 2 at 79 mph, governed by a clear signal. The headlight was lighted. Nearing the accident site, the engine crew observed the Acting Track Foreman walking in the gage of Track No. 2. The locomotive horn and bell were sounded, and the strobe lights were illuminated. When the Acting Track Foreman did not clear the track, an emergency brake application was initiated. Shortly thereafter, the Acting Track Foreman was struck and killed by Train No. 48.

## Post-accident Investigation

The Acting Track Foreman was regularly employed as an Assistant Foreman-Timekeeper. He had previously been promoted to Track Foreman in another seniority district.

Pursuant to 49 CFR Part 219, post-accident toxicological testing was performed on blood and urine samples from the remains of the deceased. Test results indicated an alcohol level of .056% in the blood and .079% in the urine. The presence of alcohol in this range may diminish attention, judgement and control.

## Applicable Rules

> 3202. Employees working on track, who are not protected by foreman or watchman looking out for trains, must look for trains themselves. They will assume a position and perform work in such a manner that will permit making frequent observations in both directions and comply with provisions of Rule 3215, par. (b) item 1.
>
> 3215. On receiving warning or knowing of approach of a train, all men must clear tracks at least 15 seconds before train reaches point of work, discontinue all activity and remain clear until receiving signal from the watchman or foreman to resume work, unless under the following circumstances and provided the action specified is taken.
>
> . . . . . .

(b) Main Track

(1) Upon the approach of train on any main track, clear the train-occupied track and the near adjacent track, preferably clear all main tracks. When not clear of all main tracks, stand erect and maintain sufficient lookout for trains in both directions to see on which tracks other trains approach, in order to clear tracks if necessary, to prevent being trapped. IN HIGH SPEED TERRITORY AND WHERE VIEW IS RESTRICTED, CLEAR ALL MAIN TRACKS ON APPROACH OF A TRAIN ON ANY MAIN TRACK, IN SO DOING KEEP CLEAR OF ANY TRACK ADJOINING MAIN TRACKS.

REPORT: 26

RAILROAD: Consolidated Rail Corporation (Conrail)
National Railroad Passenger Corporation (Amtrak)

LOCATION: Cheektowaga, New York

DATE, TIME: July 29, 1986, approximately 4:07 a.m.

PROBABLE CAUSE: Failure to clear for a passing train on the next track.

EMPLOYEE:

| | |
|---|---|
| Occupation | Brakeman |
| Age | 34 years |
| Length of Service | 13 1/2 years |
| Last Rules Training | September 30, 1985 |
| Last Safety Training | July 24, 1986 |
| Last Physical Examination | February 7, 1986 |

## Circumstances Prior to the Accident

After receiving required off-duty periods, a Conrail crew consisting of an engineer, conductor and brakeman went on duty for train PXSE-8X, at 3:50 a.m., on the day of the accident at the YMCA building, Frontier Yard, Buffalo, New York. The crew was transported in a company vehicle to the front of the train, which was located on No. 1 main track at milepost 434, in Cheektowaga, N.Y. When arriving there at about 4 a.m., this crew briefly discussed the condition of the train with the inbound train crew, before boarding and taking control of the train, which was destined for Selkirk Yard, near Albany, New York.

## The Accident

After the crew crossed over main track No. 2, to the south side of the leading locomotive and before boarding, the conductor instructed the brakeman to ride in the second locomotive unit. The brakeman then walked between the two main tracks toward the cab of the second locomotive unit, which was about 130 feet away. About two minutes later, he was struck by the right front of the locomotive on westbound Amtrak train No. 49, operating on No. 2 main track at about 70 miles per hour.

The engineer of train No. 49 reported by radio at 4:07 a.m. to the train dispatcher that, while passing the locomotive on stopped eastbound train PXSE 8X, he saw a black object in the space between the trains, then heard a thud and stopped his train. Upon hearing this report over the train radio, the conductor of the eastbound train left his position in the front cab to check

the whereabouts of the brakeman. He found him lying on the ground near the middle of the second locomotive unit. A county medical examiner arrived shortly thereafter and pronounced the brakeman dead from a head injury.

## Post-accident Investigation

Tracks in the accident area are tangent and level, with a clear view of the right of way in both directions. Grading is well maintained, and illumination comes from municipal lighting along a parallel highway.

The locomotive headlight on the Amtrak train was operating as were the warning bell and air horn. Steps and step wells along with the step handholds of the locomotive the brakeman intended to board were in good conditions; lighted and free of grease and foreign objects.

The brakeman apparently did not remain clear of main track No. 2 while boarding his train on the next track.

Toxicology tests made on the remains of the deceased, and on the crews of both trains for drugs or alcohol were negative.

## Applicable Rules

### Conrail Safety Rules for Train, Locomotive and other Transportation Employees

Rule 1304. "Expect equipment to move on any track, in any direction, at any time. Therefore, employees must look in both directions before:

(A) Fouling or crossing track.

(B) Going between and around the end of equipment.

(C) Moving out from between or under equipment.

(D) Getting on or off standing or moving equipment.

(E) Operating switch.

(F) Performing any other applicable operation.

REPORT: 27

RAILROAD: Duluth, Winnipeg and Pacific Railway

LOCATION: Ranier Yard, Ranier, Minnesota

DATE, TIME: July 31, 1986, 9:10 p.m.

PROBABLE CAUSE: Loss of a secure handhold and/or footing.

EMPLOYEE:

| | |
|---|---|
| Occupation | Front Brakeman |
| Age | 51 years |
| Length of Service | 34 years |
| Last Rules Training | March 21, 1985 |
| Last Safety Training | March 21, 1985 |
| Last Physical Examination | October 24, 1984 |

## Circumstances Prior to the Accident

Ranier Yard is a flat switching yard, consisting of two long receiving tracks and four shorter yard tracks, extending generally in a north to south direction, with a slight descending grade northward. From the east, the tracks are designated as Passing, Main, and Tracks 1 through 4. A switching lead converges with the main track at the south end of the yard. The yard lead area is equipped with overhead lights.

At the time of the accident, the weather was partly cloudy and dry, with a temperature of 60°F, and visibility normal for dusk.

The crew of Train No. 812, consisting of engineer, fireman, front brakeman, rear brakeman, and conductor, was ordered to go on duty at 9:30 p.m., July 31, 1986. They had previously been on duty from 6:00 a.m. until 1:30 p.m., that same day. At about 8:45 p.m., the fireman and front brakeman were transported from the yard office to the locomotive tie-up point, where they began preparing the locomotives for departure, and began assembling the cars which were to make up the consist of their train. These two employees accomplished the switching moves, using radios for communication. During this period, the conductor was at the yard office, about one mile distant, and the engineer and rear brakeman had not yet arrived at the yard office.

## The Accident

The cars which were to make up the train were located on Track No. 2 and 3. After a series of moves, a cut of cars was shoved northward into Track 3, and after a caboose and six cars were in the clear on Track 3, they were uncoupled as the brakeman gave a

radio signal "That will do," and the fireman stopped the movement. The brakeman then instructed the fireman to pull the remaining cars out of Track 3. The next radio transmission was at 9:06 p.m., when he said "That will do." The fireman again stopped the movement.

This was the last transmission from the front brakeman. The fireman tried to contact the front brakeman, but failed, so he notified the carman at the yard office that he could not reach the brakeman on the radio. When the conductor and carman arrived at the scene, it was 9:14 p.m., and they found the front brakeman, who appeared to be dead. They notified the yard office and the DWP dispatcher. The Koochiching County Sheriff's Office, International Falls was notified. Sheriff's deputies responded and arrived at 9:20 p.m. The ambulance arrived a few minutes later. The county coroner also was notified and arrived to observe the body.

## Post-accident Investigation

The front brakeman was found lying along side the east rail of the lead track; his head and the upper part of his body had been crushed by the truck side of car CN 400990. The body was pinned under this truck side when found. Apparently the brakeman fell southward, landing in the position described, as the cars were nearing the position where they stopped. The radio was found near his feet; the switch list farther north and east of the body. Tapes of the radio conversations during the switching moves were played, and there were no emergency messages transmitted by the brakeman.

Post-accident examination of the accident site failed to reveal a condition that would have contributed to the cause of the accident. The front brakeman and fireman were observed by the conductor prior to starting duty, and it was stated they were in condition to perform service. They were also observed by the yard clerk and the carman, and conversations were held with both.

The fireman and brakeman reported for duty 45 minutes early of their own volition. This reporting time meant these employees had received 6 hours and 30 minutes rest since their relief at 1:30 p.m. that day. Under broken service provisions, these employees could have worked an additional 4 hours and 30 minutes.

There were no known carrier rules violated.

Toxicological tests for the presence of drugs and alcohol were performed on the surviving crew members, and the results were negative. Samples of the remains of the deceased brakeman were insufficient for testing.

## Applicable Rules

None.

REPORT: 28

RAILROAD: The Atchison, Topeka and Santa Fe Railway Company (ATSF)

LOCATION: Barstow, California

DATE, TIME: July 30, 1986, 5:20 p.m.

PROBABLE CAUSE: Failure to block the freight car body before performing work between the car body and trucks.

EMPLOYEE:

| | |
|---|---|
| Occupation | Carman |
| Age | 34 years |
| Length of Service | 9 years |
| Last Rules Training | June 28, 1986 |
| Last Safety Training | July 23, 1986 |
| Last Physical Examination | 1977 |

## Circumstances Prior to the Accident

The accident occurred in the One Spot building of the Barstow Car Repair Shop.

