RAILROAD EMPLOYEE FATALITIES INVESTIGATED BY THE FEDERAL RAILROAD ADMINISTRATION IN 1977

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
OFFICE OF SAFETY

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1. RAILROAD: Atchison, Topeka & Santa Fe Railway Company
LOCATION: Clovis, New Mexico
DATE : January 2, 1977

The Accident

About 10:45 p.m. on January 2, 1977, an Atchison, Topeka & Santa Fe Railway laborer, age 61 with 30 years service, was fatally injured when struck by a yard locomotive at the west end fueling facility at Hull Street in Clovis, New Mexico. The weather was clear and cold.

Circumstances Involved in the Accident

Clovis Yard is a flat switching and classification yard. In the accident area from north to south are Harvey House, 0198, 0199, 0103 and 0104 tracks, respectively. The last four tracks are used as main tracks for east and westbound trains. The Hull Street fueling station for westbound trains is located between tracks 0198 and 0199. The fueling station is illuminated by four mercury vapor lamps located on concrete platforms, and by a light tower located at the southwest end of the Hull Street overpass which is located at the west end of the fueling station. A supply and inspection building is located north of the Harvey House track at the east end.

The laborer's duties were to fuel and water locomotives on westbound through trains. He reported for duty at 3:00 p.m. and went directly to the Hull Street fuel station.

Train 913A East was standing on track 0198 when a defective car was discovered 10 cars ahead of the caboose. Yard Job 205, using locomotive 3509 (an EMD GP-38), set out the defective car. After completing the switching move, locomotive 3509 made a reverse movement westward on track 0198. At the same time train 668-B1 was arriving and moving westward on track 0199. The conductor of the yard job rode the locomotives of train 668-B1 to where his locomotive was standing on track 0198. He crossed the fueling platform and boarded the yard job locomotive. The engineer of the locomotive was at the controls on the southeast end of the locomotive. One switchman was seated in the middle seat in the locomotive and the other at the door on the north side. The conductor entered the cab of the locomotive and while it moved at a speed of approximately six miles per hour, he saw a man

walk south across the walkway between Harvey House and track 0198 and step in front of the locomotive. The conductor shouted, "Stop," and reached for the horn. The engineer put the brakes in emergency, however, the locomotive moved about 50 feet before stopping. The locomotive headlights were on dim.

The crew found the laborer face down under the north side of the locomotive fuel tank between the north rail of track 0198 and the walkway. He was pronounced dead at 11:36 p.m. at the Clovis Hospital.

Applicable Rule

Rule 38: Employees must expect the movement of trains, engines, cars or other equipment at any time, in either direction on any track. Do not rely on others to give warning of moving equipment where designated lookouts are provided. (Atchison, Topeka & Santa Fe Safety Rules)

Analysis

The laborer was advised that train 668-B1 was arriving on track 0199, and he left the supply and inspection building and started south across the tracks to fuel the locomotives. The weather was cold and he was wearing a hard hat with a head liner covering his ears. He apparently did not see or hear the yard locomotive moving westward and stepped in front of the moving locomotive. The locomotive is equipped with a low profile snow plow at each end. The laborer was apparently struck by the snow plow near the left hip and chest area, causing fatal injuries.

Regular safety meetings are held by the supervisor. The deceased attended six safety meetings in November and December 1976. He was issued a copy of the General Rules for the Guidance of Employees on August 1, 1975. A copy of Safety Rules for Santa Fe Employees was issued on June 9, 1976.

Cause

This accident was caused by the failure of the laborer to be alert and aware of the approaching equipment before crossing the tracks.

2. RAILROAD: Consolidated Rail Corporation
LOCATION: Chester, West Virginia
DATE : January 3, 1977

The Accident

On January 3, 1977, at about 11:40 p.m., a Consolidated Rail Corporation conductor, age 62, with 33 years service, was seriously injured when he was crushed between the end of a boxcar and a pipe railing at an industrial siding in Chester, West Virginia. The weather was cloudy. The conductor was hospitalized and underwent surgery. He died on January 14, 1977, due to post-operative complications. There were no witnesses to the accident.

Circumstances Involved in the Accident

The accident occurred at the end of a depressed warehouse track at the Celotex Corporation plant which is located along the New Cumberland secondary track. The plant warehouse is parallel to the track and has approximately 24" clearance with the sides of freight cars thereon. On the opposite side of the track is a slope covered with small trees and brush. There were 3-4 inches of snow on the ground at the time of the accident.

After reporting for duty at 10:30 p.m., January 3, 1977, the local freight crew switched three loaded boxcars from the siding at Chester, West Virginia and proceeded to the Celotex Corporation plant. Two of the cars were set out on a spur track. The locomotive with the third car continued onto the warehouse track, coupled to the cars thereon, pulled back and coupled them to the two loaded cars on the spur track. The two loaded cars were then uncoupled from the consist and allowed to roll onto the descending warehouse track at an estimated speed of three to four m.p.h. with the conductor riding on the forward brake step of the leading car. The remainder of the crew then engaged in other switching operations adjacent to the plant.

The other crew members were not aware that the two loaded cars were not stopped before they struck the abutment at the end of the depressed track until the head brakeman heard the conductor call to him. The conductor was standing in the roadway alongside the track and said that the cars had bounced and that he was injured.

A short time later an ambulance transported the conductor to the local hospital where his spleen and left kidney were removed. He also suffered fractured ribs and was bleeding internally.

Applicable Rule

1150. Before attempting to control speed of equipment with hand brakes:

(a) Determine type of brake.
(b) Have knowledge of its operation.
(c) If conditions require, test the brake before the equipment is uncoupled.

NOTE: When condition requires that equipment be controlled throughout the entire movement, equipment must not be uncoupled until the employee at the brake has tested it and has indicated that it is effective. (ConRail Safety Rules)

Analysis

The cars involved were of the "Damage-Free" type with extended drawbars and cushion underframes. That type was rarely placed on that siding because the lading shipped thereto was normally in ordinary type boxcars. The car did not stop in line with the warehouse door as intended, but moved on to the end of the siding where the drawbar went over the top of the abutment. Due to the inward movement of the cushion underframe, the conductor was squeezed between the end of the car and a pipe railing atop the abutment.

The conductor was examined on the Book of Rules on November 8, 1976 and on Air Brake Requirements on November 17, 1975. He had worked on this train regularly for approximately one year.

Crew members stated that it was normal practice to drop cars by gravity and spot them by using the hand brake. Subsequent inspection disclosed the car's hand brakes functioned properly. The accident area was fully illuminated with the railing painted a bright orange color. The conductor, as the man in charge of the crew, should have been aware of the hazardous condition in this particular dead end movement.

Cause

This accident was caused by the failure of the conductor to properly control the car movement and bring it to rest prior to striking the obstruction at the end of the track.

3. RAILROAD: Atlanta and Saint Andrews Bay Railway Company
LOCATION: Betts, Florida
DATE : January 6, 1977

The Accident

On January 6, 1977, at 11:15 a.m., an Atlanta and Saint Andrews Bay machine operator, working as a laborer, age 52 with 27 years of service, was killed when he was struck by a falling boom of an on-track crane at Betts, Florida. The weather was clear at the time of the accident.

Circumstances Involved in the Accident

On the day of the accident, the carrier's roadway forces reported for work at 7:00 a.m. and were engaged in removing jointed rail and replacing it with a section of continuous welded rail. An on-track crane and a bulldozer were used in moving the welded rail from the side of the ballast section into gage position. The track was tangent and practically level.

The subject laborer and another crewman were assigned to gage and spike the rail after the crane and bulldozer moved the rail into position. This required the two men to position themselves about 15 feet in front of the crane and beneath the boom. With the assistance of the crane, one man held the rail to gage while the other spiked it in place. When this was complete, the crane was moved ahead on the gaged track, and the process was repeated. As the laborers were gaging and holding the rail in position, the boom of the crane fell without warning, striking both men.

Other crewmen rushed to the scene to assist the two men. One laborer was fatally injured in the accident, and the other received serious back and facial injuries.

Analysis

New boom extended cables were installed on the crane in June 1976 at the carrier's shops. The crane had been used very little since installation of the cables prior to the day of the accident. The right-hand extended cable pulled out of its socket at the boom hoist bridle, the bridle then rotated quickly, and the left cable sheave sheared the cotter key as it pulled off the end of the pin, allowing the boom to fall.

The post-accident investigation revealed that when the cable (wire rope) was installed in the socket the cable end was not cleaned, the strand wires were not separated, and a babbit metal was used in pouring the socket. The rail industry manual recommending procedures for anchoring a wire rope in a socket states that the wires should be broomed out, then carefully cleaned and dipped in muriatic acid, and a "high grade" zinc should be used in pouring the socket.

The carrier has no specific rules applicable to this operation. The carrier's safety training program consists of on-the-job training.

Cause

Failure to follow recommended procedures in the installation of cable in the socket resulted in the cable pulling out of the socket and causing the boom to fall, striking and fatally injuring the laborer.

4. RAILROAD: St. Louis-San Francisco Railway Company
   LOCATION: Fort Scott, Kansas
   DATE : January 9, 1977

The Accident

On January 9, 1977, at approximately 8:30 p.m., a St. Louis-San Francisco Railway hostler, age 58, with 36 years service, was fatally injured at Fort Scott, Kansas, when he fell from a locomotive or from the bridge on which the locomotive was standing. The weather was snowing, windy and two degrees below zero fahrenheit.

Circumstances Involved in the Accident

The accident occurred on the St. Louis-San Francisco Railway Company bridge C96.8 which spans a dry bed portion of the Marmaton River at Fort Scott. This single-track structure extends 18 feet above the river bed and is a combination of ballast deck pile trestles and deck plate girders. The distance from the field side of the east rail to the outside portion of the deck is 62 inches. There are no handrails or walkways, but there were 34 inches of clear space between the side of the locomotive and the eastward edge of the ballasted deck. The Fort Scott train yard is located immediately south of the accident area, and a single main track extended to the north and over the bridge.

On the day of the accident, a train was derailed north of Fort Scott, requiring rerouting of northbound trains. At 4:55 p.m., a northbound train requiring rerouting arrived at Fort Scott.

The hostler went on duty at 7:35 p.m. for the purpose of switching locomotives from one end of a train to the other. The hostler had received the required statutory rest period prior to his call. After reporting for duty, the hostler and a mechanical foreman uncoupled the locomotives from the train involved, moved them northward over a power switch in traffic control territory and stopped the four-unit consist on the ballast deck portion of the bridge. The power switch involved is located 25 feet south of the south end of the bridge and is remotely controlled by the train dispatcher at Springfield, Missouri.

In this particular instance, the switch could not be power operated, and it was necessary to manually operate the switch prior to moving the locomotives over the old main track to the south end of the train involved. The trainmaster and two brakemen were enroute from the yard office to assist in operating the switch. While waiting for assistance, the foreman and hostler walked through the locomotive consist to the third unit in order to inspect cab heaters. When the inspection was accomplished, the foreman proceeded to the switch involved after instructing the hostler to return to the lead locomotive unit.

One of the brakemen gave the hostler a back up signal after the switch was lined to the old main track, but he received no response. In addition, the trainmaster was unsuccessful in his attempt to contact the hostler on the

train radio. Shortly, thereafter, the mechanical foreman, two brakemen and the trainmaster found the hostler lying in the river bed beneath the east side of the bridge. The critically injured hostler was subsequently transported in an ambulance to a local hospital where he died about three and one-half hours later due to internal injuries.

Analysis

The four diesel-electric road type units were all equipped with exterior walkways which were used when the foreman and hostler walked from the lead locomotive to the third unit. However, it could not be determined if the hostler was on the locomotive or on the deck of the bridge when he fell while in the process of returning to the lead unit. The small accumulation of ice and snow on the locomotive walkways and deck of the bridge could have contributed to the accident.

The hostler had been issued a carrier book of operating and safety rules. He attended safety meetings on a regular basis. However, the carrier did not have a safety rule specifically relating to the job being performed.

Cause

The accident was caused by failure of the hostler to maintain a secure handhold and/or footing.

5. RAILROAD: Consolidated Rail Corporation
LOCATION: Ludlowville, New York
DATE : January 18, 1977

The Accident

On January 18, 1977, at about 12:15 p.m., a freight conductor, age 51 with 30 years of service, was killed when he fell from a platform into the path of a moving freight car.

Circumstances Involved in the Accident

The accident occurred at the Cargill Salt Company loading facility on the Ithaca and Auburn Branch of the Lehigh Division of the Consolidated Rail Corporation at Ludlowville, New York. The facility is 7.3 miles from Ithaca, New York and the timetable direction, Ithaca to Ludlowville, is west. Two tracks, the East track and the West track, approach the facility from the west, run through it and extend beyond it to the east, where empty cars are stored. A third track, the Spur track, branches off the East track.

On the day of the accident, the crew of Train IL-1, consisting of engineer, conductor, two brakemen and flagman, commenced work at Ithaca, New York, at 8:00 a.m. The crew, using two switching type locomotive units coupled back to back, having completed their work on the East and Spur tracks, had one loaded box car east of the east unit, two empty box cars east of that and were proceeding east to place one empty box car beyond the loading facility.

The flagman was in the caboose on the main track. The engineer was in the cab of the east unit, having changed ends to be on the south side where the trainmen were working. One brakeman was on the south side of the east unit on the bottom southeast step. The other brakeman was in the empty car storage area, east of the building, waiting to cut off one empty box car.

The movement proceeded east at an estimated speed of three to four miles an hour with the train air brake cut in and operative. The conductor was walking on the south side and slightly ahead of the lead empty box car. In order to continue through the building, he had to mount a two--foot wide, four-foot high loading platform, running the full length and inside of the building.

As the conductor walked along the platform, the brakeman on the step of the east unit saw him lose his footing, fall from the platform and disappear from view. The brakeman immediately signaled the engineer to stop. The engineer immediately applied the train brake in emergency position and stopped the movement in seven or eight feet. The conductor's body was found wedged between the east brake beam and axle of the east truck of the lead box car.

The conductor was pronounced dead at the scene.

Applicable Rules

Rule 1027 - Constant alertness is essential to safety.
(d) - Observe footing at all times. Watch for holes, dips and obstacles.
Rule 1050 - While walking look for and avoid slipping and tripping hazards...(ConRail (L.V.) Safety Rules)

Analysis

Post-accident investigation disclosed a pile of hard packed salt covering the platform for a length of six to seven feet, two and a half feet high against the building and sloping at an angle of forty-five degrees, or better, to the edge of the platform. Due to the packed condition of the salt, it was evident that no safe footing was available. The only light in the building came from the openings at either end, and that was partially obscured from the west end by the cars entering the building.

It did not appear necessary that the conductor would have had to proceed any further to pass the brakeman's signal upon finding the obstruction. Were it necessary, he could have stopped the movement before attempting to go over the pile of salt.

Cause

The accident was caused by the conductor loosing his footing while attempting to cross the pile of salt.

6. RAILROAD: Union Pacific Railroad Company
LOCATION: Las Vegas, Nevada
DATE : January 27, 1977

The Accident

On January 27, 1977, at about 7:40 p.m., a brakeman, age 64 with 35 years service, was injured when slack run-in threw him against the caboose wall as his train was departing Las Vegas, Nevada, train yard. He died in a hospital in Milford, Utah at 2:45 p.m., January 30th.

Circumstances Involved in the Accident

On the day of the accident, Extra 6922 East, consisting of three locomotive units, 50 cars and 3704 tons, was departing the train yard at Las Vegas. The conductor and rear brakeman were in the caboose at the rear of the train. The conductor was sitting at his desk near the front and the brakeman was standing in the rear. When about one-half of the train had entered the main track, an unexplained slack run-in caused the brakeman to be thrown against the corner of an equipment locker. When first noticed by the conductor, he was sitting on the floor with his head and arms resting on a seat. The conductor notified the engineer by radio to stop the train. After being assured by the brakeman that he was all right and did not want to make a report of the accident, the train proceeded toward Milford. They arrived in Milford, home terminal for the crew members, at about 2:10 a.m., January 28th.

After arriving at his residence, his wife took him by auto to a local hospital where he was admitted at 2:45 a.m. An X-ray examination determined that the brakeman had five broken ribs, damaged lungs and an accumulation of fluids in the lungs and chest cavity. On January 30, he lapsed into the "shock syndrome" at about 1:00 a.m. and died at 2:45 a.m.

Applicable Rule

Safety Rule 4054 - When riding on or in 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. (Union Pacific Safety Rules)

Analysis

The carrier issues each transportation department employee an operating rule and safety rule book. The employee was last examined on the operating and safety rules on September 2, 1976. His last physical examination was on January 8, 1976.

The train consisted of 50 long-length container flat cars and the speed at the time of the accident was estimated to be about 10 m.p.h. The brakeman stated to the conductor that he was walking toward the water cooler with two cans of a soft drink when the slack run-in occurred.

Cause

The brakeman's failure to protect himself from unexpected slack action caused his death.

7. RAILROAD: Illinois Central Gulf Railroad
LOCATION: Decatur, Illinois
DATE : February 1, 1977

The Accident

On February 1, 1977 at 8:40 a.m., an Illinois Central Gulf Railroad switchman, age 51 with 26 years experience, was fatally injured when he was crushed between the side of a freight car he was riding and the trailer of a truck parked close to the track. The accident occurred within yard limits on a private track within the confines of an industry in Decatur, Illinois. The weather was clear and cold; the ground was icy.

Circumstances Involved in the Accident

The Staley Manufacturing Company has a grain processing plant at Decatur, Illinois and this plant has its own system of yard tracks. In addition to being serviced by rail, this plant is also serviced by tractor-trailer trucks. In the vicinity of the accident, a road crossing intersects the west end lead track to North 101 Track and South 101 Track. Immediately to the north of the intersection, the road curves and runs parallel to the north side of North 101 Track. Trucks often park along the road while waiting to unload grain at the elevator complex.

An Illinois Central Gulf Railroad yard crew consisting of a foreman, switchman and engineer was assigned the duty of placing cars on North 101 and South 101 Tracks. This crew went on duty at 7:00 a.m., February 1, 1977, with ICG unit 8160. This unit was equipped with a radio set and each trainman had a portable radio. The train arrived at the plant and headed west with 18 empty covered hopper cars. The front (short nose) end of the locomotive was leading. The engineer and the two trainmen worked from the right or north side of the train.

The foreman and engineer stated that the entire train crew noticed that North 101 Track was not occupied by any cars as the train approached the plant. The crew also noticed that several tractor-trailer trucks were parked close to the rail on the north side of North 101 Track. Ten of the eighteen cars were to be placed on that track, and the other eight cars were to be placed on South 101 Track.

The switchman made an uncoupling behind the 10th car. Afterwards he protected the road crossing. The foreman accompanied the head end westward and positioned himself at the switch leading to North 101 Track. He aligned the switch for the reverse move into this track after the engineer had pulled the last car west of the switch. The foreman and engineer both stated that the switchman signaled the engineer to shove the cars eastward after the switch was aligned. As the cars moved eastward toward the switchman, the engineer and foreman heard the switchman ask the engineer over the radio to slow down so he could board the lead car. The switchman said the ground was icy. The engineer slowed the movement, and the switchman mounted the northeast sill step of the lead car and the foreman mounted the northeast sill step of the fourth car from the locomotive. The engineer and foreman both estimated the speed of the movement at about five miles per hour. They also stated that they heard the switchman say "that'll do" in a normal tone of voice before all of the cars were in the track. The engineer stated that he was still west of the road crossing when the switchman requested him to stop. He also said that he pondered the request for a moment and decided to place the train air brakes in emergency application instead of making a normal stop.

Prior to the emergency application, the engineer had the throttle in the idle position and 5 to 10 pounds of independent brake on the locomotive. Neither the engineer nor the foreman could see the switchman because of the curvature of the track. The engineer said he stopped the train in about one car length after hearing the switchman request the stop. The foreman said the train moved about two car lengths between the time of the radio message and the emergency application, and an additional three-fourth car length before it came to a stop. The foreman saw the switchman fall to the ground between a parked tractor-trailer truck and the lead car. He immediately called the engineer and asked him to radio the yard office for an ambulance.

The driver of the tractor-trailer truck involved said that he had been parked along the road near the track about ten minutes and there was one truck parked ahead of him and two or more trucks parked behind him at the time of the accident. While sitting in the cab of the truck, looking in the right side mirror, he saw freight cars moving toward him from the west with a man riding the north side of the lead end of the first car. As the first car reached the truck behind him, he saw the man move closer to the car until he cleared the right side cab mirror of that truck. The driver said he realized at that time that the man would not clear the entire right side of his tractor-trailer truck. He also realized that there was not time enough to move the vehicle. The driver said his tractor-trailer was parked at an angle to the track with the front end closer to the track than the rear. He saw the man on the freight car clear the rear end of the tractor-trailer. The switchman was subsequently rolled between the front of the trailer and the freight car.

Applicable Rules

Maximum authorized speed within yard limit is 10 m.p.h.

Rule 863: Radio communication may be used...(2) In switching:

Voice communication in lieu of hand signals.

Rule 138: Maintain lookout in direction locomotive or car is moving and be alert for structures alongside of or over track... .

(Illinois Central Gulf Guidelines to Safety)

Analysis

Post-accident investigation disclosed that the ground was icy in the accident area which would have restricted normal mounting and dismounting of a person on a freight car. The Staley Company had no markers or guidelines for positioning trucks in relation to North 101 Track, until a sign was posted the day after the accident. The foreman and engineer stated that they did not know why the switchman elected to ride the lead car back into the track, yet they also stated that often it was necessary to request drivers to move their trucks before North 101 Track could be used. Evidently, the switchman realized that the trucks were parked too close to the track and he intended to ride the lead car back far enough to ask the drivers to move. This can be directly related to the reportedly calm tone of voice

used by the switchman when he told the engineer "that'll do." The engineer admitted that he pondered momentarily before responding to the switchman's radio request. Under the stated conditions a normal stop should have been possible within 50 feet.

The fatally injured switchman was hired on January 21, 1951 and qualified as a foreman in 1952. His last examination on operating rules was May 20, 1974. His last physical examination was June 10, 1974, and no exceptions were noted. His personnel record is good; he was considered a good employee, and there was no indication of impairment on this tour of duty. The carrier requires periodic examinations each four years. Informal meetings on safety and operating rules are held about once a month. Safety films are regularly shown on all shifts to obtain maximum possible attendance.

Cause

The primary cause of this accident was the failure of the engineer to promptly stop the movement when the switchman said "that'll do." The lack of proper safeguards by Staley Company and the improper parking by the truck driver were contributing factors.

8. RAILROAD: Union Pacific Railroad
LOCATION: Elkhorn, Nebraska
DATE : February 16, 1977

The Accident

On February 16, 1977, at 12:40 p.m., a Union Pacific Railroad Company assistant signalman, age 20, with two years and six months service, was fatally injured when struck by the locomotive of a westbound freight train near Elkhorn, Nebraska. The weather was cloudy, calm and 34 degrees.

Circumstances Involved in the Accident

The accident occurred on main track No. 1 in double track territory on the Nebraska Division at Mile Post 22.37, 0.7 miles west of Elkhorn, Nebraska. Trains are operated by timetable and train orders in conjunction with automatic block signal and a cab signal system arranged for movements with the current of traffic. From the east there are in

succession, a tangent 573.5 feet and a three degree-four minute curve to the left, 974 feet to the point of accident and 1,069 feet beyond. The grade is 0.50% descending westward. From the accident point, visibility eastward is restricted to 1,400 feet because of track curvature and vegetation.

About 10:00 a.m., on the day of the accident, an assistant foreman and five assistant signalmen arrived at Mile Post 22.37 to dig a ditch and bury signal cable in connection with a rail relay program. An assistant signalman was stationed about 500 feet in each direction from the work site to watch for approaching trains. The assistant foreman remained at the work site to direct the work and observe the watchmen to warn the assistant signalmen when a train approached. The assistant signalmen began opening the ditch, one using a jackhammer driven by a portable air compressor and the other shoveling loosened material. The third assistant signalman relieved one of the other two periodically.

Shortly after resuming work following lunch, the assistant foreman began helping an assistant signalman correct a leaking coupler at the air compressor. Another assistant signalman was using the jackhammer between the two main tracks. The subject assistant signalman was standing in the two-foot deep ditch between the ties outside the south rail of Main Track No. 1 shoveling loosened material from the ditch. At this time, the watchman east of the work site observed an approaching westbound train and began waving and yelling at the men at the work site. None were looking nor did any hear him above the noises of the air compressor and jackhammer.

Upon seeing the actions of the watchman, the engineman of Extra 117 West applied the train air brakes in emergency position and sounded the locomotive horn and bell. The train struck the assistant signalman while moving approximately 30 miles per hour.

Applicable Rules

757. . . . It must be borne in mind that trains may be run at any time.

Employees must not rely on others to warn them and must be on the lookout at all times for approaching trains, cars or vehicles.

767. Foremen must supervise and engage in all work of their gang; see that work is properly and safety done . . .
* * *

4001. Employees must take precaution to prevent injury to themselves and other persons under conditions not provided for by the rules.

Employees must not rely upon the carefulness of others, but must protect themselves when their own safety is affected.

4045. Foremen or others in charge of employees working on or about the tracks, must instruct their men to be alert, watchful, and to keep out of danger, and must take necessary precautions to see that men working under their supervision receive warning of approaching trains in time to reach a place of safety. (Union Pacific Maintenance of Way and Signal Rules and Safety Instructions)

Analysis

Watchmen were stationed to each side of the work site because of track curvature to warn of approaching trains. The assistant foreman remained nearby to receive signals from the watchmen and alert the workmen when a train approached.

The carrier's rules require flag protection when safety of train operation is endangered to prevent damage to railroad property, but do not provide for flag protection for employees working on or around main tracks. Instead, the carrier's rules place the burden of safety upon each employee individually and require them to perform their assigned duties and watch for trains simultaneously.

Carrier's records do not indicate when the subject employee attended a safety meeting, or when he was examined on the rules.

Cause

The accident was caused by failure of the assistant foreman to maintain vigilance in order to warn the subject assistant signalman of an approaching train. The lack of rules that require procedures to definitely provide necessary safety when working with machinery generating high noise levels, on high speed track in an area of limited vision, was a contributing factor.

9. RAILROAD: Missouri-Kansas-Texas Railroad Company
LOCATION: Fort Scott, Kansas
DATE : February 17, 1977

The Accident

On February 17, 1977, at approximately 9:50 a.m. at Fort Scott, Kansas, a Missouri-Kansas-Texas Railroad Company brakeman, age 24, with two years service, was instantly killed during a drop of a flat car loaded with granite blocks. The impact of the coupling of the flat car to standing cars caused the granite blocks to shift, crushing the brakeman against the bulkhead. The weather was clear.

Circumstances Involved in the Accident

In Fort Scott a 2,640 foot-long siding parallels the north-south single main track to the west. Approximately 400 feet south of the north siding switch, track No. 9 (Bruce Marble Track), 991 feet in length, diverges southeastward to a stub end. A 900 foot long house track diverges from track No. 9, southward, parallels the main track and continues to a stub end. In the accident vicinity the main track is tangent. The grade from a point 850 feet north of the point of accident to the accident point is 0.335% descending southward. The accident occurred on the main track, 420 feet south of track No. 9 switch.