ITTX 990097, an empty flatcar, was placed in the building on track No. 1310 for service and repair of the brakes. Track No. 1310 has a built in hydraulic jack with a 17 1/2 inch by 21 inch jacking head, covered by a 1 1/2 inch rubber pad.

Two carmen were assigned by the car foreman to perform repairs on ITTX 990097. The work on the car progressed without incident until the carmen were ready to replace the brake cylinders. In order to replace the cylinders, the carmen needed the serial numbers of the cylinders. While one carman cleaned the area where they had been working, the other carman positioned the car over the hydraulic jack with the car mover. He jacked the "A" end of the car body about 18 inches above the truck assembly, then went under the car to get the serial numbers off the cylinders. Due to dirt and corrosion the serial numbers were illegible. The car foreman told the standing carman to get a wire brush for the carman under the car. At this time one carman was lying under the car, and the other carman went to get a wire brush. The car foreman went to see if he had any replacement cylinders in stock.

## The Accident

The car foreman was walking back to the One Spot building when he heard a loud noise. He hurried into the building where he found

the carman who had been lying under the car now pinned between the car body and the truck side frame. The jack was reactivated to lift the car body and release the carman. Emergency forces were immediately notified. The carman was taken to Barstow Community Hospital where he was pronounced dead at 6:13 p.m.

## Post-accident Investigation

The carrier questioned all employees in the area immediately after the accident. There were no eyewitnesses to the accident or to the actions of the carman immediately prior to the accident.

Inspection of the steel cross plate on the underside of the car revealed that when jacking the car body the head of the jack was not squarely placed under the cross plate. The car body was raised with the jack contacting only two inches of the lip, or edge of the cross plate. With the weight of the car body on the lip of the cross plate, the lip of the plate bent up, transferring the weight of the car forward and allowing the car body to slip off the jack.

Investigation revealed that the wheels on the opposite end of the car were not chocked to prevent movement. On questioning, the car foreman said, "We don't generally use wheel chocks with these built-in jacks."

Investigation revealed that the car body was not securely blocked to keep it stationary before performing work under the car. When questioned, the car foreman said it is mandatory to block or trestle a jacked car before going under it.

Toxicological tests performed by the San Bernardino County Coroner were negative for alcohol or drugs.

## Applicable Rules

The Atchison, Topeka and Santa Fe Railway Company Safety Rules for Santa Fe Employees

USE OF HEAVY DUTY JACKS

130. Be governed by the following when using heavy duty jacks:

(1) Employees must know that jack is of sufficient capacity to safely handle work to be performed and that blocking of sufficient size, properly placed and level, is used under the jack.

. . . . . .

(d) When jacking cars, wheel blocks must be used to prevent cars from moving.

. . . . . .

131. When engine, car or other heavy equipment is jacked to remove trucks; tripods, trestles, or blocks must be in position before trucks are removed. In event trucks are in position, body of car or engine must be securely blocked on top of truck before work is performed under or about the car or engine.

132. Employees must not place themselves in, under, or on car, engine or other heavy equipment being raised or lowered.

REPORT: 29

RAILROAD: Union Pacific Railroad Company

LOCATION: Crockett, Texas

DATE, TIME: August 4, 1986, 4:30 p.m.

PROBABLE CAUSE: The accident was caused by the employee touching two signal wires simultaneously carrying 550 a.c. volts.

A contributing factor was the height of the 550 volt a.c. power lines from the ground, which permitted the wires to be touched.

EMPLOYEE:

| | |
|---|---|
| Occupation | Conductor |
| Age | 41 years |
| Length of Service | 18 years 3 months |
| Last Rules Training | June 25, 1986 |
| Last Safety Training | June 25, 1986 |
| Last Physical Examination | March 14, 1983 |

## Circumstances Prior to the Accident

The fatally injured employee was a member of the tri-weekly local crew operating between Palestine and Trinity, TX, a segment of the Union Pacific's Red River and Kingsville Division, Trinity Subdivision.

After required off-duty periods, the crew was called for 9 a.m. Monday, August 4, 1986, at Palestine to operate the No. 813 South Local.

The South Local No. 813 departed Palestine about 10 a.m., performing work at Elkhart, Grapeland and Crockett, en route to Trinity, Texas. At Crockett the crew spotted cars in a wood yard. The turnout to the wood yard is a left-hand switch off the siding. After stopping north of the siding switch, they uncoupled the cars for the wood yard and proceeded into the siding with the cars. After uncoupling the cars, they proceeded south and stopped for a red signal at the south end switch of the siding.

## The Accident

While waiting for a clear signal, the conductor walked across the main line, down a short embankment, and checked the sagging signal lines at Milepost 39.3, between Poles 9 and 10. The conductor and engineer had been discussing the weight and value

of the line wires and whether the line wires were copper. Subsequently, the engineer went over to the sagging line wires and lifted, with one hand, one of the 550 a.c. volt line wires. The conductor lifted both of the 550 a.c. volt line wires, one in each hand, and was electrocuted. The engineer knocked the conductor from the line wires and attempted to resuscitate him.

## Post-accident Investigation

At the accident site, Milepost 39.3 (between Poles 9 and 10), the signal poles are 16 feet long, with four feet below ground. The poles in the accident area have three crossarms spaced approximately 2 feet apart. On Pole 10, the two 550 a.c. volt signal power lines are on two separate crossarms. One power line wire is on the top crossarm, and the other is on the second crossarm. The two power lines were sagging low to the ground. The power line on the top crossarm was sagging to within 4 1/2 feet of the ground, and the other was 6 1/2 feet off the ground.

The power substation for Crockett is located near Houston Street, Milepost 37.3. This power station supplies power for signal apparatus from Houston Street south, including the accident area.

The attending physician at Houston County Hospital pronounced the employee dead from electrocution at 5:10 p.m.

## Applicable Rules

### Safety, Radio and General Rules for all Employees - Safety Instructions

(4113) BROKEN OR CROSSED WIRES: Wires found broken, crossed or on the ground must be reported to train dispatcher at once. Employees must not consider any wire dead until positive information has been received that it has been killed and is safe to handle.

REPORT: 30

RAILROAD: Conemaugh and Black Lick Railroad

LOCATION: Johnstown, Pennsylvania

DATE, TIME: August 15, 1986, 9:15 p.m.

PROBABLE CAUSE: A brakeman either lost his balance, footing or handhold, while riding on moving equipment.

A contributing factor was a derailing freight car.

EMPLOYEE:

| | |
|---|---|
| Occupation | Brakeman |
| Age | 42 years |
| Length of Service | 20 years |
| Last Rules Training | N/A |
| Last Safety Training | August 15, 1986 |
| Last Physical Examination | July 8, 1986 |

## Circumstances Prior to the Accident

In the accident area at the Bethlehem Steel Mill yard, there are 2 stub-end, parallel, tangent industrial tracks that extend east and west. From south to north the tracks are numbered as No. 455 and 454 tracks. The east end of No. 455 connects with track No. 454, and the east end of track No. 454 connects with No. 2 Main track. The terrain in the accident area is practically level.

A crew consisting of an engineer, conductor and brakeman, were in the process of switching the steel plant; two cars were picked up from track No. 455 and added to five cars standing on track No. 454. The cars on track No. 454 from east to west consisted of two coupled hoppers, a single hopper and two coupled hoppers, all in close proximity. The conductor was working on the north side of track No. 454 controlling the movements by both hand signals and radio. The brakeman was working on the south side and was also provided with a radio. The seven cars were to be moved east and placed on No. 2 Main track. After the couplings were completed between the fifth and sixth cars, the conductor walked west to check the coupling between the sixth and seventh cars, and boarded the northeast corner of the seventh car. The brakeman was last seen standing near the southwest corner of BSC 6200, the fifth car.

## The Accident

About 4 or 5 car lengths into the eastward movement, the conductor, unaware that the fifth car was derailed, heard the brakeman yell for help. The conductor notified the engineer by radio to stop, and the engineer made an emergency application of the locomotive brakes. The conductor walked eastward and found the brakeman in a semi-sitting position pinned between the trailing wheel of the lead truck and the drop door on the north side of BSC 3037, the sixth car.

The brakeman was transported to Memorial Hospital in Johnstown, PA, where he died 1 hour 31 minutes following the accident.

## Post-accident Investigation

There were no witnesses to the accident, and the final actions of the brakeman were unknown. The brakeman's next task was to throw No. 2 Main track switch, which is located on the north side of track No. 454. It is likely that the brakeman chose to cross over to the north side between the fifth and sixth cars which were in motion, placing himself in a precarious position.

Post-accident inspection disclosed that the fifth car (BSC 6200) was derailed to the north due to slag and scale on the track. An inspection of equipment revealed no conditions which could have been a contributing factor to the cause of the accident.

Post-accident inspection of the track structure disclosed marks on the north, or lead, rail of track No. 455 turnout, indicating the derailed wheels of BSC 6200 crossed over the lead rail and probably contributed to the brakeman's losing his balance, especially if he was in the act of crossing between the equipment.

The radios used by the crew were tested subsequent to the accident by a private concern, and were found to be functioning properly.

Post-accident toxicological tests for drugs or alcohol on the surviving crewmembers and the remains of the deceased were all negative.

## Applicable Rules

Conemaugh and Black Lick Safety Rules

18.2 Maintain firm hand and foot holds to avoid falling or being dislodged in case of a sudden stop. Look forward and avoid being struck by equipment on adjacent track or by any other obstruction.

18.11 An employee riding any kind of equipment should always be properly positioned and on guard to protect himself against an unexpected stop, lurch, or jerk of the equipment.

18.12 An employee should ride on a moving car in such a manner that will provide him with complete protection and place him in position to immediately give signals to other members of the crew, as necessary, and otherwise protect the movement of the equipment.

REPORT: 31

RAILROAD: Metro North Commuter Railroad

LOCATION: Fordham, New York

DATE, TIME: August 15, 1986, approximately 4:27 p.m.

PROBABLE CAUSE: Failure to clear for an approaching ballast regulator.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation . . . . . | Assistant Supervisor Communication and Signals |
| | Age . . . . . | 53 years |
| | Length of Service . . . . . | 16 years |
| | Last Rules Training . . . . . | N/A |
| | Last Safety Training . . . . | February, 1986 |
| | Last Physical Examination . . . | None |

## Circumstances Prior to the Accident

On August 15, 1986, track No. 2 on the Harlem Line was being surfaced between Fordham, and Melrose, NY. Track No. 2 had been out of service since July 30, 1986, for continuous welded rail installation. Because of this extended track outage, signal department forces were performing track circuit testing. A assistant signal supervisor went on duty at 7 a.m. that day after having received the proper off-duty period.

The accident occurred at signal location 8.92N, which is located within the confines of Fordham Tunnel at milepost 8.9 on the Harlem Line. The tunnel is 500 feet long. This is a four-track, third-rail-electrified portion of Metro North Commuter Railroad.

## The Accident

At approximately 4:15 p.m., the surfacing gang started traveling north on track No. 2 en route to Mount Vernon Yard. The lead piece of equipment, ballast regulator BR 1402, struck the Assistant Supervisor at approximately 4:27 p.m. on track No. 2. The Assistant Supervisor was taking voltage readings on track No. 2 in conjunction with a Signal Supervisor who was located in a nearby signal case. He was facing north in a crouched position between the rails of track No. 2 when he was struck and killed by the ballast regulator.

## Post-accident Investigation

At the time of the accident, the weather was clear and sunny; therefore, the ballast regulator operator's eyes had to adjust to the darkness as there was only limited lighting on the station platform inside the tunnel. The deceased was in a crouched position in the gage of Track No. 2. He had on dark clothing and was wearing no protective gear such as a helmet or reflectorized vest, thus making it virtually impossible for the operator to see him even though the ballast regulator's lights were on. The ballast regulator was being operated in compliance with the carrier's rules.

Post-accident toxicological tests were performed on the Signal Supervisor and the remains of the deceased. Results were negative.

## Applicable Rules

Metro North Commuter Railroad Safety Rules for Maintenance-of-Way Employees (S7-C) effective June 1, 1981.

3004 - When it can be avoided, employees must not rely on the watchfulness of others. They must protect their own safety.

3060 - Wear approved helmet with nape strap while on duty (except in a building or highway vehicle, unless working on same).

3202 - Employees working on track, who are not protected by foreman or watchman looking out for trains, must look out for trains themselves. They will assume a position and perform work in such a manner that will permit making frequent observations in both directions and comply with provisions of Rule 3215, par. (b) Item 1.

3215 - On receiving warning or knowing of approach of a train, all men must clear tracks at least 15 seconds before train reaches point of work, discontinue all activity and remain clear until receiving signal from the watchman (or foreman when watchman is not required) to resume work, unless under the following circumstances and provided the action specified is taken:

. . . . . .

(b) Main Track

1. Upon the approach of train on any main track, clear the train-occupied track and the near adjacent track, preferably clear all main tracks. When not clear of all main tracks, stand erect and maintain sufficient lookout for trains in both directions to see on which tracks other trains approach, in order to clear tracks if necessary, to prevent being trapped. IN HIGH SPEED TERRITORY AND WHERE VIEW IS RESTRICTED, CLEAR ALL MAIN TRACKS ON APPROACH OF A TRAIN ON ANY MAIN TRACK, IN SO DOING KEEP CLEAR OF ANY TRACK ADJOINING MAIN TRACKS.

REPORT: 32

RAILROAD: Union Pacific Railroad Company

LOCATION: North Platte, Nebraska

DATE, TIME: August 17, 1986, 2:00 a.m.

PROBABLE CAUSE: Failure to avoid a close clearance.

EMPLOYEE:

| | |
|---|---|
| Occupation | Hostler Attendant |
| Age | 51 years/4 months |
| Length of Service | 7 years/2 months |
| Last Rules Training | June 8, 1983 |
| Last Safety Training | June 8, 1983 |
| Last Physical Examination | March 19, 1984 |

## Circumstances Prior to the Accident

On the night prior to the accident, the Union Pacific Railroad Company called a shop hostler and hostler attendant at 10:59 p.m., respectively, to switch locomotives inside and outside the diesel repair facility at North Platte, NE. Both employees were called after having completed their required off-duty period. Their duties consisted, in part, of switching locomotives inside and outside the diesel repair facility and spotting locomotives inside the diesel repair facility in order for necessary repairs to be made. The diesel repair building is approximately 200 feet wide and 450 feet long. There are five tracks that pass through the building running west to east. Alongside each track is a raised concrete platform.

At approximately 1:45 on August 17, 1986, the hostler (operating locomotive UP 3353) was shoving eight locomotives westward on Track 3. The movement was halted just outside the west entrance to the diesel shop building. The hostler was operating from the northwest end of the consist directed by hand signals given by a white lantern from the hostler attendant at the northeast end of the consist, approximately 400 feet away from the hostler.

The hostler attendant walked inside the shop building to prepare for the movement to enter the shop on Track 3. Approximately 10 minutes later, at 1:55 a.m., the hostler attendant passed a backup signal to the hostler, and the eastward movement into the shop began. The hostler attendant was passing hand signals, while standing on the concrete platform adjacent to Track 3 on the north side. The locomotives traveled 80 feet into the shop and coupled to a locomotive standing alone. Coupling was made, and the movement was stopped until the hostler attendant

walked to the east end of the shove. The shove started again and a final coupling was made to two locomotives standing at the far end. Track 3 was now full inside the shop. The hostler attendant then started walking westwardly atop the platform on the north side of the locomotives. He reboarded each locomotive, checking handbrakes as he proceeded.

## The Accident

Upon reaching the west end of the shop, the attendant descended the platform steps to ground level between the platforms end and the shop's west wall which is 20 feet in length. Locomotive UP 3642 was protruding through the doorway, with most of the locomotive outside the door. A backup signal (shove eastward) was given by the hostler attendant to the hostler at this time. The attendant then "went out of sight" and the hostler stopped the movement after shoving approximately 240 feet through the building. The hostler attendant was found under the platform, 110 feet east of the platform's end. The time was approximately 2:00 a.m.

## Post-accident Investigation

Investigation determined the only witness to observe the circumstances immediately prior to the accident was the hostler. The hostler stated that the hostler attendent gave a backup signal prior to appearing to mount a locomotive. The hostler attendant's signal to backup was interpreted by the hostler as it was given. The hostler attendant should have (by his location) been requesting the locomotives be bunched to permit uncoupling and subsequent removal of the remaining six locomotives from the shop. If this were the case, the hostler attendant, attempted to board the locomotive but was crushed between the locomotive and the platform where the clearance was as little as 3 1/2 inches.

Toxicology tests were performed on the hostler and the remains of the hostler attendant and test results were negative.

## Applicable Rules

### General Code of Operating Rules

7(A): VIGILANCE FOR SIGNALS: All employees must keep a vigilant lookout for signals, and act upon them strictly in accordance with the rules. The utmost care must be exercised by employees to avoid acting upon signals that are not understood, or that may be intended for other trains or engines. In case of doubt, understanding must be reached before movement is made.

7(B): GIVING SIGNALS: Employees giving signals must locate themselves so as to be plainly seen and give them so as to be clearly understood. When practicable, all hand signals must be given on the engineer's side of track, but they must be respected when received from either side.

7(C): SIGNAL DISAPPEARANCE: When backing or shoving a train, engine or cars in response to hand signals, disappearance from view of the employee giving such signals or the light by which such signals are given, must be regarded as a stop signal, unless employee on leading car has control of air brakes...

HAND SIGNALS FOR TRAIN AND ENGINE MOVEMENTS

| Manner of Using | Indication |
|---|---|
| 8(d): Swung slowly in a circle at right angle to track | BACK |

9: HAND AND OTHER SIGNALS: ...Other hand signals may be used for other purposes, providing they are understood by all crew members...

Safety, Radio and General Rules for All Employees

4047: MAINTAIN LOOKOUT: When necessary to extend any part of the body beyond side line of engine or car, whether standing or moving, a careful lookout must be maintained in both directions for trains, engines or cars on adjacent track, and for other close clearances.

4049(A): GETTING ON OR OFF EQUIPMENT: ...Before getting on or off equipment, employees must guard against injury by looking out for unsafe footing, obstructions or equipment moving on other tracks and must not get on or off equipment that is moving at a speed which would make the action unsafe. ...

REPORT: 33

RAILROAD: Port Authority Trans-Hudson Corporation (PATH)

LOCATION: Kearny, N.J.

DATE, TIME: August 19, 1986, 4:35 a.m.

PROBABLE CAUSE: Shot by sniper while riding in back seat of "PATH" vehicle.

EMPLOYEE:

| | |
|---|---|
| Occupation | Electrician |
| Age | 46 years |
| Length of Service | 5 years |
| Last Rules Training | March 3, 1981 |
| Last Safety Training | N/A |
| Last Physical Examination | October 10, 1985 |

## Circumstances Prior to the Incident

The train crew of PATH WTC-NWK 3 a.m. train on August 19, 1986, reported by radio to trainmaster that a smoke condition existed at Power Substation 8. The trainmaster in turn reported this condition to the power director. The power director located at PATH control center, Jersey City, NJ, contacted the operations examiner and the electrical foreman advising them to respond separately to the substation and investigate the reported condition.