On the day of the accident, the crew of Extra 223 North consisted of a conductor, two brakemen and an engineer. The crew had been on duty 2 hours 50 minutes, subsequent to a statutory off-duty period, when the accident occurred. Station switching duties for the crew at Fort Scott included instructions to place for unloading on track No. 9 (Bruce Marble Track), SAL 4710, flat car loaded with granite blocks. To facilitate stub track placement, the car was switched from an interchange track, north of track No. 9 switch, by coupling the car to the front of the locomotive and in a back-up dropping movement, uncoupling the car in motion, routing the locomotive to the house track and the free-rolling car to the main track, occupied by the six standinding cars which were included in the consist of Extra 223 North. The subject brakeman mounted the sill step on the handbrake end (south end-west side) of the car to uncouple the car in motion and after doing so, placed himself inboard from

the 18-inch-high metal bulkhead in a position permitting handbrake operation. The other brakeman was positioned at the right front, east side locomotive stairwell to relay signals. The conductor was positioned to operate track No. 9 switch. Moments later, according to crew members, the brakeman was observed in a kneeling position between the granite blocks and the bulkhead with his hands on the low mounted horizontal handbrake operating wheel. At this time, the conductor shouted a warning to apply the handbrake and dismount from the car, but for reasons unknown the brakeman failed to comply.

Crew members estimated SAL 4710 was moving southward, rolling free, at a speed of about 12 miles per hour at the time of the impact. The fatally injured brakeman was found in a prone position crushed between the bulkhead and the granite blocks which had shifted longitudinally as a result of impact forces.

Applicable Rules

103(a). Precautions in Switching

> ...Employees must observe the following precautions in switching movements.
>
> (5) Kicking or dropping of cars will be permitted only when such movements can be made without danger to employees, equipment, or contents of cars. Know that the track is sufficiently clear, and when dropping cars, know switches and brakes are working properly and run engine on straight track when practical. (Uniform Code of Operating Rules)

510. Safety Rules

> ...Employees must not: ...
>
> (9) Ride in or on end of cars containing a load that may shift.... (MKT Special Safety Rules)

Analysis

The carrier issues each employee a book of safety rules, publishes a "Safety Rule of the Day" and requires employee attendance at safety meetings on a regular basis. The fatally injured brakeman last attended a safety meeting on January 21, 1977, at which time Safety Rule 510 was discussed. The

brakeman had last been examined for understanding and application of the Operating Rules when he commenced service March 18, 1975.

SAL 4710 is a wood-deck flat car of special construction, 57 feet in length, built in 1961. The car was designed primarily for granite block service. The car is equipped with permanently installed 18-inch high formed metal bulkheads on each end and 4-inch high formed metal siderails. The car is not equipped with stake pockets. The purpose of this type of configuration is to eliminate the necessity of blocking and bracing for this particular loading. AAR open top loading rules do not include specific load restraining for this type of car. Originally, in compliance with AAR General Instructions, the shipper and originating carrier concurred in the contention that the load securement capabilities were adequate to withstand load displacement under normal operating conditions.

Post-accident testing revealed the handbrake operated as intended on the car involved.

For reasons unknown the brakeman placed himself between the bulkhead and the granite blocks and was crushed when the granite blocks shifted longitudinally on impact with standing cars.

Cause

The accident was caused by the brakeman positioning himself between the lading and the bulkhead of the car.

10. RAILROAD: Union Pacific Railroad
LOCATION: North Platte, Nebraska
DATE : February 20, 1977

The Accident

On February 20, 1977, about 7:30 p.m., a Union Pacific switch-foreman, age 27, was fatally injured, and a switchman, age 22, was seriously injured when crushed between the couplers of a standing locomotive unit and a moving outfit car in Bailey Yard, North Platte, Nebraska. Both switchmen had three years and eight months service. The weather was cloudy.

Circumstances Involved in the Accident

The accident occurred near the east end of track No. 40 in the eastbound classification bowl yard, consisting of 64 yard tracks with a hump facility located at the west end of the tracks. On the day of the accident, the switch-foreman, two switchmen and an engineer went on duty at 3:45 p.m. as the crew for yard engine 2807.

The crew had received instructions to couple three dead locomotive units to the east end of three company outfit cars on track No. 40. They were also instructed to wait for six "bad order" cars that were to be humped to track No. 40.

Shortly prior to the accident, yard engine 2807 with three dead locomotive units ahead was moved westward onto track No. 40 in order to couple to the three standing outfit cars. The engineer and a switchman were in the control compartment of yard engine 2807 and the remaining two members of the crew were on the ground assisting in making the coupling.

The crew had difficulty in their attempt to couple dead locomotive unit UP 173 to outfit car UP 904803 and the engineer moved the locomotive units eastward about 15 feet after receiving a hand signal from the crew on the ground. The foreman and switchman were attempting to realign the coupler on locomotive unit UP 173 when the three outfit cars were struck on their west end by the six "bad order" cars which were moving under their own momentum after being released at the crest of the hump. This impact caused the outfit cars to be moved eastward into the locomotive units and the switch-foreman and switchman were caught between the couplers of the dead locomotive unit and the outfit car. The switch-foreman was fatally injured and the switchman's right arm was severely injured.

Applicable Rule

Rule 4070: Employees must guard against unexpected movement of cars. (Union Pacific Safety Rules)

Analysis

During a post-accident investigation, the coupler knuckle throwers on locomotive unit UP 173 were found to be broken. Inspection of "A" end of outfit car UP 904803 revealed that the coupler toggle and rotary lock lift assembly were inoperative. The outfit car was subsequently moved in a

defective condition from North Platte (point of accident) to Grand Island, Nebraska, in violation of the Safety Appliance Acts. Findings are being handled by the FRA Office of Chief Counsel.

The switch-foreman and switchman involved were qualified on carrier rules. The carrier's records reflect that the switch-foreman last attended a safety meeting in February 1976, but do not show when the switchman attended a safety meeting.

Cause

This accident was caused by the failure of the employees involved to guard against unexpected movement of cars. The defective equipment involved was a major contributing factor to the accident.

11. RAILROAD: Atchison, Topeka and Santa Fe Railway Company
LOCATION: Pueblo, Colorado
DATE : March 1, 1977

The Accident

On March 1, 1977, at approximately 8:05 a.m., an Atchison, Topeka and Santa Fe Railway Company trackman, age 60, with 11 years service, was severely injured in Pueblo, Colorado, when he was struck by a falling boxcar door. The employee died 17 days later.

Circumstances Involved in the Accident

A track extra gang started working at 7:30 a.m. Four of the men were instructed to get material from a boxcar used as a company supply car. After the seal was broken, the door had been opened a few inches when it fell outward from the top, landing on two of the trackmen, fatally injuring one. He was taken by ambulance to the hospital where surgery was performed for back and hip injuries.

The boxcar was removed from revenue service in 1971 and had been used for company materials and equipment since then.

Applicable Rule

9. Employees must observe the condition of equipment and the tools used in performing their duties. When found defective, they must have them put in safe condition before using them and report defects. (AT&SF General Rules for the Guidance of Employees)

Analysis

An inspection of the door and its track following the accident did not reveal any condition that would have contributed to the accident. The door involved is corrugated steel, with lift fixtures activated by a double-acting lever which facilitates movement of the door. The car was equipped with top retainer clips required by the American Association of Railroads for cars of this kind utilized in revenue service. The door may not have been properly secured in the top retaining track due to bumping or switching. Subsequent to the accident, the door was properly replaced on the car and an attempt was made to reenact the accident, utilizing two of the trackmen who witnessed the door falling. The door remained secure.

The deceased employee had a good safety record and had been issued a copy of the carrier's General Rules for the Guidance of Employees. Railroad officers stated that safety meetings are conducted on an occasional basis by the foremen. No records of these meetings or attendance are maintained.

Cause

The trackmen did not inspect the door for proper securement before attempting to open it.

12. RAILROAD: Norfolk and Western Railway Company
LOCATION: Decatur, Illinois
DATE : March 5, 1977

The Accident

On March 5, 1977, at approximately 1:00 a.m., a Norfolk and Western switchman, age 24, with nine months service, was fatally injured when he was run over by an empty flat car

during switching operations enroute to the westbound classification yard at Decatur, Illinois. The weather was clear.

Circumstances Involved in the Accident

Decatur Yard is an illuminated flat switching yard consisting in part of westbound classification yard tracks located adjacent to and south of the westbound drag freight receiving and departure yard. Access to the classification yard lead from the receiving and departure yard is accomplished by use of the north lead pocket track located at the east end of the yards. The accident occurred 127 feet west of the east switch of the north lead pocket track which is tangent with a slightly descending grade westward.

A yard crew consisting of an engineer, foreman and two switchmen went on duty at 12:00 midnight after receiving the statutory off duty period. They were instructed to handle cars from the receiving and departure yard which required moving eastward clear of the north lead pocket switch and then shoving westward to the classification tracks. The crew was assigned an EMD-GP-7 locomotive with dual controls.

Shortly prior to the accident, the crew coupled their locomotive to 21 cars which were to be moved from the westbound receiving and departure yard to the classification yard tracks. The foreman and a switchman walked the short distance to the classification lead in order to operate switches for this yard movement. The engineer was operating the locomotive from the north side. During the eastward movement, the switchman alighted from the locomotive at the north lead pocket switch and gave the engineer a stop signal when the cars cleared the switch.

After aligning the switch, he signaled the engineer to move the cars westward over the north lead pocket track. However, the foreman gave his crew a stop signal when the westward movement began because another crew was using the lead track which conflicted with the intended movement. The subject switchman, from a position about 10 feet north of the north lead pocket track, relayed the foreman's stop signal to the engineer who stated that he stopped the movement in approximately one car length.

The crew involved was not aware that the subject switchman was fatally injured after he relayed the stop signal. However, about 25 minutes later, the foreman of the other crew switching on the lead noticed a lighted lantern and found the body of the subject switchman beneath an empty flat car which

was the lead car of the 21 cars being moved to the classification tracks. The switchman had sustained injuries to his lower abdomen and multiple fractures and lacerations of the right leg. His body was 28 feet east of the lead end of the flat car and was lying face-up outside of the north rail. Blood was found on the inside of the north rail and on the L-2 wheel of the lead truck of the car involved.

Applicable Rule

1052. Always look in both directions before stepping on or getting close to any track. When crossing tracks near standing equipment, always allow room to avoid injury in case of sudden movement. Crossing tracks immediately in front of moving trains, locomotives, cars, roadway equipment or motor cars is prohibited. (N&W Safety Rules)

Analysis

There were no witnesses as to the accident, and it could not be determined exactly how the switchman came in contact with the car.

The deceased received training required of new trainmen by the carrier from May 17 through June 2, 1976. This included classroom training with training manuals. On-the-ground instruction was provided, then 14 student trips evaluated by the conductor or foreman. After such trips the employee was given a written and oral examination. He was also required to observe safety films. He last attended a safety meeting February 24, 1977.

Cause

This accident was caused by failure of the switchman to stay clear of moving equipment.

13. RAILROAD: St. Louis-San Francisco Railway Company
LOCATION: Paris, Texas
DATE : March 11, 1977

The Accident

On March 11, 1977, at approximately 12:15 a.m., a St. Louis-San Francisco Railway conductor, with eight years service, was fatally injured when he was run over by a car during switching operations at Paris, Texas. The weather was dark, cloudy and 60o.

Circumstances Involved in the Accident

The crew of a switching assignment, locomotive SL-SF 587, consisting of a conductor, brakeman and an engineer, went on duty at 5:00 p.m., March 10, 1977, at Paris, Texas. At about 12:10 a.m., March 11, 1977, the crew was engaged in switching cars at the Campbell Soup Plant. The tracks in the vicinity of the accident are, south to north, No. B lead, run-around and back tracks. Radios are used for communications.

They uncoupled the locomotive from the cars on No. 8 lead and went into the run-around to pick up eight cars. The brakeman was on the locomotive and the conductor walked to the run-around to check the cars. The fifth and sixth cars were not coupled and the conductor instructed the engineer to back up five feet to make the coupling. The conductor then coupled the air hose. After the air had been cut in the conductor instructed the engineer to go ahead and pick up three additional cars from No. 3 track, which is approximately 1,000 feet eastward from the run-around track, and take the cars to the main track and couple to cars on the main track. After picking up the cars from No. 3 track the brakeman attempted to contact the conductor but received no reply. They hauled the cars to the main track and another crew in the vicinity attempted to contact the conductor but received no reply. The brakeman uncoupled the locomotive from the cars on the main track and returned to No. 8 lead to look for the conductor. The conductor's body was found on the south rail near the switch of the run-around track to No. 8 lead. He had been run over and his body was severed in three places below the waist. He was pronounced dead at the scene. Found near the body was an uncoupling lever which had broken off from a car. Post-accident investigation disclosed that the uncoupling lever had broken off the sixth car, MP 780038, at the bracket. The bracket had been previously welded. Evidence on the car wheels showed that this car had passed over his body.

Applicable Rule

1702. Constant presence of mind to insure safety to themselves and others is the primary duty of all employees. ... (SL-SF Safety Rule)

Analysis

Post-accident investigation disclosed no unusual conditions of track, ballast or ground in the area.

The conductor was last heard from on the run-around track when he instructed the crew to go ahead. Apparently, when he attempted to board the car he stepped on the uncoupling lever, the bracket broke and caused him to fall to the rail. The wheels of the car passed over his body.

The carrier issues a book of operating and safety rules to its employees. Employees are required to be examined on the rules twice each year and periodic safety classes are held. Carrier records show the employee attended a book of rules class on August 13, 1976. There were no witnesses to the accident.

Cause

The employee, while attempting to board the end of the car, apparently stepped on the uncoupling lever and the bracket broke, causing him to fall to the rail.

14. RAILROAD: Chesapeake and Ohio Railway Company
LOCATION: Beaver Dam, Virginia
DATE : March 14, 1977

The Accident

A 56 year old Chesapeake and Ohio Railway Company signal maintainer, with over 17 years service, was killed when his chest was crushed by a falling signal line pole on March 14, 1977, at about 12:45 p.m., near Beaver Dam, Virginia.

Circumstances Involved in the Accident

After having been off duty for more than the prescribed period, the signal maintainer was assisting a leading signal maintainer transferring signal line wires between terminal poles at a cut-section located near Mile Post 123.5 on the Piedmont Subdivision of the Virginia Division when the accident occurred.

The old pole extended approximately 14 feet above ground level with double crossarms about five feet from the top. Communication department wires had previously been relocated to the new pole. Both poles were provided with permanent steps. A temporary platform, referred to as a "duck board" was attached to the new pole to provide a place to work without the use of pole-climbing hooks.

After their lunch period the two men transferred the last line wire from the east side of the old crossarms to the new pole. According to the only witness, the maintainer then descended to the ground. While facing in the opposite direction, the leading maintainer heard the old pole break and fall. He went to the aid of the maintainer lying near the old pole but got no response and solicited the help of nearby residents to summon aid.

The signal maintainer was pronounced dead at the scene.

Applicable Rules

Safety Rule No. 343 - Before the last wire on a defective pole is cut or untied, the pole must be safely secured with ropes, guys, or pike poles. (Chessie System Engineering Department Maintenance Rules)

> Bulletin E.S.J.P. No. 31, Issued February 1, 1977. Step 2 - Procedure No. 2. Secure old pole to new pole with rope. Note: If old pole is too far from new pole to secure old pole to new pole secure old pole with pike poles or hand lines.

Analysis

The victim was crushed by an unsecured, deteriorated pole. No measures had been taken to support the pole before removing all of the wires from one side of the crossarms.

The maintainer last attended a general safety meeting on December 1, 1976. It is not recorded as to whether he had received individual instruction on safe job procedures.

Cause

Failure to properly secure a deteriorated pole before removing the line wires caused the accident.

15. RAILROAD: Missouri Pacific Railroad Company
LOCATION: Hoard, Texas
DATE : March 17, 1977

The Accident

On March 17, 1977, about 7:35 p.m., a Missouri Pacific trackman (crane helper), age 49 with 25 years service, slipped while alighting from a crane moving over a highway crossing at grade nearing Hoard Station. He sustained severe lacerations of the upper left leg when caught between a transport wheel of the crane and the crossing surface. He died about three hours later. It was dark and the weather was clear.

Circumstances Involved in the Accident

The crane, a swing-boom, self-propelled, on-track machine, weighs 41,000 pounds. Besides four on-track wheels 24 inches in diameter, it has four spool wheels 19 1/2 inches in diameter over the flanges, that extend beyond the frame 9 1/2 inches, and are used to move the machine on and off a special flat car for system transporting. All wheels rotate in unison. The boom can be stowed at either end when in on-track transit mode. The operator's controls are at the left side facing the extended boom. There is space on each side of the boom, above and adjacent to the lead transport wheels, and in view of the operator, that employees use while in transit. There is a step mounted above the right lead wheel when the boom is stowed in one direction, but when the boom is stowed in the opposite direction there is no similar step provided. The step is 27 inches in length and 13 1/2 inches wide. The distance from the top of the tread to the frame deck is 7 1/4 inches.

Upon completion of work the crane was returning eastward to the house track at Hoard. Approaching the grade crossing west of the station, the foreman signaled to be let off at the crossing. The crane was slowed to about 1-2 MPH and the foreman alighted from the left front onto the crossing. About the same moment the operator observed the helper alight from the right front and go out of view. He stopped the crane immediately. The foreman heard cries for help and passed around the crane. He found the helper lying on his right side facing north, and pinned beneath the transport wheel. After the crane was moved rearward to free him, he advised that he had slipped.

Applicable Rule

120. - Employees are prohibited from getting on or off moving engines, cars or other equipment except when necessary in the proper performance of their duties. ... (Missouri Pacific Uniform Code of Safety Rules)

Analysis

The trackman had 13 years experience on the crane involved and should have been thoroughly familiar with the machine.

When the accident occurred the crane boom was stowed at the end opposite the end having the step above the right lead transport wheel. It is possible during the ride back from the work site and in the dark, the trackman failed to observe the absence of the step, and stepped onto the moving wheel, falling into the path of the wheel.

The carrier issues safety rule books to each employee, requires a short safety meeting each day, and has a safety rule of the day. Supervisors make regular checks for knowledge and compliance with the rules.

Cause

The probable cause was that the employee slipped and fell into the path of the moving crane.

A contributing factor could have been the design of the crane in respect to the absence of a step above a transport wheel when the boom is stowed.

16. RAILROAD: Consolidated Rail Corporation
LOCATION: Canton, Ohio
DATE : March 17, 1977

The Accident

On March 17, 1977, at approximately 7:00 p.m., a 40 year old Conrail yard brakeman, with 12 years of service, was killed when pinned between the couplers of freight cars being switched at Canton, Ohio. At the time of the accident it was dark and the weather was clear.

Circumstances Involved in the Accident

At approximately 6:45 p.m.,Job CN 204, locomotive 9184, entered the west end of track No. 517 and coupled to three cars at the west end of the track. Job CN 204 then shoved eastward on track No. 517. They were to pick up eight more cars and pull all the cars to the west end of No. 517. The subject brakeman and front brakeman were about 1,500 feet east of the west end of No. 517. The brakeman boarded the east end of the leading car and the front brakeman boarded the locomotive. Shortly afterwards the brakeman gave a stop signal to the engineer who stopped the movement. After approximately two minutes the crew members on the locomotive felt an impact. The conductor asked the engineer if he could see the brakeman, and the engineer said that he could not. The conductor then got off the locomotive and walked eastward along the south side of the track looking for the brakeman. As he proceeded eastward he saw the brakeman's lantern on the ground inside the south rail between the third and fourth cars. He shined his light between the cars and saw the brakeman pinned between the drawbars of the cars. He ran back to the locomotive and he and the front brakeman ran to the yard office to call for an ambulance. The injured employee was moved from the area by ambulance.

Job 201 was switching cars at the east end of the 500 yard and placed four cars to the east end of track No. 517 at approximately 6:40 p.m. After placing four cars in No. 517, Job 201 continued switching operations. According to statements from all crew members of Job 201, the crew did not shove No. 517 at any time. They did not know of the accident until informed by a crew member of Job CN 204.

Applicable Rule

Train, Locomotive and other Transportation Employees

1111. Before fouling, going between or under STANDING equipment for inspection, adjustment, repairs of any other purpose:

(c) Make sure that protection has been provided against any approaching equipment on the same track.

(i) Know that the equipment will not move. (Consolidated Rail Corporation Safety Rules)

Analysis

The brakeman was familiar with the switching operations in the area where the accident occurred. He was aware that switching was being performed at the east end of track No. 517. After stopping his movement, he apparently went between the east car of his movement and the west car of the standing cut of cars on the east end of No. 517. The standing cut of cars moved westward and pinned him between the couplers of the cars.

The brakeman was issued a copy of the carrier's Operating Rules and Safety Rules. The carrier's supervisors make periodic observations of employees in the performance of their duties. On September 8, 1976, this employee last attended a Book of Rules and Safety Rules Class.

Cause

The yard brakeman's failure to perform his assigned duties in accordance with the prescribed safety rules caused the accident.

17. RAILROAD: Louisville and Nashville Railroad
LOCATION: Dent, Kentucky
DATE : April 1, 1977

The Accident

On April 1, 1977, at 10:15 p.m., a Louisville and Nashville conductor, 51 years of age, with 31 years of service, was killed when he was caught beneath the car wheels of a freight train moving northward on the main track within yard limits at Dent, Kentucky. At the time of the accident, the weather was cloudy with light rain.

Circumstances Involved in the Accident

At the south end of Dent Yard, a passing track, 8,250 feet in length, parallels the single main track on the west side. The distance between the near rails of these two tracks is approximately nine feet. At the time of the accident, the area between the tracks was clear of foreign objects and the ground surface was practically level.

After having been off duty for a period in excess of 30 hours, a crew consisting of an engineer, two brakemen and the subject conductor, went on duty at 9:30 a.m., on the day of the accident.

This crew operated a train referred to as Neon No. 3 until 9:05 p.m. at which time they were relieved of train duty at Blackey, Kentucky, about nine miles south of Dent. After being relieved of train duty, the crew of Neon No. 3, including the subject conductor, took a position inside caboose No. 6139. Since the crew of Neon No. 3 was relieved of train duty to prevent exceeding the Hours of Service Law, the crew of Extra 1356 North was instructed to pick up the train of Neon No. 3 from the siding at Blackey and take it to Dent.

When the two trains were consolidated at Blackey, caboose No. 6139 was located as the 94th unit behind the locomotives, and the 64th unit from the rear of the train. When the train was approaching the south end of Dent Yard on the main track at a speed of about five m.p.h., the conductor stepped from the south platform of the caboose to the second step on the west side in preparation to alight from the caboose. With a shoulder bag containing personal articles weighing about eight pounds on his left shoulder, the conductor alghted from the second step of caboose No. 6139 with his left foot forward, facing the direction of movement. When his feet touched the ground he was unable to maintain his balance, and fell between the caboose and the first car south of the caboose.

A brakeman who was a member of the conductor's crew observed the conductor when he fell and made an emergency application of the train air brakes from the emergency brake valve of the caboose. When the train stopped, the upper torso of the conductor was found about eight feet north of the point of fall and his lower torso was found 73 feet north fo the point of fall. No autopsy was performed.

Applicable Rule

No. 28: When alighting from locomotives or cars, keep a firm handhold until sure of secure footing. (Louisville and Nashville Safety Rules)

Analysis

Post-accident inspection of caboose No. 6139 disclosed no defects which would have contributed to the accident. The fatally injured conductor would have been in a better

position to retain his balance after alighting from the moving caboose if he had placed himself on the lower platform step before alighting from the caboose.

The Louisville and Nashville Railroad holds rule classes at two year intervals, oral and written examinations covering the operating rules and safety rules are given each employee. The conductor was last examined on the rules on May 20, 1975.

Cause

The accident was caused by the conductor's failure to keep a firm handhold until he was sure of secure footing.

18. RAILROAD: Indiana Harbor Belt Railroad
LOCATION: Blue Island, Illinois
DATE : April 2,1977

The Accident

On April 2, 1977, at about 11:20 a.m., an Indiana Harbor Belt Railroad yard conductor, age 20, with 11 months service, was run over by a moving freight car in the North yard at Blue Island Yard, Riverdale, Illinois, while engaged in a switching operation. The conductor's left arm and left leg were severed and his body was found under the L-3 wheel of the car. He was pronounced dead at the hospital at 11:45 a.m., the same day. The weather was clear.

Circumstances Involved in the Accident

The Blue Island Yard consists of a classification yard and the North yard. The North yard consists of six tracks of various lengths, running east to west. The tracks are numbered one to six from the south.

At 6:45 a.m., on the day of the accident, a yard crew consisting of an engineer, yard conductor, and two yard brakemen went on duty at Blue Island Yard. The conductor and front brakeman went on duty at 7:55 a.m., in order to have the required off duty period in compliance with the Hours of Service Act. At about 11:00 a.m., this crew was instructed by the yardmaster to move 31 cars off track 18, into track 3 in the North yard and then to set over the 31st car which was "Bad Order" on account of a disconnected top rod, as a temporary expedient. The crew pulled the

cars from track 18 onto 2 lead and after the movement cleared a crossover switch, the eastward movement was stopped by the conductor via radio communication with the engineer. The conductor then instructed the engineer to shove the cars on 3 lead in a westward direction and told the rear brakeman to cut off the "Bad Order" car and let the car drift toward track 6 in the North yard. The conductor was about 30 feet west of this car as the rear brakeman was at the uncoupling lever between the 30th and 31st car. The brakeman gave the conductor a hand stop signal to stop the movement after the car separated. He saw the conductor apparently talking to the engineer via radio to stop the movement, and then the conductor set the radio on the ground on the south side of the car. He then saw the conductor walk around the west end of the moving car to the north side before he lost sight of him. At this time the other 30 cars struck the 31st car, apparently as a result of slack action, as the movement was being stopped. As the brakeman was looking for the conductor, he picked up the conductor's radio on the ground near the center of the 31st car. He then heard a loud moan. The injured conductor was found under a wheel on the north side of car MILW 12246. He was removed to a hospital where he was pronounced dead at 11:45 a.m.

Applicable Rule

Safety Rule 1051: Expect equipment to move at any time; therefore, look in both directions before:

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

(Conrail Safety Rules, Train, Locomotive and other transportion)

Analysis

The conductor received a copy of safety and operating rules at the time of his employment. He was never examined on the rules. On April 8, 1976, he made two student trips at 6:30 a.m. and 11:00 p.m. The third student trip was April 9, 1976, at 3:00 p.m., with an experienced switch crew. Last safety meeting he attended was held on January 22, 1977.

Fresh mud marks were found on the sill step and bottom end ladder tread at the BL location on the west end of the car. Apparently, the conductor was attempting to climb the end ladder to apply the hand brake on the 31st car when slack action caused the train to strike the car, knocking the conductor off, as there was only about 1 1/2 feet separation between the cars when he went around the west end of the moving car.

Cause

The accident was caused by the conductor attempting to board moving equipment without taking proper precautions, as prescribed by rule requiring employees to expect equipment to move at any time.

19. RAILROAD: Union Pacific Railroad
LOCATION: Denver, Colorado
DATE : April 6, 1977

The Accident

A 62 year old Union Pacific Railroad division special agent was shot and killed on April 6, 1977, at about 7:00 p.m., while on duty in his company automobile at the parking lot near the Union Pacific Building in Denver, Colorado. The division special agent was employed by the carrier for 35 years before he died.

The division special agent was shot at close range with a shotgun loaded with buckshot. An off duty Union Pacific security guard was arrested later in the day and charged with the shooting.

Death resulted from multiple gunshot wounds.

20. RAILROAD: Southern Pacific Transportation Company
LOCATION: Beaumont, Texas
DATE : April 6, 1977

The Accident

On April 6, 1977, about 5:10 p.m., a Southern Pacific switchman, age 51, with 27 years service, was fatally injured when crushed by a derailing tank car near Tower 103 at Beaumont, Texas. The switchman received extensive external and internal injuries which resulted in death about 9:20 p.m. The weather was clear.