At approximately 4 a.m., the operations examiner arrived at the substation and determined that the probable explanation of the reported smoke was vapor coming from the air compressor vent. Determining that no problem existed, he returned to his car and left the area.

The electrical foreman, with two electricians, arrived at the substation via a Conrail service road from 4th Street, Harrison, NJ, in a PATH van. After confirming that no problem existed, they departed the substation and were returning to Pavonia Shop, Jersey City, NJ. The van was traveling west on a Conrail service road with the foreman driving, one electrician in the front seat, and one in the rear seat.

## The Incident

The PATH van traveling west proceeded on the service road to a point 150 feet east of PATH signal 769Z. Three shots were heard by the two surviving employees in the van; the third shot shattered the left rear window of the vehicle and struk the

electrician riding in the back seat in the head. This occurred at approximately 4:35 a.m. The foreman notified the trainmaster by radio of the shooting and requested an ambulance meet him at the Harrison Train Station. The injured electrician was transported to West Hudson Hospital, Kearny, NJ by ambulance. The electrician was pronounced dead at 5:25 a.m., a short time after arriving at the hospital.

## Post-accident Investigation

An investigation was conducted by PATH Police, Kearny, N.J. Police Department, and the Hudson County Prosecutor's Office. Investigation revealed that a rifle was fired from the south side of the Passaic River. Tracing the trajectory of the gunfire, investigators found twelve spent shell casings where Blanchard Street in Newark, NJ ends at the bank of the Passaic River. Investigators learned from area residents the name of the suspect, who was subsequently arrested and charged with aggravated manslaughter.

## Applicable Rules

None.

REPORT: 34

RAILROAD: CSX Transportation, Inc.

LOCATION: Dooling, Georgia

DATE, TIME: August 20, 1986, 3:50 p.m.

PROBABLE CAUSE: Electrical shock due to lightning striking a wayside telephone.

EMPLOYEE:

| | |
|---|---|
| Occupation | Foreman |
| Age | 32 years |
| Length of Service | 12 years |
| Last Rules Training | June 24, 1986 |
| Last Safety Training | June 24, 1986 |
| Last Physical Examination | May 21, 1974 |

## Circumstances Prior to the Accident

On the day of the accident, the foreman reported for duty at 7 a.m. assigned to a mechanized tie gang. At 3:50 p.m., while it was raining heavily during a thunder storm, the foreman was using a track-side telephone mounted on a wooden pole 10 feet west of the Dooling, GA, siding and 34 feet south of a paved road crossing at milepost 717.9.

Two on-track machines were standing on the siding approximately opposite the telephone. The three operators of the two machines and a mechanic were putting oil into one of the machines. A roadmaster was in his hi-rail pickup truck, parked on the side of the road north of the telephone.

## The Accident

The mechanic, while standing at the machines, saw a fireball travel down the telephone drop line and saw the foreman falling away from the telephone. The other three men did not see the accident, but upon hearing a loud pop they turned to see the foreman falling away from the telephone holding his head. The roadmaster, while getting out of his truck, saw a fireball at about the second pole north of the telephone traveling along the wayside communication and signal lines. He heard the men shout that the foreman had been hit.

The foreman was taken in a railroad vehicle to a point where the vehicle met an ambulance, dispatched from the Macon County, GA, Emergency Center. The ambulance team started cardiopulmonary resuscitation and transported the foreman to the hospital. Upon

arrival at 4:05 p.m., further attempts to revive him were of no avail. He was pronounced dead at 4:30 p.m.

## Post-accident Investigation

The telephone was located in a steel phone box, 33 1/2 inches high by 24 inches wide by 16 inches deep. The telephone equipment was removed from the pole at the accident site, on the night of the accident, and the ground wire was cut off near the ground. This equipment was transported to Atlanta, Georgia, and the ground wire was evidently lost in transit. The equipment appeared normal and showed no signs of burning or arcing.

A post-accident search revealed that there was no ground rod. Evidently, in this installation, the ground wire was wrapped around the bottom of the pole. Since the equipment had been removed with parts missing, it was not possible to test the effectiveness of the ground at this installation.

Carrier drawings show installations of wayside telephones depicting the ground wire attached to a 5/8 inch diameter copperweld ground rod 8 feet long. The drawings show details for a wooden platform for telephone users to stand on, located under the telephone box.

## Applicable Rules

None.

REPORT: 35

RAILROAD: Union Pacific Railroad Company

LOCATION: 6.9 miles north of Crowley, Louisiana on Louisiana Hwy. 13

DATE, TIME: August 28, 1986, approximately 5:15 a.m.

PROBABLE CAUSE: Failure to maintain control of a motor vehicle.

A contributing factor was working excessive hours without rest.

EMPLOYEE:

| | |
|---|---|
| Occupation | Carman |
| Age | 56 years |
| Length of Service | 35 years |
| Last Rules Training | No record |
| Last Safety Training | August 27, 1986 |
| Last Physical Examination | N/A |

Circumstances Prior to the Accident

On August 27, 1986, the day before the accident, the carman began his regular tour of duty at 7 a.m. After completing his regular eight hour tour of duty, he was released at 3:30 p.m.

At approximately 4:20 p.m., the day before the accident, a derailment occurred near Kinder, LA. At approximately 6 p.m. the employee and another carman were dispatched in the wheel truck from Alexandria, LA to the site of the derailment, a distance of 58 miles.

At 3:30 a.m., August 28, 1986, the day of the accident, while the wrecking operation was still in progress, a decision was made to transfer the locomotive speed tapes, related to the derailment, to Avondale, LA for analysis. An assistant trainmaster was dispatched from Avondale to Crowley, Louisiana to pick up the speed tapes. The officer in charge of the wrecking operation asked the employee to deliver the tapes from the derailment site to Crowley. The derailment site is approximately 40 miles north of Crowley.

The carman arrived safely at Crowley and delivered the locomotive speed tapes to the trainmaster. At approximately 4:55 a.m. the carman departed Crowley motor vehicle to return to the derailment site. Approaching the accident scene the roadway was straight and the pavement dry.

## The Accident

The point of the accident is 6.9 miles north of Crowley city limits. At approximately 5:15 a.m. the carman's vehicle crossed the center line of the roadway striking a sign on the west side of the roadway and from there moving into the path of an oncoming 18-wheel truck. The truck struck the carman's vehicle midway the driver's door. The carman was pronounced dead at the scene by the coroner.

## Post-accident Investigation

The carman had worked a total of 22 1/2 hours with only 2 1/2 hours (3:30 p.m. to 6 p.m.) off duty.

Inspection of the carman's vehicle by Louisiana State Police revealed no conditions that would have contributed to the accident.

## Applicable Rules

Louisiana Highway Regulatory Law

79 (1) A vehicle shall be driven as nearly as practicable entirely within a single lane and shall not be moved from such a lane until the driver has first ascertained that such a movement can be made with safety.

Union Pacific Railroad Safety, Radio and General Rules for All Employees

Rule 4159
Motor vehicles must be operated in a safe manner regardless of the urgency or importance of the trip.

REPORT: 36

RAILROAD: Consolidated Rail Corporation (Conrail)

LOCATION: Ashtabula, Ohio

DATE, TIME: September 13, 1986,
between 7:00 p.m. and 7:15 p.m.

PROBABLE CAUSE: Fire

| EMPLOYEE: | Occupation | Dumper Operator | Electrician |
|---|---|---|---|
| | Age | 63 years | 51 years |
| | Length of Service | 15 years | 24 years |
| | Last Rules Training | No record | No record |
| | Last Safety Training | No record | No record |
| | Last Physical Examination | January 20, 1971. | No record |

## Circumstances Prior to the Accident

The Consolidated Rail Corporation owns a coal dumping operation at Ashtabula Harbor, OH. The rights to operate the facility had been granted through contractual agreements to Lower Lake Dock Company. This company manages and supervises the operation. The maintenance and operation of equipment are performed by Consolidated Rail Corporation employees.

Hopper cars of coal arriving at Ashtabula Harbor Yard are placed onto a rotary dumper, which deposits the coal into a chute leading to a conveyor. The coal is transported by a series of belt conveyors to various designated areas throughout a large coal storage facility along the west bank of the Ashtabula River. The coal is loaded onto ships as required from these storage areas.

The No. 2 belt conveyor, involved in the accident, is an integral part of the series of conveyors and is used to transport the coal from the east bank to the west bank of the Ashtabula River.

The No. 2 belt conveyor was undergoing major modifications while remaining in service. The entire open conveyor was in the process of being enclosed to prevent coal dust from falling onto boat traffic. The modification was about 90 percent completed. No. 2 belt conveyor was in operation during the day prior to the accident and was shut down at 5:50 p.m.

At 6:45 p.m., a dumper operator, an electrician and two other employees were located on the east end of No. 2 conveyor belt in

maintenance building preparing for lunch. The other two employees left the property.

## The Accident

At 6:55 p.m., an employee located at the Lower Lake Dock Company office on the west bank of the river observed fire and smoke emitting from No. 2 belt conveyor. The fire was located directly over the west bank of the river near the west end of the arch support. The employee immediately notified all concerned using an intercommunication system. Also, the Ashtabula Safety Forces were notified. The dumper operator and the electrician attempted to extinguished the fire on No. 2 conveyor belt.

United States Coast Guardsmen were finishing their evening meal at this time, and they noticed the conveyor burning above the river near their Coast Guard Station. The 2 employees were overheard shouting for assistance from the enclosed portion of the conveyor by the Coast Guardsmen. They attempted to rescue the men but had no equipment available to reach them. The trapped employees stated they were being subjected to extreme heat and fumes at this time. At about 7:05 p.m., a loud explosion occurred and from that time there was no further voice communication with the trapped employees. The conveyor belt broke close to the center of the span spreading fire and debris the entire length of the conveyor. The entire conveyor belt was burning when the local fire department forces arrived at the scene.

The fire was extinguished and the area was secured at 10 p.m. The bodies of the victims were found on the east portions of the conveyor. One body was 150 feet from the east end of the conveyor, and the other body was 223 feet from the same end. Two portable fire extinguishers were found lying on the walkway near the bodies.

## Post-accident Investigation

The cause of the fire was undetermined. Because of the extensive modifications, several obstacles had to be overcome by employees assigned to the maintenance of No. 2 conveyor belt. The newly-installed enclosures caused a buildup of coal and soot along the bottom side of the conveyor necesitating new maintenance procedures. Also, construction workers dropped molten metal into the coal and soot when they were welding or using acetylene-burning torches. There was temporary lighting installed but it was not adequate because of swirling air turbulence from prevailing westerly winds.

The top dust covers that were installed did not have emergency exit doors or hatches. Also, the walkways on either side of the belt contained tools and other construction material that caused obstruction to normal passage.

There are no formal safety rules or training programs for employees at this location.

Applicable Rules

None.

REPORT: 37

RAILROAD: Missouri-Kansas-Texas Railroad (MKT)

LOCATION: Houston, Texas

DATE, TIME: September 19, 1986, 12:15 a.m.

PROBABLE CAUSE: Employee's failure to guard against unexpected movement of cars.

A contributing factor was an inoperative coupler on the "A" end of MKT 9759.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation | Switchman |
| | Age | 38 years |
| | Length of Service | 14 years |
| | Last Rules Training | March 7, 1985 |
| | Last Safety Training | August 5, 1986 |
| | Last Physical Examination | March 27, 1986 |

## Circumstances Prior to the Accident

After receiving proper off-duty periods, the crew of the 11 p.m. Yard Switcher went on duty at 11 p.m., September 19, 1986. The crew consisted of a conductor, engineer and three switchmen. The weather was clear and dark, with the temperature about 75 degrees.

The crew switched a block of cars standing on the main track and then moved over to Track No. 9 and performed some switching there. They then moved into the Repair Track lead. Their assignment was to couple to five bad-ordered cars that were to be spotted on the No. 1 Repair Track. On this day the victim was working the position known by the crew as the "long fieldman," independently handling the coupling and uncoupling of rail cars deep in the train yard. Communication between the crew members while switching is by hand signals with the use of lanterns by night. The engineer was seated on the right side of the controlling locomotive, the conductor sat on the left side in the fireman's seat, one switchman was in the yard office, and one switchman (the "short fieldman") was on the ground in a position to relay signals between the "long fieldman" and the engineer. The crew entered the Repair Track lead from the south shoving four cars ahead of the engine.

## The Accident

The first coupling to be made was between the fourth car ahead of the engine and the first southward bad-ordered car on the lead track, which was to be handled by the short fieldman. The second coupling to be made was between the third and fourth bad-ordered cars on the lead track, and was to be handled by the long fieldman. The short fieldman passed the signal to the engineer to proceed northward, then relayed the signal to the long fieldman that his coupling was made and movement should be started northward once more. As the third car approached the fourth car, the long fieldman started passing a "slow" signal to the short fieldman, which in turn was relayed to the engineer. As the third car struck the fourth car in an attempt to couple, the coupling failed, shoving the fourth car northward a short distance. The long fieldman, observing that the coupling was not complete, passed a "stop" signal to the short fieldman.

After the movement stopped, the short fieldman observed the long fieldman enter between the cars. After what the short fieldman considered an unusual length of time, he started toward the long fieldman, calling his name. As the short fieldman approached the third and fourth cars, he observed the long fieldman passing a faint "back up" signal. Upon reaching the long fieldman, he heard him say, "I'm coupled up between the cars."

Alarmed, the short fieldman ran back to his original position and passed a "back up" signal to the engineer. After the cars were separated a distance, he gave the engineer an "emergency stop" signal, then ran back to the long fieldman, where he found him on his stomach, resting on his elbows. The long fieldman again told the short fieldman that he had been pinned between the couplers and needed help. The short fieldman then ran to the locomotive, where he was met by the engineer and conductor. After alerting them to the accident, he told the engineer to call for an ambulance over the locomotive radio.

When the switchman in the yard office overheard the call for the ambulance, he ran to aid the injured fieldman. Upon reaching him, the injured long fieldman said that his right foot was pinned between the rail and the wheel of the fourth car. The switchman then ran to a position that would enable him to pass an "easy forward" signal. After the cars moved northward about 12 inches, he stopped the move. The switchman returned to the injured long fieldman, where he joined the conductor in attempting to comfort the long fieldman. About 25 minutes later the injured long fieldman was taken to a Houston hospital, where he died of his injuries about three days later, at 12:18 a.m., September 22, 1986.

## Post-accident Investigation

The coupler knuckle of MKT 9759 was found on the ground between the gage of the track near the incident location. A mechanical

inspection of the couplers between the third and fourth bad-ordered cars revealed that the coupler knuckle pin was missing and the knuckle lock-block was damaged to the extent that the coupler was inoperative on the third car (MKT 9759). A detailed inspection of the coupler disclosed that the lock-block was damaged as the result of a heavy impact from the knuckle. The impact was such that it caused a large indentation on the lock-block, warping the lock-block to the extent that it came to rest on the inner cavity of the coupler. Several unsuccessful attempts were made to operate the coupling and uncoupling mechanism from the uncoupling lever. Because of the warped condition, the lock-block wedged when attempts were made to raise the block to allow the knuckle to enter into a locked position. This condition caused the car to be out of compliance with Section 2 of the Safety Appliance Act.

The coupler on the fourth car was found free of defects and would operate as intended.

The fourth car, GATX 94326, was bad ordered to the repair track because of a defective air brake. The third car, MKT 9759, was bad ordered to the repair track because of a broken brake step. MKT 9759 had no previous report of a defective coupler or missing knuckle pin.

An examination of the track at the point of accident revealed a slight southward descending grade 30 feet in length. The grade was such that a car could roll freely if left standing in this area of track.

## Applicable Rules

### Missouri-Kansas-Texas Railroad System

### Safety, Radio and General Rules for All Employees:

4069. GOING BETWEEN CARS: Employees must guard against unexpected movement of cars. Employees must not go between or in front of moving engine or car to uncouple, open, close or arrange knuckles or couplers, or to manipulate other appliances.

4070. COUPLER-KNUCKLE ADJUSTMENT: Employees must use uncoupling lever to open knuckles when practicable. When necessary to use hand to open knuckle on standing equipment employee must, if practicable, keep both feet from between rails and must check to ascertain that knuckle pin is in place before placing hand on knuckle.

Section 2, Safety Appliance Acts
Title 49, United States Code, Section 2

It shall be unlawful for any common carrier engaged in interstate commerce by railroad to haul or permit to be hauled or used on its line any car used in moving interstate traffic not equipped with couplers coupling automatically by impact, and which can be uncoupled without the necessity of men going between the ends of the cars.

REPORT: 38

RAILROAD: Chessie System Railroads
(The Baltimore and Ohio Railroad Company)

LOCATION: Cincinnati, Ohio

DATE, TIME: September 30, 1986, approximately 11:45 p.m.

PROBABLE CAUSE: Carman operating a three-wheeled inspection cart received fatal injuries when the cart overturned, pinning him underneath.

EMPLOYEE:

| | |
|---|---|
| Occupation | Carman |
| Age | 36 years |
| Length of Service | 16 years |
| Last Rules Training | February 17, 1986 |
| Last Safety Training | September 30, 1986 |
| Last Physical Examination | September 15, 1981 |

## Circumstances Prior to the Accident

At 11 p.m., September 30, 1986, the carman reported for duty at the carrier's Queensgate Yard, Cincinnati, OH. He was assigned to inspect freight cars standing on track 5 in the receiving yard. At approximately 11:35 p.m. he left the inbound car foreman's office en route to his assignment traveling south on the East Road. He was operating cart T-3, a three-wheeled vehicle designed to carry both the operator and the equipment used to inspect and make light repairs to freight cars in the yard.

The East Road, in the area of the accident, is paved asphalt, approximately 21 feet wide, smooth and well lighted.

The weather at the time of the accident was warm and dry with patches of fog.

## The Accident

At approximately 11:55 p.m. a brakeman assigned to uncouple cars on the hump discovered the cart overturned with the carman pinned underneath. The brakeman notified his supervisor of the accident and advised him to call for emergency assistance. Cincinnati Fire Division Paramedics were notified of the accident at 11:59 p.m., and their squad assessment report indicates "Apparent Dead on Arrival." There were no witnesses to the circumstances of the accident.

## Post-accident Investigation

The carrier performed a mechanical inspection of the cart, and after determining that all systems functioned normally the cart was returned to service.

An autopsy report by the Hamilton County Coroner's office concluded that death was caused by traumatic asphyxia. A sample of blood was analyzed for ethyl alcohol and was subjected to a general drug screen. The results of both tests were negative.

## Applicable Rules

None.

REPORT: 39

RAILROAD: CSX Transportation, Inc.