Circumstances Involved in the Accident

At Interlocking Tower 103 in Beaumont, Texas, an industrial spur track of the Southern Pacific crosses the single main track of the Kansas City Southern at grade. Movements over the crossing are governed by signal indication of an unattended manual interlocking normally "clear" for Kansas City Southern trains and so arranged that a crew member of Southern Pacific trains must operate an electric lock at the crossing which after a predetermined time interval releases a hand-throw lever that permits the removal of two pipe-connected derails from the Southern Pacific track. The electric lock lever must be restored to the locked position and the signal housing door closed after which a signal indication to proceed may be obtained. The derails are electrically locked in non-derailing position while the interlocking is occupied by the train and upon completing its movement, the derails may be returned to derailing position, after a predetermined time interval, restoring the interlocking for Kansas City Southern movements.

On the day of the accident, a switching crew consisting of an engineer, foreman and two helpers went on duty at 7:59 a.m. and were assigned Southern Pacific Locomotive 3436. After performing switching services at various points the locomotive, hauling 36 cars, proceeded westward toward the interlocking about 4:45 p.m. A trainmaster carried one of the helpers to the interlocking in his automobile. The helper, working under the trainmaster's supervision, operated the derails to the non-derailing position and flagged his train into the interlocking where he boarded the locomotive. The trainmaster remained near the electric lock to restore the derails to normal upon completion of the movement. The electric-lock housing was open and the electric lock lever for the derails had been left in the unlocked position. As the last car of the train was passing over the west derail leaving the interlocking, the trainmaster operated the unlocked lever, placing the derails in derailing position which derailed the trailing truck of the last car, a tank car, to the south. The subject helper was riding the dome platform of the car in order to signal the engineer and as the car rolled over he jumped to the south and was crushed by the car.

Applicable Rules

Federal Railroad Administration Rules, Standards and Instructions for Railroad Signal Systems

Part 236.4 - Interference with the normal functioning of a device.

The normal functioning of a device shall not be interfered with in testing or otherwise without first taking measures for insuring safety of train operation which depends on normal functioning of such device.

Southern Pacific Operating Rules.

616. Operator must not actuate levers or buttons controlling a switch, movable point frog, derail or lock when any portion of a train is standing in or closely approaching that area.

Analysis

The trainmaster in attempting to expedite the crossing movement through the interlocking restored the electrically locked derails to the derailing position while the train was moving through the interlocking, derailing the rear car, subsequently causing the death to a member of the train crew who was riding the rear car.

If normal operation of the interlocker had not been interfered with, the accident would not have occurred.

Cause

The accident was caused by the trainmaster interfering with the normal functioning of the interlocking.

21. RAILROAD: Missouri Pacific Railroad
LOCATION: Otterville, Missouri
DATE : April 18, 1977

The Accident

On April 18, 1977, about 5:30 p.m., a Missouri Pacific Railroad conductor, age 54 with 30 years experience, was killed when he fell from and was run over by a boxcar moving out of control at Otterville, Missouri. The weather was cloudy.

Circumstances Involved in the Accident

On the day of the accident, the crew of local freight train, Extra 1647 West, consisting of an engineer, student engineer, brakeman, flagman and conductor, went on duty at 11:30 a.m. at Jefferson City, Missouri. The train arrived

at Otterville on the main track at 5:20 p.m. where a siding and a house track parallel the single main track to the south. The siding is 2,970 feet in length with a 0.9% descending grade eastward. The accident occurred on the siding about 647 feet from the east end.

The locomotive was detached, moved onto the siding and then to the house track through the west switches and coupled to three cars. The cars were moved westward onto the siding and stopped with the east car, empty Hi-cube boxcar CR 237683, clear of the west house track switch. It was uncoupled and permitted to roll eastward on the siding with the conductor riding on the east end of the car. He intended to stop the car on the siding clear of the turnout of the west house track switch in order to perform another switching movement into the house track.

Crew members who became alarmed when they observed that the car had not been stopped, proceeded eastward on the siding with the locomotive and discovered the conductor's body between the rails of the siding near the east end switch. When the crew members arrived at the car, they found the hand brake wheel in its extreme applied position. Without the hand brake being released, they observed that the car's wheels turned freely as it was returned westward on the main track to a point opposite the accident scene.

Federal Railroad Safety Appliance Standards

§ 231.1 * * *

(a) Hand brakes - (1) Number. (i) Each box or other house car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

* * *

Analysis

Boxcar CR 237683 is equipped with WABCO truck mounted brakes. The hand brake is designed to operate the brakes on the truck at the "B" end of the car. The car had previously been placed on the house track because of a broken brake pipe which was repaired by carmen who left the hand brake applied. The hand brake was released by the conductor when the car was moved from the house track.

Tests of the car's brakes were made at the scene of the accident by a mechanical foreman and the air brakes functioned as intended. The hand brake was found to be

ineffective. When it was released and reapplied, the car was moved and the wheels turned freely. Carrier records indicate this deficiency was caused by too much slack in the hand brake chain.

The conductor was qualified on the carrier rules. There was no record of his attending a safety meeting. He had a diabetic history; however, an autopsy was not performed and it could not be determined if this condition contributed to the accident.

Cause

The reason the conductor fell from the car could not be determined. A contributing factor to this accident could have been the failure of the hand brake to function as intended.

22. RAILROAD: Consolidated Rail Corporation
LOCATION: Ashtabula, Ohio
DATE : April 18, 1977

The Accident

On April 18, 1977, at approximately 1:00 p.m., a 57 year old Conrail yard conductor, with 36 years service, was fatally injured when pinned between the couplers of freight cars being switched at Ashtabula, Ohio. The weather was cloudy.

Circumstances Involved in the Accident

At approximately 12:30 p.m., Job AH 103, with locomotive 7844, entered the Reactive Metals, Inc. plant to perform switching operations. The conductor accompanied the locomotive, leaving the two brakemen to couple air hoses on cars left in the Cleveland Electric Illuminating Company yard. The locomotive coupled to one car from No. 1 track, then shoved westward on the lead track toward three cars standing on No. 6 track. The conductor was riding the leading end of the car on the south side. As they neared the three cars standing on No. 6 track, the conductor got off the moving car about 60 feet from the coupling and walked alongside the car to the point of coupling. He displayed a hand signal to stop to the fireman who was operating the locomotive.

The movement stopped when the coupling was made. The conductor continued to walk westward and entered between the second and third cars. After about three minutes the fireman heard the conductor say on the radio, "Don't back up, go ahead Rodney, don't back up." The fireman moved the locomotive eastward about 12 feet and observed the conductor walk from between the two cars and lean against the side of the second car. The engineer and fireman ran to the conductor and assisted him to the ground. The fireman went to the Reactive Metals office to call an ambulance, and the engineer ran to the locomotive to radio the yardmaster for an ambulance. The engineer returned to the conductor. The engineer stated that the conductor told him that he was opening the knuckle on the second car when cars ran in on him. The engine crew stated that there was no movement of the locomotive after the hand signal to stop until the radio transmission from the conductor to the fireman.

Applicable Rules

1051: Expect equipment to move at any time; therefore, look in both directiosn before:

(a) Fouling track
(c) Going between or around end of equipment

1052: When walking or standing for any purpose:

(h) Keep at least 10 feet from end of standing equipment unless protected in accordance with Rule 1111.

1111: Before fouling, going between or under STANDING equipment for inspection, adjustment, repairs or any other purpose:

(f) Equipment must be separated by a distance of at least 20 feet before any drawbar, knuckle, hose or other between equipment adjustment is made.
(i) Know that the equipment will not move.

1114: To open a knuckle on standing equipment:

(a) Stand clear at the side of the equipment.
(Consolidated Rail Corporation Safety Rules)

Analysis

The conductor was familiar with the switching operations in the area where the accident occurred. After coupling the first car to the second car, he apparently noted that the coupling was not made between the second and third cars. He entered between the second and third cars, attempted to open the knuckle on the west end of the second car, and was pinned between the couplers when the third car rolled eastward. Post-accident tests indicated that all cars moved to some degree west and east due to the surge of commodity in the tank cars. The cars were loaded with metallic sodium.

The employee was issued a copy of the carrier's Operating Rules and Safety Rules. This employee last attended a Rules Class on September 14, 1976.

Cause

The accident was caused by failure of a Conrail yard conductor to perform his assigned duties in accordance with prescribed safety rules.

23. RAILROAD: Consolidated Rail Corporation
LOCATION: Fairlane, Ohio
DATE : April 20, 1977

The Accident

On April 20, 1977, at approximately 2:24 p.m., a Consolidated Rail Corporation conductor, age 63, with 30 years service, was struck and fatally injured by an eastbound freight train at Fairlane, Ohio. The weather was cloudy.

Circumstances Involved in the Accident

The accident occurred on No. 2 main track, 1.23 miles east of Fairlane, Ohio. This is a two track main line over which trains operate by signal indication of a Traffic Control System. The tracks are tangent for 2.48 miles east and 3.85 miles west from point of accident with a 0.30% descending grade in a westerly direction. The maximum authorized speed is 30 m.p.h.

The conductor reported for duty at 8:20 a.m., April 20, 1977, in Toledo, Ohio and performed service on train CC-2. This train operates in through service between Toledo, Ohio and Cleveland, Ohio, a distance of about 125 miles. The train was scheduled to stop at Fairlane, Ohio to set off a block of cars and to position the remaining cars in station order. Upon arrival in Fairlane, Ohio, the conductor proceeded to walk on No. 2 main track in an eastward direction toward the front of his train. The flagman was walking about 350 feet to the rear of the conductor when he observed an eastbound train approaching on No. 2 main track. The flagman could hear the horn and see the lighted headlight of the approaching train. At this time, the flagman directed the conductor's attention to the approaching train. The flagman then moved clear of No. 2 main track. The engineer on the approaching train observed the conductor walking on No. 2 main track, appearing to be checking his train. The engineer sounded the horn repeatedly. The conductor appeared as though he was moving clear of the main track. When the approaching train, moving at a speed of about 25 m.p.h. was about 250 feet distant, the conductor unexpectedly stepped between the rails of No. 2 main track. The engineer immediately applied the train air brakes in emergency application while continuing to sound the horn and ring the bell. After striking the conductor, the train travelled about 250 feet. The train consisted of one locomotive, No. 5702 (a GP7 with the long hood forward), seven cars and a caboose.

Applicable Rules

1050: Walk on the Right of Way or walk or stand on the track only when required in the performance of duty. Walk clear of tracks when practicable.

1052: When walking or standing for any purpose:

(c) Maintain sufficient lookout in both directions to know of approaching equipment or close clearance.

1105: When riding on or getting on or off standing or moving equipment:

(a) Use rear step, away from main or live track if practicable and not in confined space.
(e) If equipment is approaching on any main track, move clear of all main traks until sure that no other equipment is approaching on any main track.

Analysis

At the time of the accident, the conductor was walking between the rails of No. 2 main track in the path of the approaching freight train in violation of the rules. He was checking his train and apparently unaware of the approaching train.

The carrier issues a book of safety rules to each employee and conducts annual rules classes. The conductor was last examined on the carrier's rules on September 20, 1976.

Cause

The accident was caused by failure of the conductor to move clear of the main track.

24. RAILROAD: Missouri Pacific Railroad Company
LOCATION: Peveto, Texas
DATE : May 3, 1977

The Accident

On May 3, 1977, about 8:26 a.m., a Missouri Pacific student brakeman, age 34, with two weeks service, was fatally injured when a derailed car over turned crushing him beneath it at Peveto, Texas. The weather was clear.

Circumstances Involved in the Accident

On the day of the accident a crew consisting of an engineer, conductor, two brakemen and the student brakeman went on duty at 7:00 a.m. at Orange, Texas. At 7:20 a.m., they departed with MP Locomotive Unit 1902 and five cars. When the accident occurred at the north end of the storage track, which is parallel to the main track at Peveto, Texas, the crew was performing switching service with Locomotive Unit No. 1902. As the locomotive, moving northward on the storage track hauling 15 covered hopper cars at an estimated speed of four m.p.h., approached the frog of the north switch in the main track, car TLCX 38411, coupled to the locomotive unit, derailed to the east and turned over. The rear truck of the locomotive unit and the next two cars behind TLCX

38411 derailed but remained upright and in line. The student brakeman, riding on the north end of TLCX 38411 jumped off as it derailed, running to the east. The water and vines adjacent to the track made his attempt to escape futile, causing him to be crushed when the car overturned after derailing. The cars were being handled without the use of air brakes.

Carrier's Rules

There were no rules violated.

Analysis

The student brakeman received training in the Missouri Pacific's Brakeman School April 18 to 22, 1977 in Fort Worth, Texas and on-the-job training under the supervision of various conductors until the time of the accident.

The student brakeman was performing the normal duty required of a brakeman at the time of the accident.

Cause

Excessive buff force developed between the locomotive unit and the 15 cars behind it which were being handled without air brakes on a descending grade. This caused the wheels of the first car behind the locomotive unit to apply excessive lateral force to the gage side of the outside rail in a curve, turning over the rail which caused the derailment.

25. RAILROAD: Illinois Central Gulf Railroad Company
LOCATION: Fort Dodge, Iowa
DATE : May 4, 1977

The Accident

On May 4, 1977, about 10:20 p.m., an Illinois Central Gulf section foreman, age 47 with 29 years service, was electrocuted when he came in contact with a 4,150 volt power line in the train yard at Fort Dodge, Iowa. The weather was dark with light rain.

Circumstances Involved in the Accident

The accident occurred approximately 4,145 feet east of the ICG Depot where seven Iowa-Illinois Gas and Electric Company high voltage power lines cross the ICG property.

In the accident area, two power lines were broken by the storm. One power line dropped across four ICG tracks without touching the ground but prevented train movements through the area. The remaining broken power line fell from the ground pole crossarm toward the ground.

On the day of the accident, a tornado struck the Fort Dodge area at 7:25 p.m. The aftermath of the storm included numerous broken lines. The section foreman reported for duty at 8:30 p.m. to inspect track for damage and debris. About 10:15 p.m. the section foreman joined two carrier officials and a switchman at the point where the broken power line hung over ICG trackage. The section foreman began tracing the broken power line on his own initiative. He moved from the track structure into heavy brush on the right-of-way. Carrier officials warned the section foreman of the danger and told him to leave the brush area. A short time later the section foreman came in contact with the energized power line and was electrocuted and pronounced dead on arrival at a local hospital.

Applicable Rules

401. All electrical wires and conducts are to be considered alive at all times unless employee have positive knowledge to the contrary. Do not depend on weatherproof covering for protection...(Illinois Central Gulf Railroad Guidelines to Safety).

Analysis

Apparently, the section foreman acted impulsively when he placed himself in jeopardy by moving into a brush area after being aware of a broken power line in the immediate area.

Section foremen are issued Safety and Maintenance of Way Rule Books and are required to read the "Rule of the Day" to employees under their supervision. The carrier does not conduct regular safety meetings.

Cause

The employee failed to take proper safety precautions in accordance with carrier safety rules.

26. RAILROAD: Port Authority Trans-Hudson Corporation
LOCATION: Jersey City, New Jersey
DATE : May 5, 1977

The Accident

On May 5, 1977, approximately 1:37 a.m., a Port Authority Trans-Hudson Corporation motor switchman, age 35 with 15 years service, was fatally injured when struck and crushed between two electrically operated work car trains on Track No. S, Journal Square, Jersey City, New Jersey. The weather was dark and wet.

Circumstances Involved in the Accident

On the day of the accident, two motor switchmen were dispatched to "C" Yard to get two blocks of electrically operated work cars (set of 3 each).

This carrier has three classes of equipment which consist of "Black" cars used in work train service; "K" and "PA" cars used in revenue passenger service. The different equipment requires the use of different types of brake valve handles to operate the braking systems.

Both men went to Track No. 16 in "C" Yard, got on a set of three motors and pulled onto main line (S Track). They then went back into "C" Yard and one motor switchman got off and went to the second set of motors. The first motor switchman returned to the main line (S Track), and went directly to Journal Square and stopped just short of a third set of cars. The motor switchman then got off and proceeded to aline the Van Dorn radial coupler at the front end of the lead car.

The second motor switchman then applied a brake valve handle not intended for use on this equipment, allowing the handle to by-pass the handle off and emergency position on the brake valve and leave the brake in the released position. After leaving Yard "C" and proceeding to Journal

Square, the motor switchman sighted the standing equipment on "S" Track at Journal Square and attempted to apply the brakes in emergency position. However, due to the use of improper "K" brake valve handle, the motor switchman could not stop the train and collided with the standing equipment at Journal Square. The collision caused the standing equipment to move forward crushing the first motor switchman between the two sets of standing equipment.

Applicable Rules

317 In moving up to couple or to other cars or in moving up to another car or cars, or when closing in on bumping blocks, motormen or switchmen must come to a full stop at least ten feet from the standing car or cars or bumping block, then proceed with caution using special care to avoid injuring passengers or employees or damaging equipment.

400 The safety of passengers and employees is at all times to be considered of first importance. All employees are required to exercise constant care to prevent injury to persons and damage to property, and in all cases of doubt they must take the safe course. (Port Authority Trans-Hudson Corporation Book of Rules (Safety Rules)

Analysis

Had the second motor switchman used the proper brake valve handle, the train would have stopped within a safe stopping distance and would not have collided with train ahead. The carrier issued the following notice after the accident occurred:

Notice No. 738

Effective immediately, all employees required to operate "black" car when moving work "flats" MUST USE "BLACK" CAR HANDLES, which have been issued for that purpose. Under no condition should "PA" handles be used for the moving of "black" cars.....

Cause

Failure of motor switchman operating the train to maintain safe control of the movement of his train.

27. RAILROAD: Consolidated Rail Corporation
LOCATION: South Kearny, New Jersey
DATE : May 9, 1977

The Accident

On May 9, 1977, at about 8:15 p.m., a 26 year old Consolidated Rail Corporation trainman with nine months service, was struck and fatally injured by a Port Authority Trans-Hudson Corporation electrically operated passenger train at South Kearny, New Jersey. The weather was dark and raining.

Circumstances Involved in the Accident

Meadows Yard is a flat switching classification yard used for the make-up and dispatchment of trains, and is adjacent to the main tracks of the Port Authority Trans-Hudson Corporation (PATH) commuter line. The center of the eastward main track of the PATH is 14 feet from the center of the "ought" track of the Meadows Yard.

On the day of the accident, ConRail crew No. 75-B, consisting of an engineer, conductor, and two brakemen went on duty at 2:30 p.m. at the Meadows Yard. All crew members had the required off duty period.

Prior to the accident, the conductor instructed two brakemen to switch out two cars from No. 8 display track and place them with a caboose on the "ought" track for train TV-11. The movement was to be governed by radio instructions from the conductor to the engineman. Crew 75-B moved eastward from No. 8 display track with the locomotive, caboose car and two box cars. The conductor was at the west end crossover switch from No. 8 display track to the "ought" track, and one brakeman dismounted from the caboose at the east end crossover switch to set the switch for a reverse movement to the "ought" track. Both men were on the south side away from the adjacent PATH main track. At aproximately 8:15 p.m., for reasons unknown, the second brakeman dismounted from the east end of the caboose on the north side and was struck and killed by an eastbound passenger train. There were no witnesses to the accident.

The PATH extra non-revenue eastbound passenger train, consisting of seven multiple-unit commuter cars, operated by an engineer and conductor in the control car, departed Newark station at 8:08 p.m. toward Jersey City, New Jersey.

At approximately 8:15 p.m., when passing the Meadows Yard, at a speed of 55 miles per hour, the train struck and killed the ConRail brakeman. The crew of the PATH train was not aware of the accident until arrival at Jersey City, New Jersey. Both men stated that the headlight and window wipers were operating.

Applicable Rules

1102: Get on or off moving equipment only when:

(a) Necessary for the proper performance of duty, and then only when the length of the train or draft, or the location makes it impracticable to stop the equipment.

1105: When riding on or getting on or off standing or moving equipment:

(a) Use rear step, away from main or line track if practicable and not in confined space... (ConRail (PC) Safety Rules)

Analysis

The brakeman entered service on August 12, 1976, and received his last physical examination on that date. He received instructions on Company's Book of Rules and Safety Rules at pre-employment.

It could not be determined why the brakeman dismounted from the caboose on the north side or why he failed to observe the approach of the passenger train. Sight distance in the area of the accident is well over 2,000 feet.

Cause

This accident was caused by failure of the brakeman to properly dismount from moving equipment and also his failure to observe movement of trains on adjacent track.

28. RAILROAD: Burlington Northern, Incorporated
LOCATION: Eddy, Montana
DATE : May 11, 1977

The Accident

On May 11, 1977, at about 9:50 a.m., a Burlington Northern machine operator, age 47 with 25 years service, was killed at Eddy, Montana, when a pickup truck he was repairing rolled back and crushed him. The weather at the time of the accident was clear.

Circumstances Involved in the Accident

On the day of the accident, the machine operator and a sectionman rode from their homes to a point about two miles east of Eddy in a 1975 Chevrolet four-wheel drive pickup truck owned by the machine operator. From that point the men began plowing fire guard along the railroad right-of-way with one man operating a small bulldozer and the other driving the pickup ahead to obtain track permits and to provide flag protection where necessary. After about two hours work, at about 9:00 a.m.,the machine operator told the sectionman to operate the bulldozer because his back was bothering him, and he wanted to drive the pickup to Eddy and to attempt to repair a noise he had noticed in the front-wheel drive mechanism.

The sectionman continued the plowing until he reached Eddy. He noticed the truck was parked with its front wheels up a slight incline. He walked to the truck and discovered the machine operator lying on his back with his head and upper body under the front portion of the truck behind the right front wheel. The truck had rolled backwards and the right front wheel was partially on the man's lower rib cage. The man was unconscious. The sectionman started the truck and moved it forward enough to free the machine operator. He dragged the man from under the truck, called to a farmer to get help, and attempted to revive the machine operator with mouth-to-mouth resuscitation. The machine operator was pronounced dead by an ambulance driver who arrived at the scene about 45 minutes later.

Applicable Rules

539 - Employees shall not place any part of their body under a vehicle to make inspection or repair unless the engine is stopped and vehicle is properly blocked to prevent movement...(Burlington Northern, Inc., Safety Rules).

Analysis

The truck had been driven up a small incline, apparently to provide greater clearance to work under the front drive shaft. There was no evidence or indication that the wheels of the truck had been blocked to prevent movement. The sectionman who first discovered the accident stated that he was so shaken and upset at the time that he could not recall if the hand brake was applied when he hurried to move the truck to free his fellow employee.

The 1975 Chevrolet 3/4 ton four-wheel drive pickup was owned by the machine operator. He used the truck regularly in the performance of his railroad duties hauling gasoline, tools, parts, etc., to and from company machines he operated. The man had long exposure to the railroad safety rules in various duties within the track department as a sectionman, welder, track watchman, relief track supervisor, and operator of various machines.

Cause

This accident was caused by the failure of the machine operator to properly block the wheels of his truck to prevent movement before crawling under the vehicle to make repairs.

29. RAILROAD: Southern Railway
LOCATION: Toccoa, Georgia
DATE : May 11, 1977

The Accident

On May 11, 1977, about 10:45 a.m., a Southern Railway bridge and building apprentice, age 39 with two years service, was fatally injured when he fell from a bridge at Toccoa, Georgia. The weather was clear at the time of the accident.

Circumstances Involved in the Accident

On the day of the accident, the carrier's bridge and building crew reported for work at 7:00 a.m. at Greenville, South Carolina. The crew then travelled to Toccoa, Georgia for maintenance to be performed on the Wells Viaduct structure. This structure, 190 feet in height, 1,400 feet in length, is an open deck, double track, bridge without walkways or handrails on either side. The work consisted of cutting and removing excessive tie-pad ends extending beyond and above the tie plates. These pads are constructed of asbestos materials and placed between the tie and the tie plate to prolong the service life of the tie.

The apprentice got into a squatting position holding a single edge ax on that portion of the tie pad to be cut. He placed himself parallel to the track facing south, between the running rail and a 4" x 8" guard timber. This guard is located about 22 inches outside the running rail, parallel to the rail, and anchored to each tie. Another crewman, standing between the running rails at right angles to the track, was striking the ax with a sledge hammer, thereby severing the tie pad. The two crewmen then proceeded to the next tie pad to repeat the process. Upon moving to another pad, the apprentice stood up and fell off the edge of the bridge, 150 feet to the ground. He was pronounced dead on the scene by the emergency personnel and coroner.

The foreman and another crewman were at the north end of the bridge, about 300 feet from the two men engaged in the tie pad cutting operation, at the time of the accident.

Analysis

It required extreme caution to walk on that portion of the bridge between the running rail and the edge where subject apprentice was performing his duties. The two men had worked 300 feet from the north end of the bridge without incident prior to the accident.

On a structure of this magnitude, safe working movements by the crew members should have been emphasized prior to the commencement of work on the structure.

The subject apprentice was in attendance at a safety meeting held at Lavonia, Georgia, the day preceding the accident. General safety was the main topic. However, the carrier has no specific rules applicable to this type of operation.

Cause

The accident was caused by the apprentice loosing his footing and falling from the bridge structure and also by failure of the working party to use any safety devices to prevent this type of accident.

30. RAILROAD: Southern Pacific Transportation Company
LOCATION: Roseville, California
DATE : May 16, 1977

The Accident

On May 16, 1977, at approximately 10:45 a.m., a Southern Pacific Transportation Company maintenance-of-way laborer, age 48 with 24 years service, sustained fatal injuries when he was struck by a train at Antelope near Roseville, California. The weather was clear.

Circumstances Involved in the Accident

On the day of the accident, the laborer was performing his regularly assigned duties of inspecting yard tracks at Antelope, which is located 3.8 miles west of Roseville, California, timetable direction, in the Southern Pacific Transportation Company Roseville Yard.

There is a crossing of the southerly hump lead, providing for foot traffic, located approximately 100 feet west at the control tower at Antelope. There is a pedestrian underpass located near the control tower. There is a welfare building located immediately north of the control tower and the hump leads.

A 91-car train was being shoved easterly out of the receiving yard on the southerly lead toward the hump at approximately four miles per hour. The engine foreman observed the laborer walking in an easterly direction between the yard leads. The engine foreman was standing between the hump lead tracks approximately 300 feet west of the point of accident. He observed the laborer approach the foot crossing and step over the rail in front of the cut of cars without looking in the direction of the oncoming yard movement. He called the engineer by radio and instructed him to stop immediately. The engine foreman witnessed the

lead car strike the laborer in the back and knock him to the ground between the rails. The lead car stopped approximately 100 feet beyond the point of the accident. The laborer sustained fatal injuries.

Applicable Rules

817-Employees must be alert when engine or cars are passing on adjacent tracks, and must keep a sufficient distance from passing equipment to avoid possibility of being struck by anything projecting or that may be falling or thrown therefrom. On multiple train tracks, they should keep clear of all main tracks, they should keep clear of all main tracks while train is passing. They must not depend on others to notify them of approaching trains, engines or cars.

M853-Where there are two or more tracks, employes whose duties require them to walk on tracks must, when practicable, walk against the current of traffic, keeping a lookout for trains in both directions...(Rules and Regulations for the Maintenance of Way and Structures).

Analysis

At the time of the accident, the laborer was walking between the rails on the hump lead track, in the path of an approaching yard movement. Apparently, he intended to cross the track, proceed through the pedestrian underpass to the welfare building and take his lunch break.

Conditions did not require the yard crew to position a crew member on the leading car to protect the movement.

The carrier does not require maintenance-of-way laborers to pass a book-of-rules examination. However, it does post a General Notice of General Rules and Regulations at the starting place of the crew. Such a notice was posted at this laborer's starting point and includes rule number 817. They also have a program of informal safety discusions between the supervisors, foreman and laborers. The carrier's records show that the program covered rule M853 the week of March 1, 1977, and rule 817 the week of March 8, 1977.

Cause

This accident was caused by the laborer's failure to keep a sufficient distance from passing equipment and a lookout for trains in both directions.

31. RAILROAD: Atchison, Topeka and Santa Fe Railway Company
LOCATION: Oakland, California
DATE : May 18, 1977

The Accident

On May 18, 1977, at approximately 12:55 a.m., a Santa Fe brakeman was fatally injured when the wheels of an empty gondola car ran over his body. The weather was clear and dry. He was 60 years old with 27 years service.