LOCATION: Erwin, Tennessee

DATE, TIME: October 30, 1986, 2:15 p.m.

PROBABLE CAUSE: Going between freight cars likely to move.

EMPLOYEE:

| | |
|---|---|
| Occupation | Carman |
| Age | 59 years |
| Length of Service | 36 years |
| Last Rules Training | Unknown |
| Last Safety Training | October 10, 1986 |
| Last Physical Examination | N/A |

## Circumstances Prior to the Accident

The Erwin car repair facility consists of a building with five tracks running through it lengthwise from north to south. The tracks are not level and have several areas of irregular surface. The building is constructed of brick and has dirt, concrete, and asphalt floors. Lighting is provided by side windows, skylights, and overhead incandescent lights. A Switchmaster car mover, which operates either on track or off track, is used to move cars within the repair facility. Chains and/or wood blocks placed lengthwise across the track are used to chock the wheels of freight cars being repaired.

The accident occurred on Track No. 2 about 160 feet from the south end of the car repair building. The victim was assigned to perform air brake repair work. He had reported for duty at 7:00 a.m., and had been on duty seven hours and fifteen minutes at the time of the accident.

The work had been completed on six cars inside the building on Track No. 2. Five cars needing repair were on the track outside the north end of the car repair building. After a signal for movement on Track No. 2 was given (shop whistle sounded twice), the six repaired cars were pushed by the car mover out of the south end of the building. Track No. 2, outside the building, would not hold the cars so the north car of the six, ACL 120314, was positioned at the south end ("spot one") inside the building on Track No. 2. The car mover was then taken to the north end of the building. Handbrakes on the five cars needing repair were then released, allowing them to roll into the building on Track No. 2. When the crossing at the north end of the building was cleared, the cars were stopped by applying handbrakes. The car

mover was then positioned at the north end of these cars. After proper signal was given the operator of the car mover, each car was positioned in the building, with the car mover moving from south to north.

## The Accident

The placing of the first two cars was directed by carmen assigned to work at the south end of Track No. 2. After completing this, they began to repair these cars while the carmen assigned to work at the north end of Track No. 2 directed the positioning of the remaining three cars at the north end. As the third car was being positioned, bunching was necessary to uncouple it from the remaining two cars. A signal was given the operator of the car mover to push the cars south. When slack was obtained, the uncoupling lever was pulled, and the cars uncoupled. The third car, BO 66931, began to move. A chain was placed under the wheel; however, this car rolled over the chain and into the second car, SAL 31393, causing this car to move southward striking the first car, CO 159557, where carmen were working. The chain was again placed under the wheel of BO 66931, stopping movement of the car. Two carmen working on Track No. 1 then heard someone call out. Although their view was blocked by a tool board, they rushed over to Track No. 2 and found the injured carman holding on to the uncoupling lever at the south end of BO 66931 to keep from falling. The carmen helped the injured carman to the ground and asked him what happened. The injured carman stated he "got coupled up" and that he was "passing out." The injured carman was taken to Unicoi County Memorial Hospital where he died at 3:30 p.m.

## Post-Accident Investigation

For reasons unknown, the victim was between the cars being repositioned on the shop track. Since carmen started working at the south end of Track No. 2 while movement was taking place at the north end of this track, it appears that the victim was attempting repairs to defective freight cars on this track. Apparently the victim went between cars BO 66931 and SAL 31393, to attempt repairs when the accident occurred. There were no rules or formalized (written) instructions that prescribed procedures during the freight car repositioning process for carmen at the car repair facility.

Due to confusion as to when and who should be tested, no drug and alcohol tests were performed.

## Applicable Rules

None.

REPORT: 40

RAILROAD: Union Pacific Railroad Company

LOCATION: Idaho Falls, Idaho

DATE, TIME: November 7, 1986, 11:20 a.m.

PROBABLE CAUSE: Rotation of crane while traveling.

| | | |
|---|---|---|
| EMPLOYEE: | Occupation . . . . . | Bridge and Building Laborer |
| | Age . . . . . | 57 years |
| | Length of Service . . . . . | 39 years |
| | Last Rules Training . . . . . | None |
| | Last Safety Training . . . . | November 3, 1986 |
| | Last Physical Examination . . . | January 13, 1953 |

## Circumstances Prior to the Accident

At 7 a.m. on the day of the accident, a bridge and building (B&B) crew consisting of a foreman, a machine operator, two carpenters and a laborer went on duty at Idaho Falls, ID. They were transported by company vehicle to bridge No. 187.31, where they were assigned to make repairs which included removing and replacing bridge ties. A truck-mounted hi-rail crane was used to handle the ties.

Bridge 187.31 is an open deck, riveted plate girder structure, 480 feet in length, extending north and south across the Snake River. The deck is approximately 22 feet above the surface of the water. A walkway extends the full length of the span on the east side of the bridge.

At about 11:15 a.m., while working on the bridge near the north side of the river, the foreman decided to break for lunch. The crew's lunches were in the company truck near the south end of the bridge, so the foreman and the rest of the crew boarded the truck-mounted crane to ride across the bridge. The laborer seated himself on a tool box permanently mounted on the left, or east, side of the truck chassis just behind the cab. Other crew members took positions at various locations on the vehicle, either on the crane or on the truck on which the crane was mounted. The movement of the on-track crane, which had been working with the boom extended northward and at an angle of about 15° to the east, was controlled by the machine operator from the cab of the crane.

## The Accident

As the vehicle started to move, the machine operator rotated the crane to align the boom parallel with the track structure. This caused the counterweight attached to the rear of the cab to strike the laborer, pushing him from his seat on the tool box and off the vehicle. He fell through an opening in the deck of the bridge, and dropped into the river. After about ten minutes in the water, he was pulled from the river by other members of the crew. Cardiopulmonary resuscitation was applied until medical assistance arrived. The employee was transported to a local hospital where he was placed on a life support system. After being maintained on that system for six days, he was pronounced brain dead and the life support discontinued. The laborer died on November 13, 1986, at 7 p.m.

## Post-accident Investigation

Carrier rules prohibit the turning of cranes while moving (See "Applicable Rules").

A walkway was provided on the east side of the bridge. On the day of the accident, however, the walkway, comprised of 8-foot sections of metal grating, had been removed to facilitate bridge repairs. This left a series of openings, each measuring 31 inches by 96 inches, in the deck of the bridge adjacent to the east side of the track. It was through one of these openings that the laborer fell when he was pushed from his seated position on the truck.

Although a bridge and building department employee for 39 years, most of the laborer's service was as a painter and usually in a shop environment. Recent personnel reductions had forced his transfer to the position as laborer with the bridge repair crew. His lack of recent field experience was recognized by the crew foreman, who stated that he tried to keep the laborer off the bridge as much as possible to minimize his exposure to injury.

## Applicable Rules

Union Pacific System - Maintenance of Way Rules

1478. SWINGING CRANES: Bridge erection cranes or similar cranes must not be turned or swung while traveling, either under their own power or while being handled by a locomotive either with load on boom or empty.

2000. AUTHORIZED PERSONNEL: Only authorized persons are permitted on roadway machines and work equipment.

4108. RIDING ON EQUIPMENT: Employees must not ride on cranes, ditchers or other machines or on cars on which machines are mounted unless authorized to do so.

REPORT: 41

RAILROAD: Burlington Northern Railroad Company

LOCATION: Nashua, Montana

DATE, TIME: November 18, 1986, 10:12 a.m.

PROBABLE CAUSE: Failure to maintain an adequate lookout for an approaching freight train.

EMPLOYEE:

| | |
|---|---|
| Occupation | Track Laborer |
| Age | 47 years |
| Length of Service | 17 years |
| Last Rules Training | April 2, 1986 |
| Last Safety Training | August 14, 1986 |
| Last Physical Examination | November 10, 1982 |

## Circumstances Prior to the Accident

### Extra 2283 East

After required off duty periods, the crew of local freight Extra 2283 East, consisting of an engineer, conductor, and two brakemen reported for duty at 7:30 a.m., on the day of the accident at Glasgow, Montana. The crew performed various switching assignments at Glasgow, made up their train, performed the required brake test, and departed at 10 a.m.

### Section Crew

A section crew consisting of a relief foreman, truck driver, and two track laborers reported for duty at 7:30 a.m., on the day of the accident, at Glasgow, Montana. After cleaning the main track switches and depot platform and performing other assigned duties at Glasgow, the crew proceeded to the west switch at Nashua, Montana, in company vehicles.

On arrival at the west switch at Nashua, one laborer put on a mechanical backpack snow blower and proceeded to blow snow from the switch while other crew members shoveled snow from under the switch points. The weather was cold ($+5^0$ F) and cloudy, with a southeast wind blowing 22 mph, and visibility 5 miles, as reported by the Glasgow, Montana, weather station.

## The Accident

The local freight approached the accident site at track speed, 60 mph. The engineer of Extra 2283 sounded the whistle and bell on sighting the crew and applied the train brakes in emergency at a point approximately 1500 feet before the accident site.

As the section crew was engaged in removing snow from the west switch, the relief section foreman looked up and saw the train approaching approximately 1200 feet westward. The foreman shouted to alert the two laborers removing snow from under the switch points and tried to alert the laborer using the portable snow blower. The foreman and two laborers were able to leave the track area safely, but the laborer operating the portable snow blower was struck by the pilot of the lead locomotive and thrown approximately 154 feet from the point of impact. He was pronounced dead at the scene by the County Coroner. The accident occurred at 10:12 a.m.