Circumstances Involved in the Accident

The rear brakeman was a member of the crew assigned to the Oakland Local Train using locomotives ATSF 3342 and ATSF 3356. The crew went on duty at Richmond, California at 8:55 p.m. with instructions to switch industrial tracks in the Oakland area including the Davis Metal Spur track. This track parallels the east side of Wood Street and curves westward to meet the main track at the street center. A loading platform stands 4 feet 3 inches above the top of the rail and 6 feet 11 inches from the center line of the curved track.

At approximately 12:50 p.m., the rear brakeman went to the south end of two empty gondola cars standing on a straight track at Davis Metal. The front brakeman lined the switch for the locomotive to move into the Davis Spur and remained near the switch to protect the movement against automobile traffic. The conductor closed the gate at a nearby industry.

The rear brakeman coupled locomotive ATSF 3356 to the cars and gave the "back-up" signal. The engineer saw him riding on the side steps of the locomotive just ahead of the trailing gondola cars before the engineer turned to look in the direction of the movement. After moving about 50 feet the engineer stopped the movement when the front brakeman saw a lighted lantern fall to the ground and gave a "stop" signal. The body of the rear brakeman was lying across the east rail near the south edge of the loading platform. The south wheels of the following gondola car (SP 337817) had run over the body.

Applicable Rules

...any unusual condition which may affect the safe...operation of the railroad, must be reported...(ATSF Safety Rule F).

...There are...side obstructions...on or near the right of way which may be dangerous. Employees must inform themselves as to location of such obstructions...and use due care to avoid injury therefrom. A list of obstructions that are considered especially dangerous will be shown in time table...(ATSF Safety Rule 759).

...Employees are not required to incur risks and are directed to exercise proper care and judgment to protect themselves and others...(ATSF Safety Rule 4).

...When riding on engines or cars, sit or stand in a safe position and do not permit legs or arms to protrude over sides or ends...(ATSF Safety Rule 53).

Analysis

This crew had worked regularly on the same job. They knew the Davis dock was an obstruction and had discussed it among themselves but had never reported it to authorities. The carrier had issued no warning about the obstruction. The rear brakeman rode the gondola cars into the Davis Spur and past the obstruction on a previous night. The proximity of the dock to the curved track violates the State of California Public Utilities Commission General Orders No. 26-D relative to clearances, and was a causal factor in the accident.

The carrier issues a book of safety rules and supervisors make regular inspections to assure that employees engage in safe practices. The crew attended a safety meeting five days prior to the accident. The carrier conducts yearly examinations on the Rules of the Operating Department. The subject employee passed this examination March 19, 1977.

Cause

While riding on the side of a locomotive, the rear brakeman collided with a known obstruction and fell to his death.

32. RAILROAD: Boston and Maine Corporation
LOCATION: West Cambridge, Massachusetts
DATE : May 20, 1977

The Accident

On May 20, 1977, at approximately 11:03 p.m., a Boston and Maine Corporation brakeman, age 31 with 11 years of service, 5 1/2 years as a brakeman, was killed when struck by an eastbound passenger train. The weather was clear.

Circumstances Involved in the Accident

At 9:30 p.m. on the day of the accident, BE1, a westbound freight train consisting of 3 diesel electric locomotive units, 76 cars and a caboose departed Boston, Massachusetts on the Fitchburg Route. The engineer, conductor, and head brakeman were on the locomotive at the front of the train, and the flagman was in the caboose. BE1 arrived at West Cambridge Yard, 4.16 miles west of Boston, and stopped on the westward main track. Fourteen cars were picked up in the yard and added to the head end of BE1. When brake pipe pressure was restored, BE1 departed westward at approximately 10:50 p.m.

Train No. 638, a first class passenger train, consisting of a single Rail Diesel Car, departed eastward from South Acton, Massachusetts on the Fitchburg Route, 25.06 miles west of Boston, and passed train BE1 in the vicinity of the station at West Cambridge. Approaching West Cambridge, the speed of No. 638 was reduced to comply with signal indications. At a point 1,450 feet west of the station at West Cambridge, the engineer of No. 638 saw a figure standing between the rails of the eastward track with arms raised and waving. He immediately made an emergency application of the train air brakes. The train struck the figure before it could be stopped.

Applicable Rules

G. The use of intoxicants or narcotics by employees subject to duty, or their possession or use while on duty is prohibited...(Boston and Maine Safety Rules).

S41. When necessary to cross onto, be on, or near tracks, employees must frequently look in both directions along the track and must clear the track upon which train, engine, or car is approaching...(Boston and Maine Safety Rule S41).

Analysis

The subject employee was last seen by the assistant trainmaster. The trainmaster stated that the employee appeared to be normal when he transported him to the caboose of BE1. No other employee of the railroad saw the flagman from the time he boarded the caboose at approximately 8:20 p.m. until he was struck by No. 638 at 11:03 p.m.

The company doctor testified at the carrier's hearing that a State Pathologist performed an autopsy on the subject employee about 12 hours after the accident and, at that time, found his blood-alcohol content to be 0.19 percent.

The carrier issues each operating employee a copy of the safety rules. Supervisors are required to hold semi-annual safety meetings and trainmasters make monthly operational tests.

Cause

This accident was caused by the employee standing on the track in front of an approaching train while under the influence of alcohol. Medical tests indicated that the brakeman had a blood alcohol level exceeding the percentage legally tolerated in the state of Massachusetts.

33. RAILROAD: Southern Pacific Transportation Company
LOCATION: Houston, Texas
DATE : May 23, 1977

The Accident

On May 23, 1977, at approximately 6:05 a.m., a Southern Pacific switchman, age 23 with 31 days service, was crushed between a locomotive and a freight car in Englewood Yard, Houston, Texas. The switchman received extensive external and internal injuries resulting in instant death. The weather was clear.

Circumstances Involved in the Accident

At Englewood Yard in Houston, a track known as the North Wing is used to haul cars from the north receiving tracks around the north hump. No. 1 track has an extension eastward from a crossover switch known as North No. 1 pocket track. North No. 2 and North No. 5 are receiving tracks. When cars are in North No. 1 pocket track, the lead switch is normally lined for North No. 2 track.

A crew consisting of an engineer engine foreman, and two helpers went on duty at 11:59 p.m., May 22, 1977. They were assigned a locomotive consisting of four SP Alco C628 diesel-electric units coupled in multiple control. The crew performed switching at the hump. After finishing their lunch, the crew was instructed to pull the cars in North No. 2 track to the clearing point, then pull North No. 5 track and double to the cars on North No. 2 track and haul them through the North Wing track to the hump. The subject switchman routed the locomotive down the North Wing track, stopped at North No. 2 track switch, then called the engineer by radio to come ahead.

A short time later the switchman radioed the engineer to stop. The engineer stopped, waited a short time, then notified the hump yardmaster something was wrong. The engineer then walked to the end of the locomotive and found the switchman crushed between the right front steps of unit 3136 and SP 463697, the 13th car from the east end in North No. 1 pocket.

Applicable Rules

104A. When switch is lined, employee setting it must see that both points have moved to proper position. Switch must be secured as soon as lined and...(Southern Pacific Operating Rules).

Analysis

At the time of the accident the switchman, with very little experience, was working only with the engineer. The switchman, due to confusion or lack of knowledge, operated the wrong switch and let the locomotive into the cars in North No. 1 pocket track. The switchman's lantern was found lying alongside the track, and the radio he was using was found cut in two with a part of it on the truck side frame above the spring assembly of SP 463697. The foreman was in the Crest Tower, and the other helper was in the switch shanty at the time of the accident.

Cause

The accident was caused by an improperly lined switch, permitting the locomotive to collide with a car in an adjacent track.

34. RAILROAD: Consolidated Rail Corporation
LOCATION: Vintondale, Pennsylvania
DATE : June 8, 1977

The Accident

At 8:10 a.m., June 8, 1977, a Consolidated Rail Corporation track foreman, age 57 with 38 years service, was fatally injured and died a short time later as a result of head and internal injuries received in a highway vehicle accident at Vintondale, Pennsylvania. The weather was clear.

Circumstances Involved in the Accident

On the day of the accident, the ConRail Corporation track foreman was assigned to pilot and direct vegetation spraying operations westward from Vintondale, Pennsylvania, on the Black Lick Secondary Track. He reported for duty at 7:00 a.m. at Cresson, Pennsylvania.

As Asplundh Tree Service Expert Company truck equipped for highway and rail operation with a 1,500 gallon capacity tank containing about 100 gallons departed Cresson, Pennsylvania about 7:10 a.m. with an Asplundh employed driver and helper and the track supervisor occupying the track cab. An Asplundh supervisor followed in an Asplundh automobile.

About 18 miles west of Cresson, Pennsylvania, the two vehicles entered onto Pennsylvania Legislative Route 11029 and proceeded north westward toward Vintondale, Pennsylvania about three miles distant. For approximately one-half mile this route is level and thence descending with numerous curves and varying grades. In the vicinity of the accident the grade averages about six percent.

According to the Asplundh supervisor, the truck was approaching Vintondale at a speed of 30 to 35 m.p.h. when he saw the truck brake lights illuminate. The truck then appeared to rapidly increase speed and to swerve entering

a curve to the left and disappeared from view. In the interim the supervisor heard a loud crash. When he rounded the curve he saw a clear road and came upon the overturned truck only a short distance from the Vintondale Boro line. The impact sheared a telephone pole and a large tree along the southeast edge of the roadway. The three occupants had been catapulted from the truck cab.

Tire marks observed at the scene measured 216 feet after the truck started swerving in both lanes. Double skid marks of 299 feet indicated the brakes on the rear wheels locked. These marks again appeared in both lanes. During the final 88 feet, the right rear wheels were on the east berm. The truck overturned, sheared off a telephone pole three feet east of the paved surface and a 20-inch diameter tree, nine feet east of the paving.

Applicable Rules

Pennsylvania highway signs on this route warn operators of trucks over 21,000 pounds gross weight to use lower gear ratio.

Exact weight of the truck at the time of the accident is not known.

Analysis

There were no witnesses to the truck accident, which made an exact determination of the cause impossible. According to the driver's statement, he lost his brakes while decending the hill and could not stop the truck.

A post-accident examination of the tank-truck's brake system revealed that it was in a generally good condition. The hand brake lever was found in the release position, and the shift lever was found in the 4th or 5th gear position.

Cause

The accident was caused by the driver being unable to control the speed of the tank-truck on a long descending grade.

35. RAILROAD: Illinois Central Gulf Railroad
LOCATION: Auburn, Illinois
DATE : June 9, 1977

The Accident

On June 9, 1977, at approximately 9:08 a.m., an Illinois Central Gulf track foreman, age 62 with 38 years service, was fatally injured when he was struck by a northbound Amtrak passenger train while a track gang was replacing a highway crossing. The weather was clear.

Circumstances Involved in the Accident

This is a single track line over which trains operate by signal indication of a centralized traffic control system. The main track is paralleled by a switching lead on the west side extending through the City of Auburn. The accident occurred on the main track at State Highway Crossing 104, which was barricaded from highway traffic during repair. The track in the vicinity of the accident is practically level. From south to north, the track is tangent for approximately a mile. 920 feet to point of accident and 1,275 feet beyond, there is a 0 degree 30 minute curve to the right. A person can see an approaching train from the south on the main track, a minimum of 2,735 feet from the crossing. Maximum authorized speed for passenger trains in the vicinity of the accident is 79 m.p.h.

Before going to work on the day of the accident, the foreman obtained a copy of "Line up of Trains" from his track supervisor, which included Amtrak No. 302. Later, at the scene of the accident, the track supervisor reminded the foreman of Amtrak No. 302 and instructed him to be sure and clear the train by at least 15 minutes. Amtrak No. 302 departed its initial station on time and was running 15 minutes late at the time of the accident.

A Burro crane was on the switching lead, near the crossing, and had activated the crossing protection signals prior to the approach of the passenger trains. Members of the track gang were using a chain saw and others were working between the main rails. An Illinois Highway Department employee heard the whistle and saw the approaching passenger train. He observed that the men working on the main track apparently did not see nor hear the train because of the noise made by the machines and chain saw. He called repeated warnings to the men and was finally heard by the foreman

who ran from the west side of the main track giving warning signs to his men. As the men moved into the clear, the foreman crossed in front of the train, apparently to remove a one-inch board lying near the east rail. As he was attempting to remove the board he was struck by the train.

As Amtrak No. 302 consisting of a GE-P30 locomotive and six passenger cars, approached the accident scene, the engineer observed the maintenance of way equipment on an adjacent track and men working on the main track. The train was traveling at 79 m.p.h. and the engineer stated he continued sounding the whistle about a quarter of a mile in advance of the crossing. When the men did not move from the main track, he placed the train brakes in emergency about 700 feet in advance of the crossing and continued sounding the whistle. The train stopped approximately 1,800 feet beyond impact.

Applicable Rules

Rule N. DANGEROUS POSITIONS - Employee must not place themselves in dangerous positions and must call to the attention of others that they must not do so...

Employees must not remain near the track when trains are passing. Where there are two or more tracks, they must, when practical, stand outside and clear all such tracks. They must not stand close to switches while trains are approaching or passing, and must not rely on others to notify them of the approach of trains, but must expect the movement of trains at any time on any track in either direction...(ICG Rules for the Maintenance of Way and Structures).

Analysis

The track foreman had been last examined on the "Book of Rules," April 25, 1974. He attended on-the-ground safety meetings held by the supervisory personnel two times a month. His personal record indicates no discipline problems throughout his employment.

Cause

The accident was caused when the foreman failed to stay clear of the approaching passenger train.

36. RAILROAD: Southern Pacific Transportation Company
LOCATION: Dayton, Texas
DATE : June 15, 1977

The Accident

On June 15, 1977, at 10:30 p.m., a Southern Pacific Transportation Company conductor, age 62 with 39 years service, was fatally injured when struck by an automobile on U. S. Highway 90 at Dayton, Texas. It was dark and the weather was clear and warm.

Circumstances Involved in the Accident

The accident occurred in the left lane on the westbound side of a level, four lane, undivided portion of U. S. Highway 90 within the city limits of Dayton, Texas. The Southern Pacific's Baytown Branch tracks cross the highway at the point of the accident, at about a 90-degree angle. There are no cross walks or lights at the scene of the accident. The conductor was wearing a light multicolored short-sleeved shirt and black slacks. The automobile that struck the conductor was traveling westbound in the left or south lane of the highway.

On the day of the accident, the conductor, engineer, and two brakemen went on duty at Echo, Texas, east of Dayton, at 8:25 p.m., after having the required off duty period. The conductor and crew arrived at Dayton at 10:00 p.m.

Upon arrival at the Dayton office, the conductor received orders for the train he was to operate, and instructions from the trainmaster as to the work to be performed. The trainmaster then hauled the crew in an automobile about one mile west, where their locomotive was standing on the Baytown Branch Line.

After arriving at the location of the locomotive, the engineer and the two brakemen proceeded on foot to the locomotive. The conductor took his lantern from his bag and started toward the highway, presumably to line switches, enabling the locomotive to enter the carrier's east-west main track.

The trainmaster left and proceeded about one-half mile south toward Baytown, Texas, when he heard on the radio from an engineer of another train working at Dayton, that the engineer had seen a lantern fly through the air, and that a brakeman had been struck by an automobile.

The trainmaster immediately turned around and drove to the accident area where he found the conductor lying in the roadway about 75 feet west of the crossing. Enroute to the scene, the trainmaster instructed the Dayton station to call an ambulance. The ambulance attendants indicated to the trainmaster that the conductor was dead.

The driver of the automobile told the investigating Dayton police officer that he did not see the conductor before he struck him. The driver further stated to the officer that he was on his way to work, traveling westbound at a speed of about 50 m.p.h., which is the posted speed limit through the accident area. The police officer said that skid marks about 145 feet long made by the automobile indicated that under the conditions, the automobile was traveling 45-50 m.p.h.

Analysis

No carrier operating rules were involved.

The conductor was crossing the highway in an unlighted area. An automatic crossing signal device is installed at the accident scene but was not operating at the time of the accident since no engines or cars were in the circuit to activate the device.

The lighted electric lantern carried by the conductor would be difficult to identify by a driver in the face of oncoming automobile traffic.

The conductor had no known physical impairment which would have contributed to the accident.

Cause

The accident was caused by the conductor failing to yield the right-of-way to an oncoming vehicle.

37. RAILROAD: Atchison, Topeka and Santa Fe Railway Company
LOCATION: Puente, Texas
DATE : June 21, 1977

The Accident

On June 21, 1977, at approximately 11:30 a.m., an Atchison, Topeka and Santa Fe trackman, 46 years of age,

with 5 weeks of service, was killed when he was struck by rail tongs causing him to fall from the top of bridge 19.3, a ballasted deck bridge near Puente, Texas. The weather was clear.

Circumstances Involved in the Accident

The structure is a combination inverted deck truss and deck plate girder bridge with a ballasted deck, 1,739 feet in length. There is a walkway and handrail on the east side of the bridge only. Welded rail had been laid across the bridge at which time the released jointed rail had been lined over into the walkway area with the rail and joints intact.

On the day of the accident, a track foreman and a 10-man crew were using a self-propelled speed swing crane, designated as AT 3155, to move the released rail in seven rail length sections from the walkway to the center of the track. The rail was being handled with rail tongs attached to a 48-inch cable on the end of the crane boom. The accident victim and one other trackman were behind the crane installing rail anchors on the welded rail. At the time of the accident, the crane operator had swung the north end of the rail section into the center of the track. He backed up one rail length and warned the two men behind his crane to get out of the way. An employee then attached the tongs to the second section and signaled the operator to lift the rail and pull it to the center of the track. The two men who were behind the crane were walking alongside the west side of the crane on the opposite side from the walkway. The trackman was in the lead and continued on past the crane. The trackman stopped opposite the tongs and turned to speak to the man beside the crane when the tongs slipped off the rail and struck him, causing his fall to a steel girder three feet below the deck, and then to the ground, 113 feet below. He received extensive internal injuries which resulted in death minutes later. The crane operator stated that he did not see the two men walking near the crane. Neither the crane operator nor the employee handling the tongs saw the victim move the 10 or 12 feet from the front of the crane to the position where he was struck by the rail tongs.

Applicable Rules

Rule 222---When necessary to lift at an angle, see that all persons are in a safe position...(ATSF Safety Rule).

Rule 234---Employees working in conjunction with or in the vicinity of lifting operations must keep clear of swinging boom or cab. Be alert for unexpected swing of load...(ATSF Safety Rule).

Analysis

The rail handling procedure being employed involved picking up the rail with the rail tongs and pulling the rail angularly toward the center of the track. This angular pull created sufficient twist between the tongs and rail head to cause the tongs to slip from the rail. The rail handling procedure itself required only the crane operator and an employee to handle the tongs, however, several other men involved in separate phases of the operation were working in close proximity. This situation set up unsafe working conditions, ultimately leading to the accident. The hazards could have been minimized by placing men not directly involved in the rail handling at other locations on the bridge.

The carrier issues a book of safety rules and requires all new employees to attend a two-day course where safety rules are discussed, and where the proper use of tools and materials handling techniques are demonstrated. Safety meetings are conducted at the beginning of each week. The carrier does not require the use of safety nets or safety lines while working on bridges.

Cause

The trackman was walking alongside a rail being pulled into the center of the track which slipped off the rail tongs and struck him.

38. RAILROAD: Louisville and Nashville Railroad
LOCATION: Atlanta, Georgia
DATE : June 22, 1977

The Accident

On June 22, 1977, at approximately 6:20 p.m., a Louisville and Nashville locomotive engineer was killed when the switch locomotive he was operating left the tracks and overturned down a 35-foot embankment at Tilford Yard, Atlanta, Georgia. There were no witnesses to the accident. The weather was clear.

Circumstances Involved in the Accident

Tilford Yard consists of northbound and southbound receiving, classification and departure yards. Classification of cars is performed on a hump located between the receiving and classification yards.

Switches north of the classification yard are hand operated. The mainline, on the west side, converges with track No. 492, and also with track No. 559 on the east side at a point north of a 35-foot embankment containing two parallel butt-end tracks, Nos. 320 and 321. The ends of these two tracks are about 1,920 feet from dwarf signals, Nos. 357 and 356, that control access to the tracks in the yard. The tracks can accommodate 42 cars averaging 45 feet in length.

The crew of yard switching job No. 201 went on duty at 2:00 p.m. on June 22, 1977, at Tilford Yard, composed of an engineer in the locomotive cab and three switchmen working on the ground. The crew used a switcher type locomotive connected to a booster unit. They hauled 35 cars, 1,900 tons, from the departure yard to track No. 320 in order to clear other tracks in the yard for another train movement. The crew members were at various locations near the yard office building, one of whom operated the switch allowing job No. 201 to move onto track No. 320. It is customary for the crew to allow the engineer to use his own judgment regarding the distance he pulls back to clear this switch.

Communications with the engineer were terminated by the switchman while waiting for other train movement. Sight distance of the locomotive was obscured due to the terrain. Nothing was observed by anyone for about 20 minutes. When the crew members tried to communicate with the engineer by radio to resume operations, they got no response. At the same time, the crew on train No. 638, moving north on the mainline, saw the overturned locomotive units of job No. 201 adjacent to the mainline on track No. 492 and radioed for help. The assistant trainmaster heard the radio message and immediately went to the scene of the accident.

Analysis

The controlling locomotive unit and the booster unit had rolled down a 35-foot embankment. The car, next to the booster unit turned over on its side, and remained on

the west side of the fill on track No. 320. None of the remaining cars were affected. There was an earth berm at the end of the track, approximately 2 1/2 feet high, but no barrier existed.

The engineer used this track on most working days, and had worked as an engineer around this point for about 18 years. New slid flat spots as long as 2 1/2 inches in length were found on the wheels of locomotive unit, but the rails were not burned on track No. 320. Evidence at the accident scene developed that the weight of the locomotive caused the loose fill under track No. 320 to slide, causing both locomotive units to overturn. The engineer last completed an Operations and Safety Rules examination on March 1, 1977.

Cause

The engineer was fatally injured when the locomotive he was operating left the tracks and overturned. The loose fill under the track combined with the weight of the locomotive units caused the track to slide. The sliding of the track caused the locomotive units to overturn down an embankment.

39. RAILROAD: Chicago, Rock Island and Pacific Railroad
LOCATION: Tiskilwa, Illinois
DATE : June 23, 1977

The Accident

A Chicago, Rock Island and Pacific Railroad signalman helper, age 29 with 3 months service, was struck and fatally injured by a CRIP freight train on June 23, 1977 at 4:50 p.m. The accident occurred two miles east of Tiskilwa, Illinois. At the time of the accident, the weather was clear and dry.

Circumstances Involved the Accident

A track maintenance crew, operating tamping and injecting machines, was working near mile post 120 on the eastbound main track. The signalman helper was working in conjunction with the track maintenance crew, and was assigned to remove mechanical fasteners which held signal wiring to the cross ties. He was also inspecting the wiring for damage after the track maintenance machinery had passed over the track.

Just prior to the accident, the signalman helper was standing approximately 20 feet to the south of the east main track. The track gang foreman at the site, after being warned of the approaching train via radio, instructed the track gang both verbally and with hand signals to get into the clear. The signalman helper was walking west on the south side of the east main track, past the tie injector, before turning and crossing the track. In doing so, he passed just behind the track foreman who was facing west, watching to verify that all of his men had vacated the track structure. When the foreman noticed the signalman helper, and realized that he was not going to stop before crossing the tracks, he called out to him. The noise of the track machines drowned out the foreman's voice.

After crossing the track, the signalman helper started to walk west between the two main tracks; his attention appeared to be focused toward something at ground level. He did not look up, nor see the track gang foreman trying to get his attention. Except for the instant before being struck by the train, the signalman helper did not face or look in the direction of the approaching train.

Train Order No. 449 was directed to westward trains operating on Subdivision 2 at Bureau, Illinois dated June 23, 1977. The order stated that from 7:01 a.m. until 5:01 p.m. the eastbound track would be out of service due to men and equipment working on the track between mile post 148, pole 39, and mile post 115, pole 30. Trains were to run at a restricted speed past this location, sounding bells and whistles freely.

The engineer of the CRIP freight train had slowed the speed of the train to approximately 25 m.p.h., approaching the point where the track equipment was standing. When the engineer first observed the signalman helper step from between the track machines, the train was approximately 300 feet away. The engineer immediately applied the train brakes in emergency.

The signalman helper was facing the approaching train when struck on the head by the left front edge of the pilot on the lead locomotive unit. The impact caused crushing head injuries, and knocked his body approximately 44 feet westward where it came to rest between the two main tracks. The lead locomotive unit stopped approximately 500 feet beyond the point of impact.

Applicable Rules

L...When employees are on or near tracks, they must expect the movement of trains, engines or cars at any time, on any track, in either direction. (The Rock Rules and Regulations for Maintenance of Way and Structures)

28 When stepping from between engines or cars, watch for equipment in motion on adjacent track.

25. Look in both directions for approaching cars, trains or engines before fouling, stepping on or crossing tracks. Walk straight across tracks when possible. Always stand or walk between tracks,; never between the rails of the same track. (Uniform Code of Safety Rules)

Analysis

The track gang, including machine operators working at the site of the accident, received warning of the approaching CRIP freight train from the track gang foreman. The track gang could neither hear the whistle nor the bell of the approaching train because of the noise made by the track machines. Those machines continued to run as the accident occurred.

The system signalman helper did not hear either the bells or whistles of the approaching locomotive, or the warning issued by the track gang foreman.

Cause

This accident was caused by failure of the signalman helper to look in both directions before crossing between tracks.

40. RAILROAD: Union Pacific Railroad
LOCATION: Don, Idaho
DATE : June 24, 1977

The Accident

On June 24, 1977, a Union Pacific brakeman, age 27, was killed instantly at about 10:25 p.m. when struck by a locomotive moving east at 68 m.p.h. The weather was clear, temperature about 80°, and it was dark.

Circumstances Involved in the Accident

Union Paciic train 2nd BORATH Switch 496, had stopped at Don, Idaho, preparatory to switching the industrial site. The head brakeman's duty was to get off the locomotive on the left (fireman's side) and go back to the second unit of the consist to cut it away from the train. He descended from the locomotive, and was observed by crew members to be standing between main line No. 2, on which his train was standing, and main line No. 1, on which a high speed freight train was approaching at approximately 68 m.p.h. Within minutes, the brakeman was struck by the oncoming locomotive on the adjacent track sustaining fatal injuries.

Applicable Rules

4038 Employees must not stand, sit, or walk on track except when necessary to stand or walk on or near double track, employees should face against the current of traffic. (Union Pacific Railroad Safety Rules, 1974).

4040 Employees must not cross or step foul of tracks closely on front of moving equipment, and must not cross tracks close to the end of equipment. (Union Pacific Safety Rules, 1974).

Analysis

Train members had all been notified of the approaching train on main track No. 1 by radio contact. The westbound freight train, moving at 68 m.p.h., was operating under normal conditions with the headlight on bright. There exists, at this time, no apparent reason as to what caused the brakeman to approach, and to stand between, the two main tracks.

Cause

The brakeman, after disembarking from his train, stood between the two main tracks and was struck by an approaching train.

41. RAILROAD: Southern Pacific Transportation Company
LOCATION: Echo, Texas
DATE : June 24, 1977

The Accident

On June 24, 1977, about 6:03 p.m., a Southern Pacific brakeman was fatally injured when the automobile in which he was a passenger was struck by a westbound Amtrak passenger train. The brakeman was 63 years of age with 34 years service. The brakeman received external and internal injuries which resulted in death at 8:43 p.m. The weather was clear.