## Post-accident Investigation

Post accident investigation disclosed that the crew was aware that trains were going to operate over the segment of track where the accident occurred. The relief section foreman did not delegate a member of the crew to maintain a lookout for trains while the rest of the crew was cleaning the switch.

The sight distance for the BN train crew members in the cab of the lead locomotive was approximately 1,960 feet because of an embankment on the north side of the left-hand 1° curve.

The mechanical backpack snow blower used by the laborer is a self-contained unit, powered by a gasoline-fueled internal combustion engine of small displacement. Noise generated by the unit may have interfered with the ability of the laborer to hear. Ear covering (a hard hat liner) worn by the employee may also have interfered with hearing ability. Tests by BN mechanical forces revealed no defective conditions with either the locomotive units or cars.

Toxicological samples of the crewmembers of Extra 2283 were taken; results were negative. Samples forwarded of the remains of the deceased consisted of only a small amount of blood, which was negative for alcohol. The sample was not sufficient for drug analysis.

## Applicable Rules

### Burlington Northern Railroad Safety Rules and General Rules

6. During the winter season, or in adverse weather when ear covering may

impair hearing, it is of the utmost importance to maintain a sharp lookout in all directions.

Burlington Northern Railroad
Rules of the Maintenance of Way
General Safety Rules

725. Working on or near tracks: When working on or near tracks subject to use that are not protected under Rule 10, a lookout must be assigned when view is restricted for any reason, stormy conditions exist or when noise of tools, machinery, or equipment interferes with hearing.

The foreman in charge must select a responsible employee to act exclusively as lookout. The foreman must know the lookout has placed himself to observe approaching movements in sufficient time to warn employees working on or about tracks and permit those employees to clear the movement. Where conditions require, more than one lookout must be assigned.

REPORT: 42

RAILROAD: Consolidated Rail Corporation

LOCATION: Chicago, Illinois

DATE, TIME: November 16, 1986, approximately 7:30 p.m.

PROBABLE CAUSE: Failure of driver to maintain control of motor vehicle.

EMPLOYEE:

| | |
|---|---|
| Occupation | Car Inspector |
| Age | 39 years |
| Length of Service | 10 years |
| Last Rules Training | N/A |
| Last Safety Training | November 16, 1986 |
| Last Physical Examination | June 19, 1986 |

## Circumstances Prior to the Accident

Englewood Yard in Chicago, Illinois, is a trailer-on-flat-car (TOFC) loading facility with 10 tracks running north and south. An access road, 23 feet in width, parallels the most easterly track. Semitrailers are parked perpendicular to the road on both sides. The access road is tangent and practically level. On the day of the accident, the weather was clear and 39° F. The pavement was dry. The yard is lighted by overhead flood lights and receives additional illumination from adjacent highway lighting.

The victim reported for duty at 3 p.m. on the day of the accident at the carmen's locker room located at the north end of the yard. The car foreman held a safety meeting during which the rule of the day was read and discussed. The car foreman gave each man his work assignment, and the carmen departed the locker room at 3:10 p.m. At 5:55 p.m., the carmen returned to the locker room for lunch. During the meal period, the victim communicated with the car foreman and other carmen. No unusual conditions were noted.

At 6:20 p.m., the car inspectors departed the locker room and drove in separate vehicles to the yardmaster's office at the south end of the yard to receive additional assignments. The victim was last seen in his vehicle at the south end of the yard. The victim told another carman that he had additional work to complete. The other carman then left to inspect trailer hitches.

## The Accident

There were no witnesses to the accident. The evidence indicates that the victim was operating a pick-up truck northbound on the access road when the vehicle veered to the left and struck the corner of a parked semitrailer. The truck's hood went under the semitrailer. The impact drove the windshield back against the driver and collapsed the roof of the vehicle against the back wall of the cab.

## Post-accident Investigation

The car foreman found the victim at approximately 7:30 p.m. His head was pinned between the collapsed roof of the vehicle and the back wall of the cab. The loaded semitrailer, whose gross weight was 38,000 pounds, was moved seventeen inches to the north by the force of the impact. The head lights of the vehicle remained on. The tires were inflated. There were no tire skid marks on the pavement. He was pronounced dead on arrival at St. Bernard Hospital in Chicago.

Chicago police investigators inspected the victim's truck and reported that no apparent defects were found. An autopsy was performed by the Cook County Medical Examiner's office. Tests by the Medical Examiner's office for illicit drugs or alcohol were negative.

## Applicable Rules

Consolidated Rail Corporation Manual of Safety Rules and Regulations for Maintenance of Equipment Employees.

4293. Vehicle driver is responsible for the safe and proper operation of the vehicle in his charge and the safety of the occupants.

4297. When driving at night:

(a) Slow down due to reduced visibility.

(b) Do not overdrive your headlights, be able to stop within the distance illuminated by your headlights.

REPORT: 43

RAILROAD: Burlington Northern Railroad Company (BN)

LOCATION: Murray Yard, North Kansas City, Missouri

DATE, TIME: November 22, 1986, 1:20 p.m.

PROBABLE CAUSE: Failure to properly secure the walls of an excavation.

| EMPLOYEE: | | |
|---|---|---|
| | Occupation | Water Service Mechanic |
| | Age | 52 years |
| | Length of Service | 14 years |
| | Last Rules Training | N/A |
| | Last Safety Training | N/A |
| | Last Physical Examination | March 6, 1979 |

## Circumstances Prior to the Accident

A four-man sewer pipe installation crew went on duty at 7 a.m. on the day of the accident. A Water Service Mechanic and a Bridge and Building Helper were responsible for working in the ditch, and the other two men on the crew were each operating a machine. The ditch was approximately 16 feet in depth on the south wall and 12 feet in depth on the north wall. Width of the ditch at the bottom was about 4 feet, graduating to 12 feet at the top. The sewer pipe sections being installed were 7 1/2 feet in length and 30 inches in inside diameter and weighed about 4,000 pounds. Shoring material which had been leased was available.

Responsibilities of the two employees working in the ditch were to level the floor of the ditch, clean out the end of each section of pipe, and apply sealer to each section to attach additional sections of pipe.

According to photographs of the accident area, the south ditch wall was nearly vertical, and the north ditch wall was stepped above the existing sewer line to within about 2 feet of the top of the wall. As each section of pipe was laid, the hole was backfilled before going on to the next. The Water Service Mechanic was in charge of the work on the day of the accident and had previously been instructed by the Bridge and Building Supervisor to secure the ditch walls by using the leased shoring material or by sloping the ditch walls before entering the ditch. By about 1:15 p.m., this crew was laying the fourth or fifth section of pipe since commencing work that morning. Immediately prior to this accident, three BN locomotives passed by the work

area. Ustick Tower notified the Water Service Mechanic to afford him the opportunity to vacate the ditch, which he promptly did. The locomotives stopped at a signal after passing the work area. The trailing end of the third locomotive was standing approximately 75 feet from the work area at the time of the accident. Witnesses stated that the Water Service Mechanic waited approximately 2 minutes after the locomotives passed, before he re-entered the ditch.

## The Accident

The south wall of the ditch collapsed three times in rapid succession. The victim attempted to flee the ditch after the first collapse, but his feet were caught by the falling soil. When the second failure of the wall occurred, he was entirely covered. At this point, the Bridge and Building Helper jumped into the ditch to assist the victim. The third cave-in happened just after the helper uncovered the victim's face. Once again, the victim was covered entirely and the helper's lower legs were covered. The two machine operators then joined in the rescue attempt, but to no avail. The crew aboard the locomotives was asked to notify Ustick Tower to call emergency assistance, and they complied with this request. Other BN workers nearby sought to aid the trapped employee, but the consistency of the soil made their attempts futile. Estimated response time of the emergency equipment was 10 to 15 minutes. The employee was dead on arrival at Truman Medical Center, where he was taken by helicopter.

## Post-accident Investigation

Post-accident investigation revealed that the victim was instructed by the Bridge and Building Supervisor to properly secure the ditch walls by sloping the banks at a 45-degree angle or by shoring the walls before descending into the ditch. Witness interviews revealed conflicting statements on what method, if any, was used to secure the south wall. Due to the fact that the ditch was filled in quickly, no examination was possible of the ditch itself.

The U.S. Department of Labor's Occupational Safety and Health Administration issued citations against the BN for failure to properly support the sides of the trench (29 CFR 1926.652(b)), failure to inspect the project daily (29 CFR 1926.650(i)), insufficient employee training (29 CFR 1926.21(b)(2)), improper storage of excavated material (29 CFR 1926.651(i)(1)), failure to provide additional precautions where excavations are subjected to vibration (1926.652(e)), and failure to provide an adequate means of exit from the trench (29 CFR 1926.652(h)).

No autopsy was performed. The Jackson County Medical Examiner listed the cause of death as asphyxiation.

## Applicable Rules

Burlington Northern Railroad - Safety Rules and General Rules Form 15001 - 8/81

MANHOLES, WELLS, PITS, SEWERS, TANKS, ETC.

439. Employees must not perform work in evacuations four feet or more in depth until evacuations are properly shored, or banked at 45 degrees or less, to prevent cave-ins.

Burlington Northern Railroad - Rules of the Maintenance of Way Form 15125 - 4/86

776. EXCAVATIONS, HOLES AND TRENCHES: When an excavation is near tracks the sides must always be shored.

Holes, trenches or excavations must be properly protected until they are filled.

US Occupational Safety and Health Administration

Department of Labor,
Title 29, Code of Federal Regulations

§ 1926.21 Safety training and education.

* * * * * * *

(b) Employer responsibility. (1) The employer should avail himself of the safety and health training programs the Secretary provides.