Circumstances Involved in the Accident

At Echo the main track is tangent and lies in a general east-west direction. A siding 7,589 feet in length parallels the main track on the north. Echo Road crosses the railroad about 2,709 feet west of the east end of the siding. A standard crossbuck railroad warning sign is adjacent to the west side of Echo Road 15 feet north of the siding.

Echo is a crew change point. Train crews are lodged in Orange, Texas, about three miles west of Echo. The Southern Pacific transports crews between Echo and Orange by automobile operated by a private contractor.

Extra 4700 East, 5,538 feet in length entered the siding, Echo Road crossing was opened, and the crew went off duty at 5:30 p.m.

A crew, consisting of a conductor, engineer, and two brakemen, was ordered to go on duty at Echo at 6:10 p.m. to operate Train No. 241, a westbound freight train. The contract carrier picked up the crew at their motel in a 1975 Ford Custom Sedan automobile. The subject brakeman was in the rear seat between the conductor and other brakeman. The driver of the automobile entered the Echo Road crossing from the north at a speed of about five m.p.h. without stopping. The view of the main track was restricted. As the driver moved the automobile across the main track, he observed the westbound Amtrak train closely approaching. The Amtrak train struck the automobile on the left side back of the rear door. The automobile came to rest about 80 feet south and west of the crossing. All occupants of the automobile were injured.

Applicable Rules

Rule 103...When opening road crossings at grade, when practicable, the cars must clear crossing at least 100 feet on each side...(Southern Pacific Operating Rules).

Section 86...Obedience to signal indicating approach of train...Whenever any person driving a vehicle approaches a railroad grade crossing, the driver of such vehicle shall stop (50) feet but not less than 15 feet from the nearest rail of such railroad and shall not proceed until he can do so safely when:...(c) a railroad engine approaching within approximately fifteen hundred (1500) feet of the highway crossing emits a signal audible from such a distance and such engine by reason of its speed or nearness to such crossing is an immediate hazard...(d) an approaching train is plainly visible and is in hazardous proximity to such crossing...(Texas Motor Vehicle Laws).

Analysis

At the time of accident, the occupants of the automobile were conversing and the air conditioner was operating. Due to the noise of the air conditioner and interest in the conversation, the driver failed to hear or see the Amtrak train before moving onto the main track. The cars on the siding east of the crossing were 80.3 feet from the crossing and restricted the vision of the driver. The Amtrak train was moving at 35 m.p.h., the maximum authorized speed, and the engineer had sounded the horn for the crossing.

Cause

The accident was caused by failure of the driver of the highway vehicle to stop between 15 feet and 50 feet from the nearest rail of the crossing and to remain stopped until it was safe to cross as required by state law.

42. RAILROAD: Union Pacific Railroad
LOCATION: Rock Springs, Wyoming
DATE : June 26, 1977

The Accident

On June 26, 1977, at 6:05 a.m., the front brakeman of a Union Pacific freight train, age 54 with 24 years service,

was fatally injured when struck by a westbound freight train in Rock Springs, Wyoming. The weather was clear and the temperature was 63 degrees.

Circumstances Involved in the Accident

In the accident area there are four tracks. From the north, the tracks are designated as scale track, Nos. 3, 1 and 2, respectively. The scale track is used primarily for switching and setting out of cars. Trains are operated in either direction and controlled by signal indications of a traffic control system, supplemented by an automatic cab signal system, on tracks Nos. 3, 1 and 2. The track centers measure 16 feet 9 inches between tracks Nos. 3 and 1. The gradient descends 0.8% westwardly on a 4°08' curve to the left. The maximum authorized freight train speed is 55 m.p.h. The sight distance for trains approaching from the east is 3,230 feet, and 1,220 feet from the west, to the point of accident.

On the day of the accident, the crew on Extra 3069 East consisted of a locomotive engineer, student engineer, front brakeman, conductor and flagman. The student engineer was at the locomotive controls, the engineer in the fireman's seat and the front brakeman in the brakeman's seat on the left side. The conductor and flagman were in the caboose. All the crew members had completed the required off-duty period prior to assuming duty. The train crew went on duty in Ogden, Utah at 8:00 p.m., June 25, and had been on duty 10 hours 5 minutes. The locomotive crew went on duty in Green River, Wyoming, at 4:45 a.m., June 26, and had been on duty 1 hour 20 minutes.

The train departed Green River at 5:25 a.m., June 26, and consisted of three locomotive units, 133 cars, 4,944 tons. At Milepost 808.20, the train crew was notified by the train dispatcher in Cheyenne, Wyoming, via radio, of a hot journal detector indication on about the 17th car of the train. This train was then routed from track No. 2 through the west-end crossover at Rock Springs, to track No. 3. The train stopped short of an absolute signal near the center of Rock Springs station. The front brakeman then inspected the train and returned to the locomotive to use the radio. The train dispatcher was then advised that the 17th car should be set out.

After receiving a proceed signal, the train was moved eastward to accomplish the setting out of the defective car at the east end of the scale track. The front brakeman asked the locomotive crew as to the best place to set out

the defective car, commenting that he was not familiar with the Rock Springs yard since this was one of his first trips in this territory as a front brakeman. The engineer advised setting the defective car out on the scale track north of the train. While the train was moving at about five m.p.h., the front brakeman immediately detrained, approximately 1,700 feet from where the car was to be set out. He then walked westward on the south side of his train and started down the middle of track No. 1. The locomotive crew observed an approaching westbound train on track No. 1 and began sounding the locomotive whistle. Apparently, the brakeman heard neither the warning whistle of his train nor the westbound train approaching to his rear. The brakeman stepped across the north rail of track No. 1 and was walking on the ends of the ties when he was struck by Extra 8065 West, which was traveling approximately 42 m.p.h.

Applicable Rules

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

Safety Rule No. 4038...On any track, employes must keep a careful lookout for moving equipment in both directions.

Safety Rule No. 4040...Employes must not cross or step foul of tracks closely in front of moving equipment...(Union Pacific Operating and Safety Rules).

Analysis

Conversation between the front brakeman and locomotive crew just prior to the brakeman's exit from the locomotive cab indicated his unfamiliarity with this area of the railroad and the designated defective car set-out location. These factors indicate the subject employee's confusion and his not realizing that he had gotten off his train at a location some 1,700 feet short of the set-out track.

Cause

The brakeman was walking on the ends of the ties with his back toward an approaching train.

43. RAILROAD: Burlington Northern, Inc.
LOCATION: Albia, Iowa
DATE : June 27, 1977

The Accident

On June 27, 1977, at 2:30 p.m., a Burlington Northern conductor, age 61 with 39 years 8 months service, was fatally injured when he fell through the cupola side window during a derailment of his train and was crushed between the side of the caboose and the ground. The weather was clear.

Circumstances Involved in the Accident

The accident occurred 2.9 miles west of Albia, Iowa, on the eastward main track, in a $2^{\circ}17'$ curve. The grade is 0.6% ascending for eastbound trains.

Approaching the accident point, Extra 5820 East, an eastbound freight train, was moving 28 miles per hour. The conductor and flagman were located in the right and left cupola seats, respectively.

As the rear of the train moved through a shallow cut at mile post 306.6 the track shifted under the train derailing the rear five cars and caboose. Two rear cars and caboose overturned to the left and were dragged on their sides 650 feet before the train separated, initiating an emergency application of the train brakes. According to the witness, the employee was jolted loose from his cupola seat and fell through the cupola side window and was crushed between the ground and the side of the caboose.

Approaching the derailment site from the west, there is in succession, a $2^{\circ}17'$ curve to the right 1,300 feet, a tangent for 450 feet, a $2^{\circ}17'$ curve to the left 640 feet to the point of derailment.

The track structure consists of 136-pound continuous welded rail laid new December 1975. The rails are approximately 1,500 feet long, joined with 36-inch joint bars. Tie plates are 8 by 14 inch double shoulder, and there are 24 ties per 39 feet. Ballast consists of crushed cinders, with a full ballast section six to eight inches under the ties. At the point of derailment, the track was anchored with 24 anchors per 39 feet. There was no evidence of rail movement.

Analysis

The train was being operated in accordance with all applicable rules and regulations of the carrier. The employee had attended a carrier's safety seminar on June 21, 1977. The employee was issued a copy of the Consolidated Code of Operating Rules, and Burlington Northern Safety Rules.

According to carrier officials the rail had been destressed at the time it was laid and the roadbed had not been disturbed for 10 days prior to the derailment. The temperature at the time of the derailment was 96 degrees Fahrenheit. The track at the point of derailment is in a shallow cut paralleled on both sides by tall trees and heavy brush which would induce an increase in rail temperature.

The track was inspected on June 24, 1977, by the carrier track supervisor. At the time of this inspection, no FRA defects were noted in the derailment area.

Cause

The derailment was caused by a lateral displacement of the track under the train.

44. RAILROAD: Consolidated Rail Corporation
LOCATION: Washington, D. C.
DATE : June 29, 1977

The Accident

On June 29, 1977, at approximately 9:35 a.m., a Consolidated Rail Corporation machine operator, age 29 with 17 months service, was fatally injured while operating a hydraulic boom to adjust a bundle of ties. The ties swung and struck him in the upper chest and head. The weather was clear.

Circumstances Involved in the Accident

The "boom truck" is equipped with a dump body and a hydraulic boom with operating controls and platforms on each side, located just behind the truck cab.

On the day of the accident, the machine operator went on duty at 7:00 a.m., at Benning Yard, Washington, D. C. He was assigned with another employee to distribute various items of track material from a boom truck. Their first assignment was to pick up 11 ties at Deanwood and take them to "C" Yard, approximately .6 miles south of Deanwood.

At Deanwood, a hydraulic boom is used to load ties secured by boom cables. On the day of the accident, the Assistant Track Supervisor instructed the machine operator to operate the boom from the opposite side of the lift. When the loading of the ties was completed, they proceeded to "C" Yard to unload the ties. The dump body was raised to release the ties with the tail gate in a locked position. When the ties did not release, the machine operator on the west or driver's side began to operate the boom with the dump body still in a raised position. The ties became lodged in the bed of the truck and as he moved the boom westward, the ties became free, swinging and striking him in the upper chest and head and knocking him into the base portion of the boom.

Applicable Rules

3416 - Keep from between any object and load being handled to prevent being caught between them. (ConRail Safety Rule 3416)

3078(f) - Wear approved helmet with nape strap when: working with or near hoisting equipment, ballast cleaning or other such situation. (ConRail Safety Rule 3078(f))

Analysis

An examination of the "boom truck" revealed that the boom operating platform on the rider's side was partially bent and broken which could deter its use. The boom operated as intended.

The machine operator had been instructed to operate the boom from the opposite side of the load being handled.

The carrier had issued the machine operator a Safety Rule Book and helmet. A safety rule of the day is read to the men each morning by the foreman.

Cause

The accident was caused by the machine operator operating the hydraulic boom on the same side as the load being handled.

The defective operating platform may have contributed to the employee's decision to operate the boom from an improper location.

45. RAILROAD: Union Pacific Railroad Company
LOCATION: Rock Springs, Wyoming
DATE : June 30, 1977

The Accident

On June 30, 1977, at 7:50 a.m., a Union Pacific power tool operator, age 23 with approximately 3 months service, was fatally injured when struck by the lead locomotive unit of an eastbound freight train, approximately five miles east of Rock Springs, Wyoming. The weather was clear and the temperature 70°.

Circumstances Involved in the Accident

In the accident area there is a double-track main line. The north track is designated westbound and the south track eastbound. Track centers measure 13 feet 1 inch and are tangent a considerable distance westward from the point of the accident. Visibility is in excess of one mile for trains approaching from the west. The grade is 0.06% descending eastward. Trains moving against the current of traffic in double-track territory with Automatic Block Signal system are provided train order authority when one main track is to be used by trains in both directions, as specified in Rule 252 of the carrier's operating rules.

On the day of the accident, single-track operation was in effect between 5:01 a.m. and 5:01 p.m. Train Order No. 312, issued on June 29, 1977, required Extra 3095 East to use the westbound track between the east crossover at Rock Springs and east crossover at Thayer, Wyoming, not to exceed 30 m.p.h. between MP 798 and MP 792, and to sound whistle at all times while approaching and passing gang and machines.

The heat control engineer working east of the subject employee noticed the approaching train approximately 1,200 feet from the gang and waved to the men to get in the clear. During this time, the subject employee was operating a pnuematic spike driver on the gang side of the north rail. The air hose became disconnected from the spike driver and began a whipping motion. In attempting to get out of the path of the hose, he stepped to the north and into the path of the approaching train routed over the westbound track.

Applicable Rules

757. When trains are approaching and until they have passed, employees must stand outside and clear of all main tracks and when practicable must be at least 20 feet from the nearest main track. Where there are two or more main tracks, they must not stand between main tracks except when track centers are 50 feet or more apart.

All employees must stand on the same side of track, except one man designated by the foreman to stand on the opposite side, and observe trains closely...(Union Pacific Maintenance of Way and Signal Rules).

4045. Foreman or others in charge of employees working on or about the tracks, must take necessary precautions to see that men working under their supervision receive warning of approaching trains in time to reach a place of safety...(Rules Governing Duties and Department of Employees Safety Instructions and Use of Radio).

Analysis

As the train approached the work site, the locomotive whistle was sounded frequently, warning bell was ringing, headlight was on and radial warning light atop the locomotive cab was operating. Speed was 30 m.p.h. The locomotive engineer and front brakeman stated that while approaching the gang, the men failed to cease operations and retreat to a safe location. General practice requires employees to keep working on the lead track while trains are passing on the adjacent track.

The carrier states that the foreman discusses safety each Monday morning and, in addition, that this gang was contacted on June 16 and 28 regarding safety rules. No records are maintained of safety meetings, no safety rule book was issued, nor examination given on safety rules.

Cause

The accident was caused by the carrier's failure to enforce its rules requiring employees to be at least 20 feet from the nearest main track while approaching trains pass. A contributing factor could have been the noise of several units of motorized equipment preventing the employee from hearing the locomotive whistle and bell.

46. RAILROAD: Consolidated Rail Corporation
LOCATION: Russell, Massachusetts
DATE : July 2, 1977

The Accident

On July 2, 1977, at approximately 5:05 p.m., a Consolidated Rail Corporation trainman, age 48 with 6 1/2 years experience, was struck and fatally injured by ConRail Locomotive Number 6555 as he sat on the north rail of the eastward main track in Russell, Massachusetts. The weather was clear.

Circumstances Involved in the Accident

The day of the accident, the train crew of Extra 6528 West consisted of a conductor, front brakeman, rear brakeman, and engineer. The pusher locomotive crew consisted of an engineer and conductor/flagman.

Extra 6528 West, operating on Main Track No. 1 loaded with 68 loaded ballast cars, stopped in the vicinity of Mile Post 116 to investigate a sticking brake on the 7th head car. This investigation was performed by the conductor and front brakeman. The rear brakeman was instructed by radio to remain on the caboose. The train could not be started at this location without assistance, and a "pusher" locomotive was dispatched from Chester, Massachusetts.

Pusher Locomotive No. 6555 was operating eastward on Main Track No. 2 from Chester towards Woronoco, Massachusetts to crossover and get behind Extra 6528 West, in order to assist the stalled train. The pusher locomotive moved around a curve to the left, while passing Extra 6528 West at a speed of approximately 30 miles per hour. Approximately

600 feet ahead of the pusher, the crew observed a shirtless person sitting on the north rail of Main Track No. 2 in the vicinity of the caboose of Extra 6528 West. The engineer sounded the whistle three times and when the person failed to move, placed the locomotive brakes into emergency. The locomotive then struck the trainman sitting on the rail of the north track.

Applicable Rules

Safety Rule 1052. When walking or standing for any purpose:

(c) - Maintain sufficient lookout in both direction to know of approaching equipment or close clearance.

(e) - If equipment is approaching on any main track, move clear of all main tracks until sure that no other equipment is approaching on any main track.

(k) - Do not sit, stand, step or walk on rail, frog, switch, guard rail, interlocking machinery or other such part of track structure...(Consolidated Rail Corporation Safety Rules).

Analysis

Post-accident investigation disclosed that the rear brakeman sat on the north rail of the main track and was apparently unaware that he had placed himself in an unsafe position. He made no attempt to move and was struck by the eastward moving pusher locomotive. Investigation showed that the last Rules Examination taken by the brakeman was April 6, 1977, and his last physical examination was February 5, 1971.

Cause

This accident was apparently caused by the rear brakeman's noncompliance to Carrier's Safety Rules and disregard for his own personal safety.

47. RAILROAD: Norfolk and Western Railway Company
LOCATION: Adrian, Michigan
DATE : July 8, 1977

The Accident

About 1:10 p.m., on July 8, 1977, an N&W brakeman, age 35 with 7 years service, was fatally injured when he was run over by a locomotive after being thrown off the brake step of a runaway box car in the vicinity of Adrian, Michigan. The weather was clear.

Circumstances Involved in the Accident

Local F-22-M is a local freight which went on duty at Adrian, Michigan at 9:00 a.m., with N&W Locomotive 770. The crew consisted of the engineer, conductor, flagman and brakeman. Prior to the accident, the locomotive was used to move a box car from the wye track east of the depot to the westbound passing track. The brakeman had released the hand brake, and after the car was pushed into the passing track, he ascended to the brake step at the west end of the car and applied the brake. The tracks in the area are all on a descending grade to the east. The hand brake did not stop the car and it continued to roll east through the passing track. At the same time the locomotive, which was crossed over from the westbound to the eastbound main track and was moving east, came abreast of the rolling car. The brakeman shouted to the flagman that the hand brake was no good. The flagman went over and attempted to insert a piece of wood in the hand brake chain to apply sufficient pressure to stop the car, but to no avail. The flagman boarded the locomotive and went to the east end switch of the passing track and opened it, allowing the box car to go out onto the westbound main track. The flagman closed the switch and the locomotive went west through the crossover and got back onto the westbound main track. The locomotive headed east in pursuit of the run away box car and caught up to it after having traveled about 2.5 miles. The locomotive was approaching the box car at about 25 m.p.h. and the opposing knuckles were open. The brakeman was still riding the brake step and was holding onto the brake wheel and the roof handhold. As the locomotive was approaching, the box car apparently slowed down slightly and the impact between the two threw the brakeman from the car. The coupling did not make and the car continued to roll eastward. The brakeman fell to the track structure and the locomotive ran over him. The locomotive came to a stop 87 feet east

of the brakeman. The engineer and flagman went back to where the brakeman was lying and saw no sign of life. The brakeman appeared to have been killed instantly and was officially pronounced dead by a doctor at the mortuary.

Applicable Rules

Operating Rule 103(g) - When necessary to control cars by hand brakes, it must be ascertained that such brakes are in good order.

Safety Rule 1107 - Where the use of hand brakes will be required, they must be tested before the cars are cut off or dropped by gravity.

Analysis

Post-accident investigation disclosed that the hand brake was inoperative. The mechanical automatic brake adjuster was in a position in which no slack was taken up and consequently the hand brake wheel became chain bound and tight in the application position before the shoes contacted the wheels. It appears that the brakeman did not test the hand brake prior to the car being pushed into the passing track even though he released the brake on the wye track before the initial movement.

Cause

The accident was caused by failure of the brakeman to test the hand brake for stopping ability. A contributing factor was the defective slack adjuster device in the foundation brake rigging.

48. RAILROAD: Union Pacific Railroad
LOCATION: Denver, Colorado
DATE : July 9, 1977

The Incident

On July 9, 1977, about 2:30 a.m., a Union Pacific Railroad special agent was shot to death while on duty in the Union Pacific Railroad yard near East 46th Avenue and

Race Street, Denver, Colorado. The special agent's body was found by the Denver city police about 10 feet from his patrol truck, after the local police had responded to a call for help. The special agent had reported apprehending two theft suspects, reportedly armed, in the rail yard. The special agent's handgun was missing, and there was no sign of a struggle.

The special agent's death was caused by multiple gunshot wounds inflicted by an unknown assailant.

49. RAILROAD: Chicago, Rock Island & Pacific Railroad
LOCATION: Iola, Texas
DATE : July 14, 1977

The Incident

On July 14, 1977, a Chicago, Rock Island & Pacific Railroad track laborer, age 25 with less than 1 day's service, became violently ill and was dead on arrival at Memorial Hospital in Madisonville, Texas. On July 16, 1977, another track laborer, age 26 with about 1 year's service, became violently ill and was admitted to the same hospital where he died the following day.

The two fatalities were investigated by various local, state, and Federal health agencies. Work environment, food, and water were examined and tested for contamination. The official cause of the deaths was tentatively registered by the State of Texas Public Health Agency as hyperthermia. The state epidemilolgist stated that the two laborers were physical ill-equipped to do work on a railroad gang.

50. RAILROAD: Burlington Northern, Inc.
LOCATION: Minneapolis, Minnesota
DATE : July 16, 1977

The Accident

At 3:10 p.m., July 16, 1977, a 47 year old Burlington Northern, Inc. switchman, with 21 years service, was killed when run over by five freight cars and four diesel-electric

locomotive units. He was engaged in switching operations at Northern Yard, Minneapolis, Minnesota. The weather was clear and the temperature about 95 degrees.

Circumstances Involved in the Accident

After being off duty in excess of the required time, the switch crew, consisting of an engineer, a conductor and two switchmen, reported for duty at 2:30 p.m. The two switchmen were identified as a head man and a field man. Five cars were pulled eastward from Track 54 in the Classification Yard to Track 4 in the Transfer Yard. The switches were then lined for reverse movement to pick up six cars from Track 9, in the Classification Yard. Power operated switches are controlled by a switchtender. When the four unit locomotive and five cars passed the switches and arrived on Track 4, the engineer was advised by the switchtender, via radio, and a stop was made. The engineer was at the controls on the south side of the east locomotive unit. The conductor had gotten off at the tower at the east end of the Classification Yard to obtain a switch list and instructions. The field man remained in the Classification Yard to arrange movement to Track 9. The head man was on the engineer's side, waiting to board the first car when the shove movement started. The engineer received radio instructions from the switchtender to shove toward Track 9 and sounded three short blasts on the locomotive horn. As the movement started, the head man was seen getting on the leading end of the first car. The car soon disappeared around a curve, away from the engineer's view. Shortly thereafter, the field man advised the engineer, by radio, that he could see the lead car and the switches lined to Track 9. The conductor had to hurry from the tower to get on the control unit of the locomotive as it passed. He asked about the head man and the engineer said that he thought he got off in the Transfer Yard to line for the next move. Cars were picked up from Track 9, then a forward movement was made westward. As the locomotive returned to the switch leading to Track 4, the head man's severed body was found across the rail close to where he was last seen. The upper part was on the field side of the south rail and the lower part was between the rails.

Applicable Rules

Yardmen are prohibited from wearing shoes with wedge-type soles...(Burlington Northern Safety Rules).

"Employees must not ride:
1. On buffers, drawbars, brake beams, journal boxes and brake wheels.
2. On end ladders of cars that are being moved except to operate the hand brake." (Burlington Northern Safety Rules).

Analysis

The fatally injured switchman passed a physical examination on February 16, 1976, a rules examination on January 5, 1977, and attended safety meetings on January 25, 1977, and on April 20, 1977.

The track was in good condition, the footing was good and no vegetation or debris was present. The switchman was wearing boots with wedge-type soles. The box car involved was inspected and no defects found. It had been modified with end platform handholds but did not have an end platform. An end sill handhold and a horizontal end handhold were located on the forward south corner of the car. Evidence that the south lead wheel of the first car passed over the body indicates that the man fell from the forward end of the lead car.

Cause

The switchman apparently climbed around the corner of the car to ride the forward end and fell across the rail.

51. RAILROAD: Illinois Central Gulf Railroad
LOCATION: Memphis, Tennessee
DATE : July 16, 1977

The Accident

A 58 year old Illinois Central Gulf Railroad switchman was run over and killed by a box car during switching operations in Johnston "A" Yard at Memphis, Tennessee on July 16, 1977, at about 7:50 p.m. It was daylight and the weather was clear at the time of the accident. The employee had 34 years service, 8 years as a switchman, when he died.

Circumstances Involved in the Accident

Johnston "A" Yard is a flat switching yard consisting of 32 parallel tracks running generally east and west. The tracks are tangent and the grade is practically level. Switching is performed by the use of hand signals and two-way radios issued to crew members, and a radio installed in the locomotive.

Yard Assignment No. 39, consisting of an engineer, a foreman and two switchmen, using Locomotive No. 406, went on duty at 3:30 p.m. after having been off duty over 10 hours.

Prior to the accident, the locomotive entered Track No. 19 from the west end for the purpose of coupling cars standing on the track. During the course of this operation, the two switchmen had placed themselves on the south side of Track No. 19 about 2,800 feet from the west switch, with the subject switchman located about 300 feet east of the other switchman. The other switchman had experienced intermittent faulty transmission on his radio and was using signals, relayed by radio to the engineer by the subject switchman. Finding the knuckles closed on two cars, the other switchman signaled for a movement to the west, and the cars separated. At that time, he observed the subject switchman standing about 300 feet eastward with his hand on the side of a car on Track No. 19. He also observed that cars on Track No. 18 were being shoved westward at a speed of about two m.p.h. After opening the knuckles, the other switchman signaled for an eastward movement. The cars were coupled, and he signaled "Stop." When the movement did not stop, he looked toward the subject switchman to determine the cause. He observed the northwest end of the leading car in Track No. 18 strike the switchman, who was standing between the rails of Track No. 18 with his back toward the oncoming cars. Upon being struck, the subject switchman made two leaping steps southward but fell across the south rail of Track No. 18 and was run over by the southwest wheels of the leading truck. As the westward movement continued, the switchman either crawled or his body was forced from beneath the wheels to a point about three feet south of the south rail. He was dead when the first person reached him. The other switchman was the only witness to the accident.

Applicable Rules

175. Do not go between or in front of moving locomotives, cars, or other equipment...(Illinois Central Gulf Guidelines to Safety).

198. Do not walk, stand, or sit on tracks unless your work requires you to do so...(Illinois Central Gulf Guidelines to Safety).

Analysis

At the time of the accident, the subject switchman was standing between the rails of Track No. 18 in the path of approaching cars.

There is no evidence that the faulty two-way radio contributed to the accident.

The carrier utilizes on-the-job training for newly employed switchmen and requires attendance at periodic Rules and Safety meetings. The subject switchman was issued copies of the Operating Rules and Guidelines to Safety, and was last examined on these rules on May 7, 1974.

Cause

The cause of the accident was the switchman standing between the rails in front of moving cars when his work did not require him to do so.

52. RAILROAD: Atchison, Topeka and Santa Fe Railway
LOCATION: Los Angeles, California
DATE : July 19, 1977

The Incident

On July 19, 1977, a waybill clerk died from injuries received in a traffic accident which occurred while he was on duty. The employee, with 10 years company service, was operating a motorcycle, traveling north on Santa Fe Avenue, when he was struck by a pickup truck at the intersection of Santa Fe and First Street. He was pronounced dead at the scene at 11:35 a.m.

53. RAILROAD: Illinois Central Gulf Railroad
LOCATION: Milan, Tennessee
DATE : July 20, 1977

The Incident

At 7:30 a.m., July 20, 1977, the body of a signal maintainer was found lying alongside the tracks, one mile north of Milan, Tennessee. The employee was enroute to Milan to assist a signal maintainer at that location.

There were no marks on the body to indicate the occurrence of an accident or of foul play. The town coroner listed the cause of death as by natural causes, apparently a heart attack.

54. RAILROAD: Seaboard Coast Line Railroad
LOCATION: Jacksonville, Florida
DATE : July 20, 1977

The Accident

At approximately 9:45 p.m., on July 20, 1977, a Seaboard Coast Line Railroad yard conductor, age 56 with 26 years service, was electrocuted when he came in contact with an overhead high voltage power line during a switching operation at Jacksonville, Florida. The weather was clear.

Circumstances Involved in the Accident

The train crew involved, after an off duty period of 12 hours, went on duty at 3:00 p.m., July 20, 1977, at Export Yard in Jacksonville, to perform industrial switching service. The crew soon realized that the portable radio handset, furnished by the carrier for switching operations, was not dependable. It would receive properly, but transmission was intermittent. Hand signals were used to supplement the radio when necessary.

The crew was assigned an EMD SW9 type diesel-electric locomotive. They assembled a train of 22 cars of wood at a local yard, and departed that point with the train at approximately 9:15 p.m., enroute to a box factory. The locomotive pushed the cars during this movement. The crew

anticipated additional problems with the portable radio, so the conductor and two trainmen took positions at the front, middle, and rear of the train to permit use of visual signals. Other crew members stated that the conductor stood on the wood chip lading of an open top hopper car, 12 cars ahead of the locomotive. The train stopped several times enroute to permit crew members to provide flag protection at city street crossings. After the train arrived at the box factory,the engineman realized the conductor was missing, and two trainmen began to search for him. His body was found on top of the lading of the open top hopper car on which he was last seen alive. He was taken to St. Luke's hospital in Jacksonville, where he was pronounced dead on arrival. It was first assumed the conductor died of a heart attack, but an autopsy revealed his death was caused by electrocution.

Applicable Rules

12(h)...when backing or shoving a train, engine or cars, the disappearance from view of employee giving signals, or light by which signals are given must be constructed as a stop signal...(Seaboard Coast Line Railroad Operating Rule).

132..."Employees are prohibited from walking or standing on the top of moving cars." (Seaboard Coast Line Railroad Safety Rule).

NATIONAL ELECTRIC SAFETY CODE

Part II Section C 2.2 - 1960-61. Safety Rules for the Installation of Electric Power Lines and Communication require a minimum height from ground to wire of 28 feet over railroad trackage.

Analysis

The conductor was last seen alive standing on top of the load of wood chips, at a point about 500 feet west of Wigmore Street. He gave a proceed signal with his lantern which was seen by two other trainmen. The train moved eastward and the crew then lost sight of the conductor as the train entered a curve and the view was obstructed by trees near the track.

An investigation revealed that a 14,400 volt power line spanned the railroad track at a height of 21 feet at a point about 210 feet east of Wigmore Street. The extreme

height of the car involved was 15 feet 11 inches above the rails, and the load of wood chips extended 11 inches above the top of the car in the area where the conductor's body was found.

National Electric Code requires a minimum height of 28 feet for a power line with this voltage. Clearance required by the owner of the track involved is 30 feet. The power line was properly located soon after the accident.

The conductor last attended a safety rules meeting on February 8, 1977.

Cause

The accident was caused by failure of the conductor to perform his assigned duties according to prescribed safety and operating rules. Contributing causes were the improper height of the power line and a defective radio requiring the use of visual signals.

55. RAILROAD: Union Pacific Railroad Company
LOCATION: Park City, Utah
DATE : July 26, 1977

The Accident

On July 26, 1977, at approximately 11:20 a.m., a Union Pacific Railroad Company track machine operator, age 59 with 22 years service, was fatally injured when a runaway crosstie-saw machine struck a track-lining machine he was operating. The weather was clear.

Circumstances Involved in the Accident

A track-lining machine, equipped with wire attachments, was being used to line track at Milepost 19.8, 4.7 miles east of Keetley Junction, Utah. A tie-saw machine was parked for repair on the main track at Keetley Junction, Milepost 24.5. The crosstie-saw machine weighs approximately 14,500 pounds.

On the day of the accident, the track machine operator reported for duty at Keetley Junction at 6:00 a.m. and commenced lining track. A machinist and a machinist helper apprentice were instructed to repair the saw which was parked

on a 0.097% descending grade toward Milepost 19.8. The scheduled repair work on the saw included replacing the engine. The work-equipment repair crew arrived at Keetley Junction about 10:00 a.m. In order to have a more suitable location to change out the engine, they decided to move the saw to a country road/railroad crossing at Milepost 24.0. The repair crew used a ballast regulator to move the saw by applying a chain to connect the regulator to the upgrade end of the saw and allowed the saw machine to drift during the move. The apprentice was operating the regulator. The chain uncoupled before the machines reached the road crossing and the saw moved uncontrolled down grade, crashing through the track-lining attachments, ramming the track liner and fatally injuring the track-liner operator.

Applicable Rules

2000. Only authorized persons are permitted on road machines and work equipment...(UP Railroad Maintenance of Way and Signal Rules).

2000(A). Only employes who have been properly qualified are permitted to operate...(UP Maintenance of Way and Signal Rules).

Chief Engineer Instruction Bulletin No. CE-72-83R
June 27, 1972.

To: Division Engineers, Track, B&B Signal Supervisors, Supervisors of Work Equipment, Roadway Machinists, and Roadway Equipment Operators.

Subject: Instructions Governing Movement of Self-Propelled Work Equipment and Machines To and From Work Locations.

When multiple units of equipment are traveling from one point to another on track, caution must be exercised by supervisors and equipment operators to avoid having one machine run into another.

Brakes must be tested by operators of the machines immediately after starting movement to insure they are in proper working order.

Machines towing other units or push cars must be attached with standard couplers.

Analysis

The machinist helper apprentice reports to the machinist; the machinist reports to his supervisor of work equipment; and the supervisor of work equipment reports to the division engineer. The machinist and his helper stated that they had not seen Bulletin No. CE-72-83R prior to the accident. The supervisor of work equipment indicated that he discussed safety with the machinists at various times. The division engineer said he was unable to advise where communications broke down.

The work equipment repair crew moved the crosstie-saw machine without applying a towbar as spelled out in Bulletin No. CE-72-83R and without a qualified operator on the machine.

Cause

This accident was caused by the failure to move on-track equipment in compliance with the carrier's rules.

56. RAILROAD: Atchison, Topeka and Santa Fe Railway Company
LOCATION: Thorn, California
DATE : July 26, 1977

The Accident

About 8:30 p.m. on July 26, 1977, an Atchison, Topeka and Santa Fe Railway Company (ATSF) conductor, age 48 with 21 years experience as a trainman, and a brakeman age 32 with 11 years experience as a trainman, were crushed to death between a moving locomotive and a shifted load of lumber on a moving flat car near Thorn, California. The weather was clear.

Circumstances Involved in the Accident

This accident occurred on the south main track of a two-track main line extending between Hesperia and Thorn, California, about four miles. Between the two stations the south track consists of a series of tangents and left and right-hand curves varying from 2° 08' to 4° 11'. From Hesperia eastward to Thorn, the south track is on descending grade which varies from 0.19% to 1.58%. South of and parallel to the south main track at Hesperia is a siding about 7,600 feet along, and near the west end of the siding,

a "run-around" track about 500 feet long. Two spur tracks, each about 500 feet, also extend from the main track. In the vicinity of the latter tracks is another spur track which terminates at Don Oaks Lumber Company. Just east of the runaround track a branch track extends from Hesperia siding to Cushenbury, California, about 29 miles.

On the day of the accident, a crew consisting of an engineer, conductor and two brakemen, went on duty at 11:05 a.m. at Victorville, California, 8.4 miles east of Hesperia. They assembled a train of 64 cars, including a flat car load of lumber which had been delivered to the ATSF by the Union Pacific Railroad (UP) and was destined for Don Oaks Lumber Company. The train consisted of, from the east, five locomotive units, the flat car load of lumber and 63 cars destined for Cushenbury. Following normal procedure, the train departed Victorville about 6:51 p.m. with the locomotive pushing the train westward to Hesperia, where the 63 Cushenbury cars were placed on the siding. The crew then moved the locomotive units and the flat car load of lumber to the west end of the siding.

Later the crew uncoupled the flat car, allowing the car to roll eastward on the south track and the locomotive units to move toward the Don Oaks Lumber Company. The front brakeman and the engineer were in the process of picking up an empty car at the lumber company when the engineer received a radio call from the rear brakeman. The latter asked the engineer to come get the conductor and rear brakeman on the loaded flat car because they were unable to stop the car with its hand brake, which was on the west end of the car. The engineer then used the locomotive to pursue the loaded flat car, making two unsuccessful attempts to couple it. On the third attempt, the locomotive was moving at a sufficient rate of speed that the impact caused the lumber to shift violently, crushing the two men between the lumber and the locomotive. The locomotive and the car finally stopped near the Thorn station sign. An examination indicated that the two men were killed instantly.

Applicable Rules

1115(A). Before dropping a car, the hand brake must be tested and proper safeguards taken to avoid an accident. The engine must be run on straight track when practicable... (Atchison, Topeka and Santa Fe Operating Rules).

Analysis

The subject car was delivered to the ATSF by the UP the day before the accident. The Safety Appliance Act prohibits the interchange of a freight car which is not in compliance with the Acts. At the time of interchange, the subject car's air brake system was overdue for the required periodic cleaning. The Safety Appliance Act also requires that all cars hauled in interstate commerce have efficient hand brakes. It is apparent that this car did not have an effective hand brake.

In accordance with carrier rules, the hand brake should have been tested before allowing the car to move freely. In addition, the carrier's rule requires the locomotive to use the straight track during this type move. This probably would have resulted in the loaded car moving onto a track which contained cars and which could have stopped the flat car.

This carrier provides each employee with a rule book, conducts rule book classes on an unscheduled basis, and officers monitor the safety habits of employees. Carrier records indicate that the conductor attended a book of rules examination on May 31, 1977, and the rear brakeman attended a book of rules class on November 3, 1976.

Cause

This accident was caused by a defective freight car hand brake, followed by the freight car being struck by the locomotive.

57. RAILROAD: Seaboard Coast Line Railroad
LOCATION: Conetoe, North Carolina
DATE : August 2, 1977

The Accident

On August 2, 1977, at about 11:55 a.m., a Seaboard Coast Line bridgeman, age 49 with 22 years of service, was accidentally electrocuted near Conetoe, North Carolina, while drilling a hole through a wooden bridge cap. The weather conditions were hot and humid.

Circumstances Involved in the Accident

About 7 a.m. on the day of the accident, the gang foreman and four men left their camp car at Tarboro, North Carolina, and traveled by truck to Conetoe Creek trestle, M.P. ABC-144.4, Plymouth subdivision, Rocky Mount Division. After rigging an aluminum scaffold under the ballast-deck trestle, they installed a wooden cap on top of the piling.

At about 11:10 a.m., the bridgeman and the foreman rode a motor car to the house track at Conetoe to clear Train No. 418. When they returned, the subject employee repositioned himself on the scaffold and was handed a 5/8-inch electric drill with a bit in the chuck.

The bridgeman put the bit through the old hole in the diagonal brace and pulled the trigger of the drill to bore a hole in the new cap. The drill didn't operate. He yelled to the bridgeman helper who was on top of the trestle that he didn't have any power. The helper checked the extension cable connections, but there still was no power to the drill. The bridgeman helper went to the portable power generator and checked the receptacle. At this time the subject employee said to his other helper, "this thing shocked me." The helper turned in time to see him fall to the water which was six to eight feet below the scaffold.

After the bridge foreman and bridgeman helper had removed the bridgeman from the water, they administered artificial respiration, but to no avail. He was pronounced dead on arrival at Edgecombe General Hospital by the county medical examiner.

Applicable Rules

67. Employees must be suitably shod. Wearing thin soled, canvas or cloth top, open heeled or toed, loose or unbuckled shoes, high heeled or cowboy type boots, is prohibited. Where there are foot hazards, steel reinforced safety shoes are recommended...(Seaboard Coast Line Safety Rules).

72. Electric wiring and apparatus must not be handled except by authorized personnel, nor altered except by qualified electrician...(Seaboard Coast Line Safety Rules).

74. Extension cords must be inspected frequently and defects repaired or reported to supervisor at once. They must not be run under floor mats, rugs, etc. Keep cords clean and free of kinks and avoid contact with hot or rough surfaces. Lamps on extension cords must be equipped with guards...(Seaboard Coast Line Safety Rules).

Analysis

At the time of the accident, the twist lock plug on the cable to the generator did not have a keyed grounding terminal. Also the three terminals on the plug would mate with the receptacle of the power generator in two positions. One position provided the correct circuit and the other would not. The improper position allowed the circuit to pass through the frame of the drill motor and caused the ground to be from the frame of the generator to the drill motor armature, instead of through the frame of the drill motor.

The bridgeman was standing on an aluminum scaffold which was fastened to the rail above with steel cables. The bridgeman's left boot had a hole in the heel which exposed a metal plate in the boot to the scaffold.

With the twist lock plug incorrectly inserted in the generator receptacle, a dangerous situation was set up, inasmuch as live current was brought to the drill motor case through the grounding wire. When the metal plate in the bridgeman's boot contacted the scaffolding, the circuit was completed through the bridgeman's body.

The carrier has a safety rule of the day. The bridgeman was issued a safety rule book on September 27, 1967, and February 13, 1974, and last attended a safety meeting on June 13, 1977.

Cause

The cause of the accident was the use of an improper plug on an electrical extension cord, which permitted the plug to be inserted in the wrong position. A contributing factor was the exposed metal plate in the left boot heel of the bridgeman.

58. RAILROAD: Duluth, Missabe and Iron Range Railway Company
LOCATION: Proctor, Minnesota
DATE : August 4, 1977

The Accident

On August 4, 1977, at approximately 10:52 p.m., a DM&IR Railway trainman, age 55 with 29 years service, was killed when he was crushed between a locomotive unit and a train of ore cars in a side collision on a crossover between yard tracks in A yard, Proctor, Minnesota. The weather was partly cloudy and 62 degrees.

Circumstances Involved in the Accident

Proctor A yard lying north-south consists of tracks numbered from the west, 22 through 54. South A Lead lying tangent, north-south along the east side of the yard, connects the south switches of A yard tracks in turn outs to the west. Mallet Main, a yard running track, parallels South A Lead on the east. No. 27 crossover connects Mallet Main and South A Lead opposite the south switches of tracks 25 through 27. The south switch of the crossover is facing point for north movements on Mallet Main and is located 187 feet south of the switch and an east turn out to the enginehouse lead. Floodlight towers to the north and west of the crossover provide general yard lighting. Targets of crossover switches are reflectorized.

About 10:30 p.m., on the day of the accident, the locomotive units of the 10:30 p.m. Proctor Hill Ore job proceeded from the enginehouse to the south end of Track 31. The units were coupled to 52 cars of ore and a caboose. Enroute, the locomotive units traversed 27 crossover northward on the Mallet Main to the South A Lead. The north switch of 27 crossover was realigned for further movement southward over South A Lead. The south switch of 27 crossover on Mallet Main remained lined for the crossover.

At 10:20 p.m. the 2:30 p.m. Steelton Ore job heading south with a train of ore arrived at the Proctor yard. The locomotive consisted of four SD-38 units; No. 202, the control-ling unit facing south, 203, 209 and 213 facing north. The units were uncoupled and operated southward through the yard entering Mallet Main, 1,507 feet south of the enginehouse lead. Moving in reverse the locomotive proceeded north on Mallet Main. The engineer was in the

controlling unit and the front trainman, carrying a lighted lantern, was on the west front stairway of the north unit 213. The headlight at the front of unit 213 was not lighted. Midway to the enginehouse lead, the Steelton Ore locomotive, moving at 11 - 12 m.p.h., met and passed the locomotive of the Proctor Hill Ore job, which was slowly moving south on South A Lead. Soon, thereafter, the Steelton Ore engineer, anticipating a stop at the enginehouse lead, closed the throttle. Moments later he applied a full locomotive brake in response to movements of the front trainman's light. The sound of the collision and sparks flying from the front of unit 213 immediately followed. An investigation disclosed that the locomotive of the Steelton Ore job entered 27 crossover at the open south switch and struck the 45th through 49th cars of the Proctor Hill Ore job. The Steelton Ore front trainman was trapped between Unit 213 and the ore cars. He was instantly killed.

Applicable Rules

17(B): The headlight must be dimmed under conditions outlined below...

In yards where yard engines are employed and at stations where switching is being done;...(The Consolidated Code of Operating Rules).

104(A): Employees handling switches must know that the switches are properly lined for movement to be made and that the switch points fit...(The Consolidated Code of Operating Rules).

Analysis

The Steelton Ore locomotive consist was not operating at the time of the accident in compliance with Rule 17(B). In tests performed under identical light conditions, points and target were visible from the front trainman's position at sufficient distance to stop short of an open switch.

Post-mortem tests disclosed a blood alcohol level of .105 grams/centimeter, considered in Minnesota to be acute intoxication. According to fellow crew members, the front trainman exhibited no unusual behavior and was not observed consuming any alcoholic beverages. He was last examined on operating rules in August 1976.

Cause

The trainman did not observe the crossover switch lined into the adjacent occupied track. Medical tests indicated that the trainman had a blood alcohol level exceeding that percentage legally tolerated in the state of Minnesota.

59. RAILROAD: Consolidated Rail Corporation
LOCATION: Buffalo, New York
DATE : August 4, 1977

The Accident

At 11:50 p.m., on August 4, 1977, a brakeman age 47, with 21 years service, was pinned between a moving box car and a building. He sustained crushing injuries of chest, abdomen and pelvis, and was pronounced dead on arrival at a local hospital. The weather was clear.

Circumstances Involved in the Accident

The crew consisting of a conductor, two brakemen, an engineer and a fireman reported on duty at 10:30 p.m., after having an off duty period of 16 hours.

The accident occurred on an industrial track of the West Virginia Paper Company, located adjacent to Babcock Yard in the City of Buffalo, New York. WESTVACO track 1 extends eastward from Babcock Yard track No. 4, with a 5° 30" curve to the right for 387 feet to the building entrance. An additional 159 feet to the bumping block is tangent. The grade is about 0.09% ascending eastward, and the distance from building to track center varies from a maximum of 9.7 feet to 7.1 feet where the accident occurred.

At 11:40 p.m., on the day of the accident, locomotive PC 8905 entered WESTVACO track No. 1, shoving caboose CR 18699. The fireman, a promoted engineer, was seated at the controls on the south side of the locomotive and the engineer was seated on the north side. The conductor had walked through the building to open the overhead door, and was standing on the loading platform. The two brakemen were aboard the leading end of the caboose as it entered the building, and an attempt was made to couple to PC 168386.

The coupling failed and the subject brakeman dismounted on the south side and adjusted the knuckles. After the coupling was made, he signaled the engineman to back up. As the movement started, wheels of the car were sliding and in releasing the brakes, he pulled and held the brake cylinder release rod and continued to walk in the direction of the movement. The other brakeman, who had remained on the caboose, observed the hazard involved, shouted a warning, and gave the engineman a signal to stop. The movement stopped, but not before the brakeman was pinned between the car and building in a space measuring a total of eight inches. The body was removed by emergency personnel utilizing a hydraulic jack.

Applicable Rules

1052. When walking or standing for any purpose:

(c). Maintain sufficient lookout in both directions to know of approaching equipment or close clearance.

(i). Keep as far as practicable from passing equipment. If in a confined space in switching area, tunnel, station or other such place, STOP and STAY in the clear, the conductor and every trainman in plain view of the engineman or the crew member on each side while the equipment is moving. If possible, maintain handhold until equipment stops or has passed...(Consolidated Rail Corporation Safety Rules).

Analysis

Post-accident examination of the equipment failed to reveal any defect which would have contributed to the cause. The close clearance sign mounted on the building adjacent to the track was illegible and failed to provide adequate warning to the switching crew. The brakeman was familiar with the territory involved, having worked this assignment on numerous occasions.

The carrier employs a "Safety Rule of the Day," issues a book of safety rules to each employee, conducts periodic safety meetings, and supervisors check for rules compliance.

Cause

The accident was caused by failure of the employee to remain clear of a visible obstruction and obvious hazard.

60. RAILROAD: Chicago, Milwaukee, St. Paul and Pacific Railroad
LOCATION: Glenview, Illinois
DATE : August 5, 1977

The Accident

On August 5, 1977, between 10:45 a.m. and 12:30 p.m., a Chicago, Milwaukee, St. Paul and Pacific Railroad machine operator, age 23 with 4 years service, was fatally injured when his tractor and rotary mower turned over, pinning him underneath the tractor. The weather was cloudy and rainy.

Circumstances Involved in the Accident

The accident occurred 2,567 feet east of Glenview, Illinois, which is located 17.4 miles west of Chicago, on that portion of the railroad extending westward from Chicago, Illinois to Milwaukee, Wisconsin, a distance of 85 miles.

The tracks in the accident area consist of a double-track main line. The tracks are designated eastbound and westbound, although they run north and south geographically.

On the day of the accident the subject machine operator was operating a tractor and rotary mower and was mowing weeds along the east side of the westbound main track moving in a southward direction.

The tractor's front wheels struck a washed out area approximately eight feet from the field side of the rail, causing the tractor and rotary mower to tip over and fall down a 40 degree embankment eight feet deep. The tractor landed upside down, pinning the operator under the tractor seat.

Applicable Rules

Rule 206. There are several types of power-driven brush and weed cutters in service on the railroad. Employees using such equipment must follow the instructions of the

manufacturer and railroad to prevent injuries to themselves and others...(Chicago, Milwaukee, St. Paul and Pacific Railroad Maintenance of Way Safety Rules).

Analysis

The machine operator was observed operating the tractor by a woman from her residence between 10:45 a.m., and 11:00 a.m. At approximately 12:30 p.m., her husband saw the machine operator's body lying underneath the overturned tractor.

The Fire Department arrived at the scene at 12:38 p.m., and found the machine operator pinned under the tractor seat. No vital signs of life were found. The body was removed to a hospital where the operator was pronounced dead on arrival.

The machine operator had been employed by the Maintenance of Way Department for a period of four years and had three months experience operating this type of tractor. The tractor and rotary mower is leased by the carrier from Case Power and Equipment Company. The model of the tractor is David Brown, Model No. 885 c/o.

The tractor was not equipped with roll-bar protection and it is recommended that this protection be provided in the future.

The carrier issues a book of Operating and Safety Rules to each Maintenance of Way Department employee, conducts a Rule of the Day Program and supervisors check for rules compliance. The employee passed a written examination on the Operating and Safety Rules on March 31, 1977. The employee's last physical examination was February 15, 1977.

Cause

The machine operator did not steer the tractor clear of the washed out area near the embankment. The tractor, upon reaching this area, tipped over, pinning the machine operator underneath.

61. RAILROAD: Illinois Central Gulf
LOCATION: Harvey, Illinois
DATE : August 8, 1977

The Accident

On August 8, 1977, at approximately 3:45 a.m., an Illinois Central Gulf yardmaster, age 57 with 28 years service, was struck by a multiple unit diesel-electric locomotive consist moving southward on the engine thoroughfare track, "C" yard, at Harvey, Illinois. The yardmaster sustained extensive internal injuries and died two hours later at the local hospital.

Circumstances Involved in the Accident

"C" yard in Markham Yard is utilized for classification, and consists of 10 tracks, numbered 1 to 10, from west to east. Adjacent to the yard lead on the east, the engine thoroughfare track parallels the lead southward. The track center between the lead and the thoroughfare track measures 18' 8". A power pole line runs between these two tracks.

At approximately 3:20 a.m., the yardmaster instructed a hostler to move a two unit diesel-electric consist from the oil track to the engine thoroughfare. Several switches had been lined for the engine movement. The hostler was located on the east side of the control compartment of the north unit.

In order to assist an outbound C&O freight train in increasing its train consist, the engine was being moved to the thoroughfare track. The yardmaster had left the engine in the vicinity of the switch from "C" yard, leading to the thoroughfare track, when he was struck by the consist moving southward.

An examination of the ground at No. 3 switch revealed a mound of dirt surrounding one pole of the power line. The yardmaster apparently walked around this mound of dirt to the east, stepping too close to the thoroughfare track and was struck by the backing locomotive consist. The yardmaster was found under the fuel tank on the west side of the south unit.

Applicable Rules

Keep a safe distance from passing cars or locomotives... (Illinois Central Gulf, Safety Rules 205).

Analysis

From the instructions issued to the hostler and to the crew of the C&O freight train, the yardmaster, after leaving the engine movement, was to line No. 5 switch on the "C" yard lead for the C&O train. He was walking with his back to the locomotive movement on the thoroughfare track in the vicinity of No. 3 switch when he stepped too close to the track, and was struck by the west hand rail on the south end of the backing locomotive consist.

The yardmaster was last examined on the book of operating rules May 24, 1974, and the last safety class he attended was June 27, 1977.

Cause

The accident was caused by the employee stepping too close to a track on which a locomotive movement was being made.

62. RAILROAD: Louisville and Nashville Railroad Company
LOCATION: Maceo, Kentucky
DATE : August 15, 1977

The Accident

On August 15, 1977, at approximately 11:45 a.m., a Louisville and Nashville track repairman, age 53 with 31 years and 7 months service, was fatally injured when he fell from a derailed maintenance of way machine, 2.9 miles south of Maceo, Kentucky.

Circumstances Involved in the Accident

The maintenance of way machine is a two axle, on-track, self-propelled unit, used to drive rail anchors on the rail base. The weight of the machine is 2,756 pounds and its

length is approximately eight feet. The movements are controlled by an operator seated in the center of the machine. No provisions are made for other persons to ride, or be transported, on this machine.

On the day of the accident, the track repairman reported for duty with his section gang at 7:00 a.m. At 10:00 a.m. the section gang met the machine operator at Maceo, and received permission to occupy the main track from 10:11 a.m. until 2:00 p.m. The gang then drove to and boarded the machine at MP 101.7, and proceeded to MP 100 and commenced working.

At 11:30 a.m., the foreman and the four track repairmen boarded the machine with the operator to return to the truck for lunch. After traveling a distance of .7 miles and traversing two curves to the right, they entered a slight curve to the left at a speed of 15 m.p.h. The right front wheel of the machine went over the right hand rail, derailing the front wheels.

The subject track repairman was riding on the left front corner in a squatting position. As the machine rolled to a stop, the track repairman was jarred off the front of the machine in a summersaulting, head first motion, landing between the rails on the ties. He was struck on the head by the left front wheel. The machine traveled five feet after striking the victim, a total distance of 43' from point of derailment.

Applicable Rules

(K) Rule 382. Exceeding the speed indicated below is prohibited: Burro cranes, tampers, ballast regulators and other self-propelled on-track equipment - 20 m.p.h. (L&N Safety Rules).

Rule 391. Employees are forbidden to: (K) stand on motor car or truck while it is in motion or sit in an insecure or careless position. When riding on other work equipment, employee must have a secure hand and foot hold. (L&N Safety Rule).

Analysis

According to witnesses, the employee was not securely seated and was subsequently jarred off due to the derailment. Three other employees were also located on the left side with the operator in the center, and one employee on the right side.

An inspection of the machine revealed that the right front wheel showed little wear or polish from movement. Unloaded weight tests of the wheels on level track revealed that the right front wheel bore no weight. At the same time, the weights on the other three wheels were; right rear - 1,040 pounds; left rear - 490 pounds, left front - 1,226 pounds. These facts indicate that the weight on the wheels was unevenly distributed causing the machine to track improperly. The frame was evidently twisted and the placement of the six men riding the machine further contributed to the conditions.

The carrier has no rule prohibiting the questionable practice of employees riding on machinery not equipped for this purpose.

The safety instructions received by the track repairman and his gang included a daily reading of a safety rule by a gang member, and periodic safety observations by a division safety committee.

Cause

The track repairman sustained a fatal injury when he fell off the maintenance of way machine during its derailment. The derailment was due to improper tracking which was the result of unequal weight distribution on the wheels.

63. RAILROAD: Chicago, Milwaukee, St. Paul and Pacific Railroad
LOCATION: Oshkosh, Wisconsin
DATE : August 15, 1977

The Accident

On August 15, 1977, at about 10:56 a.m., a Chicago, Milwaukee, St. Paul and Pacific Railroad section laborer, age 60 with 11 years service, was crushed between two trucks near Oshkosh, Wisconsin. The section laborer suffered multiple severe injuries and was pronounced dead on arrival at a hospital. The weather was clear at the time of the accident.