(2) The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

§ 1926.650 General protection requirements.

* * * * * * *

(i) Daily inspections of excavations shall be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

§ 1926.651 Specific excavation requirements.

* * * * * * *

(i)(1) In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

§ 1926.652 Specific trenching requirements.

* * * * * * *

(b) Sides of trenches in unstable or soft material, 5 feet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them.

* * * * * * *

(e) Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

* * * * * * *

(h) When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.

REPORT: 44

RAILROAD: Chessie System Railroads (The Chesapeake and Ohio Railway Company)

National Railroad Passenger Corporation (Amtrak)

LOCATION: St. Albans, West Virginia

DATE, TIME: December 17, 1986, 9:05 a.m.

PROBABLE CAUSE: A welder helper failed to stay clear of approaching train.

A contributing factor was heavy fog which limited visibility to approximately 150 feet.

EMPLOYEE:

| | |
|---|---|
| Occupation | Track Welder Helper |
| Age | 27 years |
| Length of Service | 7 years |
| Last Rules Training | No record |
| Last Safety Training | November 25, 1986 |
| Last Physical Examination | December 12, 1986 |

## Circumstances Prior to the Accident

The accident occurred on the Coal River Bridge at milepost 466 of the Kanawha Subdivision of the West Virginia Division of The Chesapeake and Ohio Railway Company, which extends from Handley, West Virginia, to Russell, Kentucky. The double track bridge is constructed in three spans. The east and west spans are through plate girders which are each 105 feet 9 inches in length and have a height of 48 inches above the rail. The center span is a through rivet truss 152 feet in length, making the total length of the bridge 363 feet 6 inches. The walkway, which is approximately 42 inches wide, is in the center of the bridge between main Tracks No. 1 and No. 2. The bridge is on tangent track. The maximum authorized passenger speed in the accident area is 60 mph on Track No. 1 and 45 mph on Track No. 2.

Amtrak No. 50, a scheduled eastbound passenger train had departed Huntington, WV, at 8:15 a.m. On the day of the accident, the operating crew, after receiving required off-duty periods, had reported for duty at 7:55 a.m. In addition to the engineer and fireman, a Chessie System Road Foreman of Engines ("road foreman") was with the crew and was operating the train.

On the day of the accident, a maintenance force had authority to occupy Track No. 2 with track equipment and foul Track No. 1 between the hours of 8:01 a.m. and 4:01 p.m. in the accident area. This meant that eastbound Amtrak No. 50, would be on Track No. 1. Trains passing through the work area on Track No. 1 could do so only with the permission of the maintenance-of-way foreman in charge.

At 7:45 a.m. on the day of the accident, the victim, a trackman who had been furloughed from his regular job in Huntington, WV, the previous day, was advised that he could work as track welder helper for a few days while another employee was on vacation. He was instructed to report that same morning to St. Albans, WV, to meet the welder at the east end of the Coal River Bridge.

## The Accident

At 8:55 a.m., Amtrak No. 50 received permission from the maintenance-of-way foreman to proceed through his working limits on Track No. 1. At the time, the engine was being operated by the road foreman and the regular engineer was standing behind him. The fireman was standing in the center of the cab. Visibility was limited to approximately 150 to 200 feet by heavy fog. As the train approached the west end of the bridge, the road foremen began blowing the engine horn for the road crossing just east of the bridge. Just as the engine started onto the bridge, at a speed of 58 miles per hour, the fireman shouted, "Man on track!" The road foreman did not see the man, but immediately upon hearing the thud as the engine struck him, made a full service application of the train brakes. The train came to a stop approximately one-half mile east of the point of impact. The crew contacted the dispatcher, advised him of the accident, and requested medical assistance. The man, however, had been killed instantly.

## Post-accident Investigation

At the time of the accident there was heavy fog which restricted visibility to 150 to 200 feet. The victim was wearing a hard hat with a winter liner which covers the ears. His vehicle was parked at the east end of the Coal River Bridge, where he was instructed to meet the welder. The welder was one-half mile away in the St. Albans depot getting authority from the dispatcher to work on the switch at the east end of Coal River Bridge. For some reason, possibly to see if the welder was at the switch at the west end of Coal River Bridge, the victim walked out onto the bridge. Because this was his first day to work on the roadmaster's territory, the victim was unaware that a surfacing unit had authority to occupy Track No. 2 and that Amtrak No. 50 would run eastbound on Track No. 1. As he walked eastward toward his vehicle with his back to the train, his vision restricted by the heavy fog, and the sound of the train muffled by the hard hat

liner over his ears, he showed no indication of alarm as he stepped in front of the train.

The identity of the deceased as a railroad employee was not immediately known; a positive identification of the body was ultimately made by the police. Statements of the engineer and fireman agree that the man was walking on the north side of the north rail on Track No. 1. They also agree that, although the engine horn was blowing continuously, he made no indication that he heard it; nor did he make any attempt to get out of the path of the train. The fireman, because of his position in the middle of the locomotive cab, saw the man step into the gage of the track just as the engine struck him.

Toxicological tests of the remains of the deceased for drugs or alcohol were negative.

## Applicable Rules

### Chessie System Railroads Safety Rules

45. Expect movement of equipment on any track, at any time, in either direction. Always look in both directions before crossing or getting close to any track. Crossing tracks immediately in front of moving trains, locomotives, or cars is prohibited. When crossing tracks near standing equipment, always allow sufficient room to avoid injury in case of sudden or unexpected movement.

46. Employees on or about any tracks, whether in the open, in shops, on bridges, or in tunnels, must move to a place of safety upon the approach of rolling equipment on the track. Employees must always position themselves at a safe distance from moving equipment, and be alert for falling or protruding equipment.

50. Employees are prohibited from being on rails, ties or any other part of track structure, except when necessary in performance of duty, or as may be necessary in going to or from work, and then only when sufficiently protected to ensure their safety.

REPORT: 45

RAILROAD: Consolidated Rail Corporation (Conrail)

LOCATION: Selkirk, New York

DATE, TIME: December 20, 1986, 8:55 a.m.

PROBABLE CAUSE: Failure to follow instructions when attempting repairs to a plug-type car door.

Car door had previously sustained damage to its operating mechanism and was not retained its normal operating position.

EMPLOYEE:

| | |
|---|---|
| Occupation | Car Inspector |
| Age | 42 years |
| Length of Service | 19 years 11 months |
| Last Rules Training | N/A |
| Last Safety Training | December 20, 1986 |
| Last Physical Examination | January 12, 1983 |

## Circumstances Prior to the Accident

The accident occurred between Tracks No. 5 and 6 in Conrail Selkirk Receiving Yard. The weather was clear with a temperature of 35° and approximately 1 to 2 inches of residual snow on the ground. On the day of the accident, the car inspector reported for duty at 7:59 a.m. at Selkirk Yard. Prior to receiving his first assignment, he attended a safety meeting, conducted by his foreman during which the rule of the day was reviewed.

After discharging his first assignment on Track No. 3, the car inspector and his partner drove a company pickup truck to the accident site to inspect train OPSE arriving on Track No. 6 at 8:45 a.m. from New York, NY. They drove along the north side visually inspecting the train. When they arrived at the 94th car, UPFE 458257, they saw that the plug-type door was partially open. The inspector stopped the truck and exited the driver's side with a 28-inch pry-bar. When asked what his intentions were, he stated he was going to "close the door."

## The Accident

The car inspector positioned himself in front of a refrigerated box car plug door, which was dislodged from its lower track. He placed a pry-bar between the bottom of the door and the track and exerted downward pressure in an attempt to raise the door onto the track. During this maneuver, the door became dislodged from

its top operating cranks and fell to the ground. As it fell, it rotated to a horizontal position and landed on top of the car inspector, pinning him against an adjacent rail. Immediately, at approximately 8:55 a.m., emergency medical personnel were summoned, and at 10:20 a.m., the coroner pronounced the car inspector dead at the scene of the accident.

## Post-accident Investigation

An investigation of the freight car's movements prior to the incident developed that the door for some reason opened at an undetermined location and while en route (Oak Point Yard, New York, NY), struck a track-side structure and sustained damage that dislodged it. Post-accident inspection of the door disclosed damage to the top retaining channel which rendered the safety hangers inoperative, in violation of Section 215.121(d) of the Freight Car Safety Standards (49 CFR 215.121(d)). (See "Applicable Rules.")

His body was removed to Albany Medical Center, Albany, NY, where an autopsy was performed. Toxicological tests of his remains for drugs or alcohol were negative.

## Applicable Rules

### Conrail Safety Rules
Maintenance of Equipment Employees
Effective June 1, 1981

Rule 4254. To open or close roller or other type side door of box or baggage car:

(a) Look for and be sure door is properly tracked.

(b) If not properly tracked and cannot be retracked, keep clear of the door and use rope equipped with hook to pull the door.

(c) If properly tracked, use handle provided and keep body, hand or other part of person clear of jamb, travel rail or door opening.

### Federal Railroad Administration Regulations
Freight Car Safety Standards

49 CFR 215.121 Defective car body.

A railroad may not place or continue in service a car, if:

* * * * * * *

(d) After December 1, 1983, the car is a box car and its side doors are not equipped with operative hangers, or the equivalent, to prevent the doors from becoming disengaged.

U.S. Department
of Transportation

**Federal Railroad
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

**FOURTH CLASS BOOK RATE**
POSTAGE & FEES PAID
FEDERAL RAILROAD
ADMINISTRATION
PERMIT NO. G-128

**RETURN POSTAGE GUARANTEED**

Official Business
Penalty for Private Use $300