Circumstances Involved in the Accident

On the evening of August 13, 1977, the section foreman in charge of the territory near Oshkosh was notified by the Winnebago County Police Department's office of a dangerous condition at a highway-railroad grade crossing on U. S. Highway 41 near Oshkosh. However, the section forces were not notified to make the repairs at that time.

Shortly after 8:00 a.m. on August 15, the foreman and two laborers inspecting the crossing found loose and missing planking. The work gang then proceeded to Oshkosh to obtain the necessary materials to make the repairs. In Oshkosh the foreman requested highway protection from the Winnebago County police. The foreman was advised that all cars were busy at that time and one would be sent to the crossing as soon as possible. The gang returned to the crossing and after about 10 minutes, decided that the repairs could be made without the police protection.

U. S. 41 in this vicinity is a six-lane divided highway, three lanes in each direction. The section foreman proceeded north about 120 feet in the southbound lanes of the crossing with a red flag to wave vehicular traffic out of the lane of traffic being worked on.

After tightening the loose bolts in the planking, the asphalt truck was driven onto the center lane just south of the crossing. The only signal on the truck was the rear lights that were flashing. The section foreman continued to wave vehicular traffic into the left lane. A truck and trailer, failing to switch lanes on the foreman's signal, continued in the center lane to the crossing and struck the rear end of asphalt truck. One of the laborers noticed the approaching truck and yelled a warning to the others. The second laborer was unable to clear the lane and was crushed between the two trucks in the collision.

Analysis

The truck driver had been on duty a total of 5 hours and 27 minutes at the time of the accident, after having been off duty in excess of 48 hours. It could not be learned why he failed to heed the signals of the foreman who attempted to flag him into the left lane of traffic.

Applicable Rules

The carrier has no operating rules for employees in the Maintenance of Way Department, or safety rules to cover situations of this nature.

Cause

The truck driver failed to observe the flagman diverting traffic and collided with the asphalt truck, fatally injuring the laborer.

64. RAILROAD: Missouri-Kansas-Texas Railroad Company
LOCATION: Smithville, Texas
DATE : August 18, 1977

The Accident

On August 18, 1977, at about 1:40 p.m., a Missouri-Kansas-Texas brakeman, age 19 with 23 months service, was fatally injured when he was crushed between the ends of a car moving southward on the main track and a car standing in the turnout of a converging track. He was pronounced dead shortly after arrival at a local hospital. The weather was clear.

Circumstances Involved in the Accident

At Smithville Yard, the south switch of the back lead track is located 382 feet south of Miller Street crossing. The grade from Miller Street to the south switch is 0.06% descending southward. On the day of the accident, a crew consisting of a conductor, engineer, and two brakemen went on duty at 1:30 p.m. to operate Train No. 105 from Smithville to Eureka, Texas, 110.8 miles. The engineer and front brakeman took charge of the four-unit locomotive consist at the yard office and moved the train to the south end of the yard. The rear brakeman made a cut at a road crossing about 2,200 feet north of Miller Street and remained at that crossing. The front brakeman uncoupled the locomotives and the seven head cars. The seventh car, MKT 12321, was moved to and placed in the clear on the back lead track. The sixth car, MKT 12118, was moved to and stopped near the Miller Street crossing. The front brakeman closed the angle cock on the fifth car and pulled the uncoupling lever. The locomotive and the five cars then moved south of the back lead switch.

The front brakeman lined the switch, gave a backup signal and boarded the northwest corner of the fifth car, SLSF 65501. The engineer said that shortly after he started shoving the cars toward the back lead, the brakeman gave a violent stop signal, then a proceed signal, and went out of view around the end of the cut of cars. The engineer initiated an emergency application of the brakes.

The engineer moved the locomotive and five cars forward as soon as he was able to release the emergency brake application. The conductor, who had arrived at Smithville on the train involved, arrived at the south end of the yard to deliver the waybills to the locomotive. He observed the brakeman wedged between the corners of MKT 12118 on the main track and SLSF 65501 on the turnout of the back lead track. Shortly afterward, the locomotives and five cars moved southward and the brakeman's body fell to the ground. He had suffered severe injuries of the pelvis and lower abdomen.

Applicable Rules

103(a)...

Employees must observe the following precautions in switching movements:

(1) See that cars left on tracks are properly secured...(Uniform Code of Operating Rules).

232.11(c) Each train must have the air brakes in effective operating condition, and at no time shall the number and location of operative air brakes be less than permitted by Federal requirements...(CFR 49 Part 200 to Part 999).

Analysis

The brakeman had closed the angle cock ahead of each of the cars he had cut off and permitted the brake pipe to exhaust, depending on the air brakes of the cars to hold them. This was the customary method of securing cars at this location. After the accident, it was found that the air brake was cut out on MKT 12118. It is apparent that shortly after the movement to the back lead began, the brakeman realized MKT 12118 was rolling southward on the main track. As a collision was imminent, he gave a stop signal followed by a proceed signal and attempted to stop MKT 12118 with the hand brake. The marks on the cars showed that he was

on the end ladder near the hand brake of MKT 12118 when that ladder came in contact with the A-end ladder of SLSF 65501. It could not be determined how far MKT 12118 was from the fouling point when the brakeman attempted to stop it with the hand brake.

The brakeman had received physical examinations August 15, 1975 and November 24, 1976.

He was examined on the carrier's operating rules on September 9, 1975, last attended a rules instruction class on December 1, 1975, and attended safety meetings on September 1, 1976 and August 15, 1977.

The brakeman received a deferred suspension of 15 days on November 10, 1975, and a 60-day suspension on February 26, 1976. He was dismissed on September 13, 1976, and reinstated November 24, 1976. He received a 30-day deferred suspension on March 31, 1977. All of the discipline was assessed in connection with incidents that occurred while shoving cars.

Cause

This accident was caused by failure of the brakeman to secure a car by use of the hand brake and by the employee attempting to stop a rolling car with the hand brake as it closely approached the collision point with the other car.

The cut out brake on MKT 12118 and the carrier's failure to counsel and re-train the brakeman after having assessed discipline four times for similar occurrences during 18 months of actual service were contributing factors.

65. RAILROAD: Illinois Central Gulf Railroad Company
LOCATION: Markham, Illinois
DATE : August 20, 1977

The Accident

On August 20, 1977, at about 1:00 p.m., an Illinois Central Gulf section laborer, age 28 with 3 years service, was fatally injured, and 1 section laborer, age 40 with 10 years service, was injured when they were struck by a moving car in Hump Yard E, at Markham, Illinois. The weather was clear.

Circumstances Involved in the Accident

The Hump Yard is part of the Markham Facility and consists of 49 tracks of various lengths. The tracks are numbered west to east. Cars move by means of gravity after being cut off from north to south. On the day of the accident, a track crew, consisting of two machine operators and two section laborers, went on duty at 7:00 a.m., and were instructed to work in the Hump Yard. They were working with a Torsion-Beam Tamper machine (Electromatic Mark 2 Tamper) which was first in line, and with a junior tamper that was a few feet behind it.

At about 11:30 a.m. on the day of the accident, the machine operator asked the hump yardmaster to take Track No. 4 out of service. The yardmaster notified the machine operator shortly thereafter that Track No. 4 was taken out of service for the tamper machines. The tamper machines then started to work on Track No. 4, moving in a southward direction. The two section laborers were on the west side of the Torsion-Beam Tamper on the ground between Tracks No. 4 and 3, hand shoveling ballast between ties as the machines were working southward.

At about 1:00 p.m., the machines were moving southward on Track No. 4 with the operators in the cabs of their machines. The two section laborers, with their backs to the north and shoveling ballast, were struck by a southward moving car on Track No. 3, on a two-degree curve, approximately 182 feet south of the north end of the hump Yard ladder tracks.

The machine operator on the most southerly tamper machine saw the car strike both section laborers, and throw them to the ground between Tracks No. 3 and 4. He then noticed the end of the car roll over the first laborer working to the north, killing him instantly. The second section laborer was injured, sustaining severe bruises to the back and to the left side of his body.

Applicable Rules

No. 205 Keeping a safe distance from passing cars or locomotive. (Illinois Central Gulf Railroad Maintenance of Way Safety Rules).

No. 211 The foreman or employee in charge must and other workmen will, as consistant with their work-be alert and watchful, keeping a lookout for approaching

locomotives or cars and give warning upon the approach of locomotives or cars in time for all to reach safety. (Illinois Central Gulf Guidelines to Safety).

No. 212 Move to a place of safety whenever locomotives or cars are approaching. (Illinois Central Gulf Guidelines to Safety).

Analysis

The track center of the Hump Yard tracks are 13 feet and 5 inches. Allowing for the overhang of 28 inches on the tamper machine (width 9 feet and 3 1/2 inches) and the overhang of the humped car of approximately 27 inches, this leaves approximately 4 feet between the machine and the hump car as working area. This is not enough clearance for a man hand shoveling ballast. In the future, the carrier will take out of service the adjacent tracks on either side of the track where the machinery is working.

The carrier conducts a daily discussion of the designated rule of the day for Maintenance of Way Department employees in conjunction with a monthly safety calendar. In addition, during the month of June 1977, the carrier conducted safety meetings on their rail safety car. The fatally injured employee attended such a class on June 22, 1977.

Cause

The section laborers, while working between two tracks, were struck by a passing car. A contributing factor to the accident is that the carrier did not provide adequate supervisory personnel to oversee the activity of the section laborers working between two operational tracks.

66. RAILROAD: Norfolk and Western Railway Company
LOCATION: Frankfort, Indiana
DATE : August 26, 1977

The Accident

At approximately 8:28 a.m., on August 26, 1977, a N&W section laborer, age 21 with 2 years service, was fatally injured when he was crushed by an International rubber tired tractor, which flipped over backwards on him in Frankfort Yard, Frankfort, Indiana. The weather was daylight and clear.

Circumstances Involved in the Accident

The section laborer went on duty at Frankfort, Indiana, at the 7:05 a.m., on the day of the accident. Assigned duties of section laborer were to drive a rubber tired International tractor, which would be used to pull rails on this date. At approximately 8:05 a.m., while pulling a 39' section of #112 rail in a northwesterly direction across The Stripping Track, the rail being pulled caught on the gage side of the stationary north rail of the Stripping Track and flipped the tractor over backwards on top of the section laborer. At the time of the accident, the section laborer was working alone. The rail being pulled by the tractor was attached with a chain around a bolt, which had been placed through a hitch located on the rear of the tractor, with the chain wrapped around a 12" bolt which had been placed through the end hole of rail. Rail was being pulled from the second tier of rail which was stacked south of the Stripping Track. The tractor was being operated on practically level ground at the time of the accident. The tractor was found to be in second gear, a low range gear, following the accident. This would indicate that the tractor could not maintain more than five m.p.h. speed when the accident occurred. The section laborer was killed instantly, and was officially pronounced dead by a doctor at the accident site.

Analysis

Post-accident investigation of the tractor disclosed that the brakes and clutch were in good working order. The carrier had no applicable rule to cover this incident that would have prevented the accident. The carrier has an active safety program consisting of a Rule of the Day Program. The section laborer had attended a short safety meeting prior to beginning work, with reading and initialing the Safety Rule of the Day. Occasional operators of these tractors receive on-the-job training by experienced supervision and the employee had experience in the operation of the tractor prior to the accident. Record of the employee indicated a clear safety record while in service of the carrier.

Cause

The accident was apparently caused by the failure of the operator of the tractor to insure that rail being pulled was sufficiently clear of the north rail of Stripping Track.

67. RAILROAD: Chicago and North Western Transportation Company
LOCATION: Mason City, Iowa
DATE : August 27, 1977

The Accident

On August 27, 1977, at approximately 4:50 a.m., a Chicago and North Western Transportation Company switchman, age 61 with 30 years service, was struck and fatally injured by 8 free-rolling cars during switching operations in West Yard at Mason City, Iowa. The weather was clear.

Circumstances Involved in the Accident

West Yard is a flat switching yard consisting of nine tangent tracks extending in a generally north-south alinement. This is an inverted-saucer type yard with a 0.27% descending grade from the crown toward the lead track in both directions.

A yard crew comprised of an engineer, fireman, footboard yardmaster, and a switchman went on duty at 11:00 p.m., August 26, 1977, after having the prescribed off duty period.

A short time prior to the accident, the yard crew picked up 16 cars from various yard tracks and moved to the north lead track for switching purposes. The footboard yardmaster was positioned at No. 4 track switch to uncouple cars and operate the switch. He opened the knuckles and blocked the cars to prevent a rollout. Thirty-six cars were standing on No. 4 track when the footboard yardmaster cut off in motion eight cars, in three separate switching moves, on that track. These cars moved under their own momentum until they were stopped by cars standing in No. 4 track. The footboard yardmaster was in the process of operating No. 4 track switch when he was informed by the switchman via radio that cars were rolling out of No. 4 track. The cars moved through No. 4 track switch at four-six miles per hour. The eight cars coupled into four cars and a locomotive standing on the north lead track and stopped. The footboard yardmaster ran southward and found the switchman across the east rail of No. 4 track, 171 feet south of No. 4 track switch, with his right leg severed. Am ambulance arrived and moved the switchman to a local hospital where he was pronounced dead on arrival.

There were no eyewitnesses to the accident.

Applicable Rules

127. Walking directly in front of moving car or engine for any purpose is prohibited...(Chicago and North Western Safety Rule).

Analysis

Post-accident investigation disclosed that there were no unusual conditions of track, ballast or ground in the accident area. There were no equipment defects. Apparently, the initial two cars switched into No. 4 track did not couple to the cars standing on that track. Subsequently, the following six cars switched into No. 4 track started a reverse movement toward the lead track due to the descending grade. The first wheel on the east side of the lead car, a box car with high hand brake, showed evidence of having passed over the switchman's body.

During his 30 years service, the switchman was issued both operating and safety rule books. Carrier records indicate that he last attended an Operating Rules Class on July 22, 1976. He attended a safety meeting at Mason City on July 12, 1977. Monthly safety meetings are held at Mason City, but attendance is not complusory.

Cause

The switchman, after informing the yardmaster of the rolling cars, did not stand clear of their movement.

68. RAILROAD: Soo Line Railroad Company
LOCATION: Minneapolis, Minnesota
DATE : August 29, 1977

The Accident

On August 29, 1977, at 5:55 a.m., a hostler helper was fatally injured when his body was crushed between a platform and the running board of a diesel locomotive at the locomotive servicing facility of Shoreham Yard, Minneapolis, Minnesota. The helper, age 19, had been with the railroad for one and half months.

Circumstances Involved in the Accident

Two GP 9 diesel electric locomotive units, numbered 550 and 2402, coupled, were backed toward the diesel service building. Both units were facing away from the building and unit 550 was shoving unit 2402. The hostler was at the controls, located on the right side of unit 550. A stop was made, short of the building. The hostler helper opened the door and entered the building to sound a warning horn. He then crossed the track, behind unit 2402, to the hostler's side and gave a backup signal with a lighted flashlight. He climbed to the end walkway of the rear (leading) end of unit 2402 and crossed to the opposite side, out of the hostler's view, as the units moved into the building.

Platforms, inside the building, and located on both sides of the track, clear the running boards of unit 2402 by five inches. The platforms are almost level with the running boards of unit 2402. The attention of two roundhouse employees was drawn to the locomotive by an unusual movement. They observed the hostler helper's body wedged and rotating between the platform and a running board of unit 2402, on the side opposite the hostler, as it moved into the diesel service building.

Applicable Rules

"Do not ride on side of locomotive or car while it is being moved over turntable, transfer table, in and out of Shops or Roundhouse, on depressed track, or any other points of restricted clearance. Under no circumstances must a shop employee ride on the forward end of a locomotive in direction it is moving." (Soo Line Railroad Mechanical Department Safety Rules).

When the employee giving the signals disappears from view, stop the movements of any locomotive." (General Rules Governing Handling of Locomotives).

Analysis

Witnesses did not see the accident until after the hostler helper was wedged between the running board of the locomotive and the platform. How he came in contact with the platform is not known.

The carrier has no record of attendance by the employee at a safety meeting or a formal rules class. His training consisted of being placed as an extra man with a regular hostler helper.

Cause

The hostler helper came in contact with the edge of the platform causing his body to be crushed between the platform and the running board of a locomotive unit.

69. RAILROAD: Utah Railway Company
LOCATION: Martin, Utah
DATE : September 8, 1977

The Accident

On September 8, 1977, at approximately 8:40 a.m., a Utah Railway Company track laborer, age 18 with 3 months service, was fatally injured when he was struck by a freight car during a yard movement. The weather was clear.

Circumstances Involved in the Accident

The accident occurred on the westbound main track at Milepost 1.04, in a multiple track yard. The tracks in the accident area are tangent and are constructed on a level grade.

The carrier's timetable indicates that the rules and regulations of the operating department of the Denver and Rio Grande Western Railroad Company governing the general movements of trains were adopted and shall be complied with by all trains operated by the Utah Railway Company.

On the day of the accident, the track laborer reported for duty at 7:00 a.m. At about 8:15 a.m., the roadmaster instructed him to pick up debris fouling the tracks. The crew with the crane had not arrived at the designated work area prior to the accident.

On the morning of the accident, a five-man train crew on duty at Martin was instructed to make up an 85-car train on the westbound main track from cars located in the yard. Two carmen were assigned to assist the train crew. The engineer and fireman boarded the locomotive at the engine-house located at the west end of the yard and coupled into 33 or 34 cars located on a yard track adjacent to the main track. They pushed seven cars of the train easterly down

the main line toward the track laborer's work location. The eighth car was a bad-order and was set out on a yard track. Additional cars were pushed down the main track to be made a part of the new train. The cars rolled to a stop and the carmen were in the process of making the train ready for main line movement when they discovered that the first cut of cars had passed over the track laborer's body.

Analysis

The roadmaster stated that he walked up to the track laborer in the yard and asked if he noticed the locomotive leaving the enginehouse area. The roadmaster said that he told the laborer specifically to watch out for the locomotive and to stay in the clear. He said the laborer acknowledged understanding of these instructions by nodding his head up and down.

The engineer and two brakemen testified at the carrier's investigation that they observed the track laborer at his assigned work location in the clear of the track for train movement when they coupled into the cut of cars on the yard track. They testified that they did not see him on or about the main track when they pushed seven cars down the main track into the yard to make up the train.

The carrier has no formal safety training program. The superintendent's office issues a monthly circular listing safety rules to be studied for the month. There were no specific rules applicable to this accident issued during this employee's service with the carrier. Safety meetings are conducted periodically. There was no record of this employee attending a safety meeting. The laborer may have become confused about which track was being used to make up the train and failed to step in the clear. It is possible that, due to his lack of experience or training, he failed to place enough significance on the roadmaster's instructions.

Cause

The accident was caused by failure of the track laborer to clear the track for moving cars.

70. RAILROAD: Consolidated Rail Corporation
LOCATION: Westerville, Ohio
DATE : September 13, 1977

The Accident

On September 13, 1977, at approximately 12:02 p.m., a ConRail brakeman was critically injured in a collision between a freight train and a dump truck at a rail-private grade crossing near Westerville, Ohio. The brakeman expired of third degree burns the following day. The truck driver was killed in the collision. The weather was clear.

Circumstances Involved in the Accident

The accident occurred on the ConRail Mt. Vernon Secondary main track about 568 feet south of Mile Post 134 where the track is crossed at a grade by a private road which provides access to an asphalt plant.

From the south, the track is tangent for over 1,325 feet to the point of accident. The private road extends eastward from the asphalt plant and ascends a 0.5% grade for a distance of about 150 feet to the crossing. Brush in the southwest quadrant restricts an eastbound motorist's clear visibility of a northbound train to within 50 feet of the crossing. Advance warning signs are located on each side of the crossing. State law does not require protection at private grade crossings.

On the day of the accident, local freight train AD-6 departed Columbus, Ohio at 10:00 a.m. with a locomotive, eight cars and a caboose. The engineer was at the controls on the east side of the locomotive. The conductor was in the center seat, the fireman was sitting on the west side of the unit and the rear brakeman was standing behind the fireman. None of the crew members were aware of the location of the front brakeman. However, it appears that he must have been riding on a walkway outside of the locomotive cab.

The truck driver, with an 18-ton truck load of hot asphalt, proceeded eastward to the crossing without stopping. As the truck moved onto the track, the locomotive, moving at a speed of 18 m.p.h., struck the truck cab rupturing its gas tank. Flames engulfed the truck and the locomotive. With brakes applied, the train shoved the truck northward for about 97 feet.

After impact, the engineer jumped to the west and the other crew members jumped to the east. The front brakeman was found in a willow lined ditch along the east side of the track. Except for his shorts and shoes, his clothing had been burned from his body. He died from third degree burns the following day. The truck driver died at the scene from internal injuries and fourth degree burns.

Applicable Rules

"Sec. 4511.62(A) Whenever any person driving a vehicle... approaches a railroad grade crossing under any of the circumstances stated in this section, he shall stop within fifty feet, but no less than fifteen feet from the nearest rail of the railroad, and shall not proceed until he can do so safely. The foregoing requirements shall apply when... (Ohio State Motor Vehicle Laws).

"(5) An approaching train is plainly visible and is in hazardous proximity to the crossing."

Motorist's Road to Track Visibility

From 50 feet west of the near rail, a northbound train is clearly visible 130 feet south of the crossing. From 15 feet west of the crossing a northbound train is clearly visible about 1,000 feet south of the crossing.

Analysis

The train was being operated in the manner prescribed by rules. The locomotive headlight was burning, the bell was ringing and the horn had been sounded repeatedly. On the day of the accident, the truck driver had crossed the track five times prior to the collision. It is unknown as to why he failed to see the approaching train.

Cause

The accident was caused by the driver of a dump truck driving his vehicle onto a rail-private road grade crossing immediately in front of an approaching freight train movement.

71. RAILROAD: Union Pacific Railroad Company
LOCATION: City of Industry, California
DATE : September 19, 1977

The Accident

On September 19, 1977, at approximately 1:15 a.m., a Union Pacific brakeman, age 53 with 9 years service, dismounted from a moving car and was fatally injured when struck by the locomotive of a train passing on an adjacent track. The weather was clear.

Circumstances Involved in the Accident

The crew of an industrial switcher, locomotive unit UP 861, went on duty at City of Industry at 7:00 p.m., September 18, 1977. They performed industrial switching until 12:30 a.m., September 19. At this time the train, consisting of three box cars and six covered hopper cars ahead of the locomotive and a caboose behind the locomotive and entered the south drill track between City of Industry and Walnut, California.

The train then entered the Bullock spur track, which extends southward from the south drill track, and spotted the three box cars at an industrial warehouse on a spur track extending westward from the Bullock spur. The rear brakeman then returned to the Bullock spur switch to wait for the train. While waiting, he observed the conductor and front brakeman switching the covered hopper cars between the Bullock spur and industry spur tracks and he proceeded to that location to see if he could be of assistance. When he arrived, the switching had been completed. He then boarded the loaded covered hopper on the north side and rode out to the Bullock spur switch.

According to the engineer of Extra 6914 West, a Union Pacific freight train was approaching Bullock spur at approximately 60 m.p.h., when the engineer observed from a distance of approximately 1,000 feet, the rear brakeman of UP 861 riding a hopper car out of the Bullock spur. The headlight of the approaching train was lighted brightly, and the engineer immediately began to blow, the locomotive whistle to alert the brakeman to the trains approach. As the train closely approached the Bullock spur switch, the engineer observed the brakeman alight from the hopper.

The engineer's view of the brakeman on the track was soon obstructed by the nose of the locomotive. He heard a sound like something had hit the side of the locomotive, and he immediately put the train brakes in emergency. He contacted the conductor of UP 861 by radio to inform him that a man had been hit. A paramedic unit arrived shortly and administered cardio-pulmonary resuscitation. The brakeman was then transported by ambulance to a nearby hospital where he was pronounced dead at 2:10 a.m.

Applicable Rules

Operating Rules

General Rule M - Employees must expect the movement of trains, engines, cars or other moving equipment on any track, at any time, in either direction...(Union Pacific Operating Rules).

No. 724 (A) - Employees must not stand between main tracks, or between a main track and another track while trains or engines are passing unless track centers are twenty-five feet or more apart...(Union Pacific Operating Rules).

Safety Instructions

No. 4038 - On any track, employees must keep a careful lookout for moving equipment in both directions...(Union Pacific Safety Instructions).

No. 4040 - Employees must not cross or step foul of tracks closely in front of moving equipment and must not cross tracks close to the end of equipment... (Union Pacific Safety Instructions).

Analysis

The track centers were 15 feet apart, between the main track and the south drill track, at the point where the accident occurred.

In returning to assist in the switching operation on the industry spur tracks, the rear brakeman had left the Bullock spur switch. This positioned him between the main track and the south drill track when the westbound train approached.

The carrier had issued the brakeman a copy of operating and safety rules. Posters and circulars relative to safety are posted periodically and supervisors check for rule compliance.

The rear brakeman was last examined on the operating rules on April 20, 1972. His last physical examination was on January 4, 1977.

Cause

The rear brakeman, after disembarking from the hopper on his return to the Bullock spur switch, failed to remain clear of a moving train on the adjacent track.

72. RAILROAD: Louisville and Nashville Railroad
LOCATION: Louisville, Kentucky
DATE : September 28, 1977

The Accident

On September 28, 1977, at 9:25 a.m., a Louisville and Nashville yard foreman, age 57 with 32 years service, was fatally injured when he was run over by a freight car at the Central Avenue Yard, Louisville, Kentucky. He was pronounced dead at the scene. The weather was clear.

Circumstances Involved in the Accident

At the north end of Central Avenue Yard, freight cars are classified by a flat switching method. The classification tracks are numbered consecutively, eastward, from the double main tracks, 1 through 14.

A yard running track, referred to as the Short Line Main, parallels the switching lead on the east side. A track known as the Jackson Highway Track parallels the Short Line Main on the east side and is connected to the Short Line Main by a crossover. The north switch is located about 525 feet north of the point of accident. The accident occurred on the Short Line Main track, about 18 feet south of No. 8 switch.

On the date of the accident, two yard switching crews were assigned to the north end of Central Avenue Yard. The two crews reported for duty at 7:00 a.m.

Crew 132, with locomotive 5039, consisted of a yard foreman, an engineer and two switchmen.

Crew No. 131, with locomotive 2209, consisted of a foreman, an engineer and two switchmen. The locomotive of each crew was operated with the long hood forward.

Shortly before the time of the accident, crew 132 moved northward from Track No. 8 to the switching lead, with 12 cars. The yard foreman had taken a position between the lead track and the Short Line Main, near No. 8 switch, to check the car numbers against the switch list. Crew 131 moved northward on the Short Line Main with four cars. When the cars had passed, the foreman moved to a position between the rails of the Short Line Main, about 18 feet south of No. 8 switch. Crew 131 stopped the locomotive about 30 feet north of the Jackson Highway crossover, and was instructed by the yardmaster to take the locomotive for supplies via the Jackson Highway track. In order to clear the crossover to the Jackson Highway track, crew 131 pushed the four cars southward on the Short Line Main.

As the cars were approaching the yard foreman, the rear switchman of crew 132 attempted to warn him, by radio, of the approaching cars. The warning was too late to prevent the foreman from being struck and run over by the south car.

Applicate Rule

Rule 11. Walking, or even being on, railroad tracks, except in direct line of duty, is prohibited. If duty makes it necessary to be on the tracks, a sharp lookout must be kept for trains approaching in either direction. Any time is train time on a railroad track and even on double track, movements may be made in either direction. Walk beside the track, in clear of engines and cars instead of on it, when possible. (Louisville and Nashville Safety Rules).

Analysis

After the northward movement of crew 131 on the Short Line Main, the foreman apparently did not expect the southward movement, and failed to protect himself against that movement.

The carrier conducts written examinations on the operating and safety rules annually. The foreman was last examined on the rules, February 7, 1977.

Cause

The yard foreman occupied an operational track when he was struck by cars.

73. RAILROAD: Consolidated Rail Corporation
LOCATION: Lansing, Michigan
DATE : September 29, 1977

The Accident

A 27 year old conductor was killed when his body was rolled between two cars during a switching operation in New Olds Yard in Lansing, Michigan on September 29, 1977 at about 7:35 p.m. It was dusk and the weather was clear. The conductor was employed by ConRail for seven and half years.

Circumstances Involved in the Accident

New Olds Yard, the accident site, consists of 9 tracks numbered 1 through 9 from south to north. The lead track is at the west end of the yard with the east end of Tracks 3 through 9 stubbed.

At dusk, after being on duty for approximately three and half hours, the subject employee instructed his crew members to pull eight cars out of Track 3 onto the lead track of the yard and then to shove the two east cars (MP 355945, PLE 6099) eastward into Track 2. These two cars were to couple with two cars that were stationary on Track 2 approximately 250 feet from the switch. The MP car stopped 16 feet short of the coupling, leaving the west end of the PLE car fouling movement of cars into Track 3. The clearance point between Tracks 2 and 3 is 308 feet from the switch on Track 2. The fieldman (brakeman) determined that the two cars were not going to couple and placed a wheel block under the easternmost set of wheels of the MP car. This was done to prevent the MP and PLE cars from moving as they stopped on a .10% grade, descending westward. The fouling condition was not detected by any member of this switch crew.

The conductor then asked the fieldman if the MP and PLE cars were stopped. The fieldman answered yes, and in addition, gave a high sign signal with his lantern. The subject employee lined the switches on the lead for movement into Track 3, and gave a move ahead signal to the head brakeman who relayed the signal to the engineer. As the six remaining cars were being shoved eastward onto Track 3, the subject employee boarded the east end of the six-car movement and set the handbrake. Apparently, without looking to determine whether or not he was in the clear, the conductor swung from the end brake step to the south side ladder of the car he was riding. Apparently, at that precise instant, the left side of his body came in contact with the PLE car that was left on Track 2, fouling movement into Track 3. As determined by the marks left on the sides of the cars the conductor was wedged and rolled between the cars for a distance of 25 feet, at which time sufficient clearance between the two cars permitted him to drop to the ground.

Applicable Rules

Rule 1105(b). When riding on, or getting on or off, standing or moving equipment: Look for, remove if practicable, and stay clear of any obstruction, opening or other such hazard.

Rule 1105(d). Face equipment and the direction it is moving. Keep body as close as possible to the equipment.

Analysis.

No one actually had the subject employee under observation at the instant he was caught between the car he was riding and the stationary car on Track 2. However, he apparently did not look to insure that he would not be in danger as he moved from the brake step to the southside ladder of the car he was riding. The subject employee was familiar with carrier safety rules. He had passed his most recent rule exam on September 26, 1976.

Cause

The conductor failed to look for and stay clear of the car that was on Track 2, obstructing movement of the car he was riding onto Track 3.

74. RAILROAD: Southern Railway
LOCATION: Marshall, Virginia
DATE : October 6, 1977

The Accident

On October 6, 1977, at approximately 2:35 p.m., a Southern Railway Maintenance of Way laborer, age 22 with 9 weeks service, was fatally injured at Marshall, Virginia. He was riding on the broom attachment of a Kershaw Ballast Regulator when it dropped to the track causing the employee to strike his head on the south rail. The weather was warm and clear.

Circumstances Involved in the Accident

The accident occurred on the Harrisonburg Branch, officially designated as the "B" line at Mile Post 23.6, a single tangent track at this point. The mile post at Marshall, Virginia is 24.0.

On the day of the accident, the laborer was a member of the "Tie Patch Gang No. 551" which was surfacing a curve at Mile Post 23.4. The Tie Patch Gang on this date consisted of five laborers, three machine operators, a foreman and four pieces of on-track equipment. The foreman on this date also served as a machine operator.

The foreman, in clearing the work area for a train movement, directed the first three machines to go west to Marshall, Virginia and remain on a siding. Moments later, the foreman, who was operating the ballast regulator, instructed the four remaining laborers to board the machine. Three laborers boarded the left side, sitting on the wing of the ballast regulator. The other laborer mounted the right side, standing with one foot on the wing and the other foot to the rear, on the broom attachment. The foreman-operator asked if everbody was on and received a positive reply. He then began a forward movement westward towards Marshall, Virginia. The laborer on the right side moved to the broom attachment on the rear of the machine where he held on to the top of the frame. The ballast regulator was moving at approximately 10 m.p.h. approaching Mile Post 23.6. At this point, the broom attachment securement bolts failed, causing it to separate from the machine and drop to the track. When the broom attachment separated, a warning was shouted. The ballast regulator was stopped approximately 65 feet west of the broom attachment. The laborer was found

about 10 feet west of the broom attachment, lying face up between the tracks with his head on the south rail. He died moments later.

Applicable Rules

Operating Rule 1501 - Operator or employee in charge of on-track equipment will be responsible for its safe and proper movement, operation car and maintenance...(Southern Railroad Safety Rules).

Operating Rule 1527 - On moving equipment, occupants must not stand, hang legs over side, sit on machine with feet on another, ride between machines in any way, step from one machine to another, or change from one location to another...(Southern Railroad Safety Rules).

Analysis

The laborer was observed standing on the top of the broom attachment when it separated from the ballast regulator. Upon separation, the broom attachment fell to the track, injuring the laborer as his head struck the south rail.

The laborer had received on-the-job safety instructions, but had not been issued an Operating Rule Book which included the carrier's safety rules. Safety meetings were scheduled for each Monday, but not always convened. The division engineer has a general safety meeting quarterly for all Maintenance of Way employees.

Six bolts were found in the accident area, four were broken and two were elongated with the threads of the nuts indicating a stripping of the nuts.

The foreman-operator inspected the ballast regulator in the morning prior to going to work and took no exceptions.

Cause

The primary cause of the accident was failure of the broom attachment securement bolts. A contributing factor was the laborer's movements once upon the ballast regulator.

75. RAILROAD: Union Pacific Railroad Company
LOCATION: Kansas City, Kansas
DATE : October 27, 1977

The Accident

On October 27, 1977, at about 9:15 p.m., a Union Pacific Railroad Company yard foreman, age 29 with 7 years service, was fatally injured when he was run over by a freight car while performing switching operations at the Phillips Petroleum Company's refinery in Kansas City, Kansas. The weather was clear.

Circumstances Involved in the Accident

The switch crew assigned to locomotive UP 127 went on duty at 3:15 p.m. at Quindaro Yard Office in Kansas City, Kansas, on the day of the accident. The crew, consisting of an engineman, yard foreman and two switchmen, arrived at the refinery at about 6:10 p.m. in the performance of their duties. After switching on several other tracks in the facility, they were stopped by a representative of the refinery at about 8:50 p.m. as they approached tracks Nos. 8 and 9. The Phillips representative warned the yard foreman and the two switchmen about the close clearances at a construction project on Track No. 8.

The construction project involved an excavation about 7 feet in depth and 18 feet in width, the width being parallel to Track No. 8. The excavation was barricaded parallel to the track with two scaffolding type pipes installed vertically and extending from ground level to a height of 8 feet, 2 inches to which were clamped 2 horizontal pipes, one foot, 3 inches and 3 feet, 10 inches, respectively, above ground level. The barricade was 6 feet, 3 5/8 inches from the centerline of Track No. 8 on the west and provided only 12 inches clearance to a tank car running board.

Shortly after being alerted about the close clearance, the switch crew entered Track No. 8 and pulled eight cars out, passing the excavation without incident. They set two cars on Track No. 9 and again entered Track No. 8, shoving six cars. After placing three cars at the far end of Track No. 8, they began leaving, pulling, in order from the locomotive, a tank car, a covered hopper and another tank car. One switchman was walking toward Track No. 9 preparing to pick up two cars placed there previously. The other switchman

was riding the stairwell of the locomotive in view of the engineman on the west. Shortly before reaching the barricade, the yard foreman climbed onto the trailing end of the first tank car, placing both feet in the sill step and holding the vertical handhold. According to the switchman, the yard foreman was looking back toward the trailing cars as he closely approached the barricade. To no avail the switchman tried to warn the yard foreman verbally and by whistling As the movement continued, the yard foreman was brushed against the barricade which swung him around between the tank car and covered hopper. The switchman immediately signaled the engineman to stop the movement, and upon investigation, found the yard foreman's body beneath the leading truck of the covered hopper.

Applicable Rules

Section III

1. Side clearance in general 8'6" (from centerline of track...(Kansas State Corporation Commission Regulations, Docket 58, 144-R).

M...

Employees must inform themselves as to the location of structures or obstructions where clearances are close and must take necessary precautions to avoid injury at such locations...(Union Pacific Operating Rules).

725. Employees must not ride in or on engines or car as follows:
(Union Pacific Operating Rules).

On side of engine or cars while being moved through doorways, over turntable or at other locations where clearance are close.

Analysis

The barricade, intended for the protection of the excavation, did not comply with the regulations governing clearances on railroads established by the State of Kansas. It could not be determined why the yard foreman attempted to ride the tank car past the barricade after having been informed of its close clearance, only 25 minutes prior to the accident.

The yard foreman was issued a copy of the carrier's operating rules and rules governing duties and deportment of employees, safety instructions and use of radio. He

was last examined on the carrier's rules February 15, 1971. A rules of the day is posted daily on the Superintendent's Bulletin Board.

Rule M was last posted July 29, 1975, and rule No. 725 was last posted January 8, 1977. Although the carrier holds monthly safety meetings, there is no record of the yard foreman's attendance.

Cause

The yard foreman failed to heed the warning of close clearance at the barricade. The encroachment of the barricade into the required clearance was a contributing factor.

76. RAILROAD: Tacoma Municipal Belt Line Railway
LOCATION: Tacoma, Washington
DATE : November 7, 1977

The Accident

On November 7, 1977, a Tacoma Municipal Belt Line Railway sectionman, age 31 with 3 years service, was injured when he fell from the seat of a tractor he was operating and was crushed by the machines rear wheel. The employee subsequently died on November 15, 1977, of injuries sustained in the accident. The accident occurred at the carrier's classification yard in Tacoma, Washington, at 2:50 p.m. under clear skies.

Circumstances Involved in the Accident

On the day of the accident, the section crew was engaged in replacing eight-foot timber crossties with timber switch ties on a section of track near the west end of the carrier's classification yard. The sectionman's duties included the operation of a John Deere JD401-A wheel type tractor equipped with a front loading bucket and backhoe. The tractor was also equipped with roll bars and seat belt. The sectionman was familiar with this equipment and had been regularly operating the tractor for the previous six months.

At the time of the accident, the sectionman was transporting seven crossties in the tractor's front bucket from the point of work to a dumping point approximately 150 feet east. The tractor was being operated at a slow speed, in a low gear over a well maintained 15-foot wide gravel road

bordered by a yard track to the south and a ditch seven feet deep to the north. The seat belt was not being used. The tractor had traveled approximately 70 feet east when the sectionman was heard to shout an exclamation. The tractor suddenly made a sharp turn to the left. The sectionman fell from his position on the seat toward the left side of the tractor and to the ground. He landed on his left side and the left rear wheel of the tractor traveled up his legs. After passing over the sectionman, the tractor continued northward over the bank and into the ditch. The sectionman was transported to a hospital where he died eight days later of injuries sustained in the accident.

Post-accident examination of the tractor revealed nothing mechanically wrong with the tractor or its steering mechanism. It was also shown that the load in the front bucket had no negative effect on the tractor's operation. The seat belt was found to be wrapped around a hydraulic arm and was not being regularly used. The examination also revealed pieces of the sectionman's left pants leg attached to a large cotter pin on the left side of the tractor body, just below the foot rest and several inches ahead of the left rear wheel.

Analysis

The sectionman had received his last examination on carrier safety and maintenance rules on October 31, 1974. He was on medical leave when the biennial examination was held in 1976 and was not examined on the rules prior to or after his return to service on February 7, 1977.

The sectionman received his last physical examination on February 4, 1977.

The carrier has no rules governing the use of seat belts when operating tractors. The seat belt was not being used at the time of the accident.

The tractor's sharp turn to the left could only have been caused by the steering wheel being turned in that direction. It appears that the sectionman pulled it to the left as he went off the tractor.

Pieces of the sectionman's left pants leg attached to the roller pin indicate that the pants leg must have become entangled with the pin after the tractor was moving and probably as the sectionman fell from the tractor.

Cause

The sectionman's left foot slipped off the clutch pedal or was otherwise placed outside the floorboard area, and became entangled with the left rear wheel, which pulled him from the seat and out of the tractor.

77. RAILROAD: Louisville and Nashville Railroad
LOCATION: Louisville, Kentucky
DATE : November 10, 1977

The Accident

On November 10, 1977, at approximately 1:13 a.m., a 23 year old Louisville and Nashville switchman with 10 months and 23 days service, was fatally injured when an interior bulkhead door fell, crushing him underneath, during a switching operation at United Industries in Louisville, Kentucky. The weather was cloudy, cold and windy.

Circumstances Involved in the Accident

On the day of the accident, the crew of job 308, comprised of a conductor, an engineer and two switchmen with locomotive LN 2261, entered Track No. 11 at approximately 12:30 to perform a switching operation.

Two of the five cars on Track No. 11, adjacent to the United Industries plant, had undergone reconditioning of the interior bulkhead doors and carrier assemblies. These cars were scheduled to be switched out during the day.

After coupling to the north car of the five cars, the conductor and one switchman walked back to the fifth car and uncoupled the four north cars. The conductor instructed the switchman to remain at that location and to spot the cars being switched back into the plant. Upon reentering Track No. 11, the conductor radioed ahead to the switchman to warn him of the locomotive's approach. After several radio attempts without response, the conductor ordered the engineer to stop. The conductor, in his search for the switchman, found him pinned underneath a bulkhead door inside one of the box cars. The switchman was taken to a hospital, where he died at 3:50 a.m. There were no witnesses to the accident.

Applicable Rule

Rule B Employee must refrain from unsafe and improper practices, under which heading is understood to be included violations of written rules and instructions and the violation of unwritten rules of "common sense." (L&N Safety Rules).

Analysis

Prior to the accident, one of the two thousand pound interior bulkhead doors inside the box car was raised and blocked up in order to remove the door carrier for repair. For some unknown reason, the switchman entered the car and the bulkhead door fell upon him.

The subject switchman was issued a copy of the carrier safety rules and was last examined on the rules October 11, and 18, 1977.

Cause

The switchman was crushed by an interior bulkhead door as he entered the box car. A causal factor of the accident was the lack of industrial safety precautions that would have prevented the door from falling while disengaged from the carrier.

78. RAILROAD: Consolidated Rail Corporation
LOCATION: Detroit, Michigan
DATE : November 14, 1977

The Accident

On November 14, 1977, at approximately 5:10 p.m., a ConRail carman/welder, age 31 with 4 years service, was fatally injured, and a second carman, age 22 with 3 years service, was severely injured when a plug door that they were attempting to close fell off the side of a box car. The accident occurred at the Southbound Yard in Detroit, Michigan. The weather was clear.

Circumstances Involved in the Accident

The two carmen went on duty at 3:30 p.m. on November 14, 1977 at the Southbound Yard. They were assigned to make repairs to a car located on the scale track. At the time of the accident, the carmen were working on closing the plug doors of a 50-foot box car. The left door was closed with no problems. At about 4:55 p.m. the two carmen began to work on the right side door. After the vertical support arms were turned to their proper position, an attempt was unsuccessfully made to close the door. One carman got a sledge hammer from the truck. He positioned himself and began to hammer on the left side bottom roller in order to move the door. The other carman was standing behind him. As he beat on the roller, he saw the door begin to fall. He dropped the hammer, turned and ran to his right. The door fell flat to the ground, catching the standing carman under the center. The fleeing carman was caught under the right side of the door with only his left arm, shoulder, and head exposed. He was unconcious for 15 minutes and, extricated himself afterwards. He could not move the door to get the other man out, and went to the yard office for help. The door was raised and the man was removed. The emergency squad arrived and the time of death was placed at 5:25 p.m. Cause of death was asphyxia compression of the chest due to the door pressing against his back. The injured man received a broken right arm and severe bruises to the legs and body.

Applicable Rules

Rule 4361 - To open and close roller type side door of box car and baggage car:

(a) Look for and be sure door is properly tracked.
(b) If not properly tracked and can not be retracked, keep clear of the door and use rope equipped with hook to pull door.
(c) If properly tracked, use handle provided and keep body, hand, and other parts of the person clear of jamb, travel rail, or door opening.

Analysis

Post-accident investigation disclosed that the top guide crank arms had previously been heated and bent. The upper guide way was bent out in one place. When the door was rehung, the right top crank arm was in the bent area of the guide, and the left top crank arm was hanging next

to an open area in the bottom flange of the guide way. The door was suspended precariously on the top crank arms instead of the bottom rollers. The impact from hammering on the bottom roller allowed the top crank arms to disengage from the guide way, the door pivoted on the bottom rollers, and fell to the ground.

Cause

The carman's hammering, in an attempt to close the plug door, caused the top crank arms to disengage from the guide way, allowing the door to fall to the ground. The carmen also did not check the tracking of the plug door to insure its safety.

79. RAILROAD: Atchison, Topeka and Santa Fe Railway
LOCATION: Los Angeles, California
DATE : November 15, 1977

The Accident

On November 15, 1977, at approximately 10:15 a.m., an Atchison, Topeka and Santa Fe trackman, age 32 with 4 years service, was fatally injured when he was run over by the rear wheels of a switch mover transporting a switch at Hobart Yard, Los Angeles. The weather was clear.

Circumstances Involved in the Accident

The accident occurred at Milepost 145.4 between the set-out track and Track No. 1 at Hobart Yard.

The subject employee was working on Track Gang No. 62, which consisted of 12 men and a foreman. This gang was engaged in moving switches in conjunction with a track relocation project in progress at Hobart Yard. The gang worked with a machine known as a switch mover, which is a metal framework with dual 20-inch truck-tire wheels in front and quad 20-inch truck-tire wheels in the rear. The machine is about 100 feet in length, 14 feet wide at the front and 25 feet wide at the rear. It is centered over a switch and the entire switch, including rails, points, guardrails, frog and ties, is lifted by block and tackle. The machine is then pulled by tractor to where the switch

is to be relocated. The only work required of the trackmen while the switch mover is being pulled is to place wedges under the wheels as the machine is pulled over rails.

On the day of the accident, the switch mover was being pulled eastward between the set-out track and Track No. 2, its wheels straddling Track No. 1. The subject trackman was walking ahead of the right rear wheels of the machine. The only witness to the accident was walking behind the right rear wheels and he observed the trackman apparently fall in front of the wheels. He immediately started shouting to stop the machine but it continued forward, the right rear wheels crushing the trackman.

Applicable Rule

Rule 260 - When working with or near any roadway maintenance equipment stay in clear of moving parts...(Atchison, Topeka and Santa Fe Safety Rule).

Analysis

The total weight of the switch mover carrying a switch is about 40,000 pounds, which would indicate the right rear wheels were supporting in excess of 10,000 pounds.

Shortly before the accident the switch mover started to move to the right in preparation for a 180-degree turn to the left to position the switch for installation.

At the time of the accident, the switch mover was being pulled parallel to the tracks and there was no necessity for placing wedges under the wheels.

The only witness was behind the wheels of the switch mover. The subject trackman tripped or was bumped by the wheels of the switch mover.

All employees receive a physical examination and a copy of the safety rule book at the time of their employment. The carrier also holds periodic safety meetings.

Cause

The trackman was walking too close to the wheels of a moving maintenance vehicle.

80. RAILROAD: The Ogden Union Railway and Depot Company
LOCATION: Ogden, Utah
DATE : November 16, 1977

The Accident

On November 16, 1977, at 11:15 a.m., an 18 year old yard brakeman (switchman), with 3 months service, was struck and killed by a free rolling car while performing switching duties in the Ogden Union Railway and Depot Company yard at Ogden, Utah. The weather was clear.

Circumstances Involved in the Accident

Switching services in the Ogden yard are performed by the Ogden Union Railway and Depot Company. The OUR&D is jointly owned by the Union Pacific Railroad Company and the Southern Pacific Transportation Company, and transportation employees are drawn from the owning companies' extra boards as needed. On the day of the accident, the switchman, a Union Pacific employee, was working for and on the payroll of the OUR&D Company.

In the vicinity of the accident, the geographic east and west sections of the yard are served by two parallel lead tracks designated "UP lead" on the geographic east and "SP lead" on the west. On the day of the accident, the subject switchman was assigned to a crew consisting of an engineer, fireman, switch foreman and two switchmen, with the primary duty of working the east, or the UP, section of the yard.

At the time of the accident, the switching crew was engaged in pulling a cut of cars northward from the UP yard onto the UP lead. The fireman, who was operating the engine at the time, was seated on the west side of the engine cab. He observed the switchman standing in the clear between the two lead tracks facing south, about 150 feet away. The fireman also noticed a free rolling car moving southward on the SP lead track. He noticed the switchman then step to his right, apparently to gain a better view of signals from the switch foreman. In moving to the right, he fouled the SP lead track. He was struck behind the right shoulder by the car and thrown forward to the track with his right arm and shoulder across the east rail. The lead east wheel

of the car passed over his shoulder and arm, severing the large artery in that area. Paramedics and an ambulance arrived within minutes. He was pronounced dead at the scene.

Applicable Rules

Employees in yard service of the Ogden Union Railway and Depot Co. must...obtain a copy of and be governed by Union Pacific Safety Instructions...(OUR&D General Rules).

Employees must exercise care to prevent injury to themselves and others. Employees must expect the movement of trains, engines, cars or other moving equipment on any track, at any time, in either direction...(UP General Safety Rule M).

On any track employees must keep a careful lookout for moving equipment in both directions...(UP Rule 4038).

Employees must not cross or step foul of tracks closely in front of moving equipment...(UP Rule 4040).

Analysis

As the switch engine began pulling the cut of cars onto the lead track, the fireman observed the switchman standing in the clear between the two lead tracks. He also observed a free rolling car closely approaching the switchman's location from his rear. However, apparently in an effort to better observe the switch foreman's signals, the switchman suddenly moved to his right and into the path of the moving car. The fireman did not have sufficient time to shout a warning.

The switchman was employed by the Union Pacific Railroad in Los Angeles, California, on August 6, 1977, at which time he was given an Operating Rule book and a Safety Rule book, as well as a physical examination. After a period of training, he was examined on both rule books. On August 27, 1977, he was transferred to the UP extra board in Salt Lake City and assigned to work in Ogden, Utah.

During the month of October 1977, the SP and UP Terminal Superintendents at Ogden jointly conducted safety meetings during the working hours of all three shifts for transportation employees on duty in the Ogden yard.

Cause

The switchman moved onto an adjacent track and was struck by a free rolling car.

81. RAILROAD: Chicago, Milwaukee, St. Paul and Pacific Railroad
LOCATION: Milwaukee, Wisconsin
DATE : November 17, 1977

The Incident

On November 17, 1977, at approximately 11:40 a.m., the body of a Chicago, Milwaukee, St. Paul and Pacific Railroad switchman, age 53 with 31 years service, was found between tracks 5a and 6a at the Glendale Yard, Milwaukee, Wisconsin.

The switchman was taken to a hospital where he was pronounced dead on arrival. Cause of death was determined to be a heart attack.

82. RAILROAD: Consolidated Rail Corporation
LOCATION: Cleveland, Ohio
DATE : November 26, 1977

The Accident

On November 26, 1977, at approximately 5:30 p.m., a ConRail yard conductor, age 24 with 5 years experience, was fatally injured when pinned beneath the wheel of a freight car at Rockport Yard in Cleveland, Ohio. At the time of the accident, it was dark, and the snow was blowing.

Circumstances Involved in the Accident

At the west end of Rockport Yard, a major classification yard, two parallel switching lead tracks, 16 feet apart, extend east and west. From the south they are designated as the Belt Lead and the South Switching Lead. From the west on the south Switching Lead, Tracks No. 29, 27, 26, 25 and 24 turn out toward the northeast in the order named. The switch for Track No. 27 is about 210 feet east of the switch for Track No. 29.

Job 1014-B, one of several switching crews working in the yard on November 26, was switching a defective car from a train on Track No. 29 into Track No. 24 shortly before the accident. The crew moved westward out of Track No. 29 onto the South Switching Lead and stopped there with

the locomotive, 3 cabooses and 16 cars coupled in that order. The defective car was on the South Switching Lead near the switch to Track No. 29. The fieldman stayed with some cars left on Track No. 29, and the front brakeman, also on the South Switching Lead, was near the switch to Track No. 27.

As Job 1014-B prepared to switch the defective freight car, another yard crew, Job 1018-B, was using the Belt Lead to classify Train TC-2. This kind of movement requires switching cars from west to east down an .08% descending grade. Job 1018-B switched 15 cars of a 32-car cut. The 16th car, a loaded gondola destined for Track No. 19, was uncoupled and rolled eastward at an approximate speed of four m.p.h. A brakeman had boarded the west end of the car and began to tighten the hand brake when he heard a scream. He immediately applied the hand brake. After the car stopped, he dismounted from the gondola and went to the east end of the car where he found the conductor of Job 1014-B pinned beneath the northeast wheel.

Applicable Rules

1051. Expect equipment to move at any time; therefore, look in both directions before:

(a) Fouling track.

(CONRAIL Safety Rules Train, Locomotive and other Transportation Employees).

1052. When walking or standing for any purpose:

(c) Maintain sufficient lookout in both directions to know of approaching equipment or close clearance.
(d) If equipment is approaching on other than a main track, stay clear and maintain a sufficient lookout in both directions until sure that no other equipment is approaching on a nearby track.
(i) Keep as far as practicable from passing equipment. If in confined space in switching area, tunnel, station or other such place, STOP and STAY in the clear.

(CONRAIL Safety Rules Train, Locomotive and other Transportation Employees).

Analysis

The conductor of Job 1014-B was familiar with switching operations in Rockport Yard. Job 1018-B was switching cars on the Belt Lead adjacent to the South Switching Lead on which the yard conductor was working. For reasons that could not be determined, the conductor fouled the Belt Lead, was struck by the loaded gondola moving under its own momentum and was pinned beneath the east wheel on the north side of the car.

The carrier issues each employee a book of operating rules and safety rules. Annual rules classes are held, and there are periodic efficiency checks for rules compliance. The conductor last attended a rules class in December 1976.

Cause

The conductor did not remain clear of moving equipment on an adjacent track.

83. RAILROAD: Louisville and Nashville Railroad Company
LOCATION: Atlanta, Georgia
DATE : December 1, 1977

The Accident

On December 1, 1977, at approximately 3:30 a.m., a Louisville and Nashville Railroad switchman, age 40 with 4 years service, was fatally injured at Tilford Yard, Atlanta, Georgia. The switchman had fallen from the leading end of a TOFC flat car. At the time of the accident, the weather was dark and cloudy, and the temperature was 38°.

Circumstances Involved in the Accident

Included within Tilford Yard complex are a receiving yard, a classification yard, and a departure yard. The receiving yard consists of 15 tracks which extend northward from its south end. The accident occurred in the receiving yard, on the Seaboard Coast Line outbound track, the westernmost of the tracks which comprise that yard. In the accident area, the tracks are tangent and practically level. The point of accident is approximately 1,861 feet north of Mile Post 467, which is located at the south end of the yard.

At approximately 2:30 a.m., the locomotive of Job No. 304 was coupled to the south end of 14 loaded TOFC cars standing on track No. R-10. Each car was loaded with two highway semi-trailers. Those cars subsequently moved to the south end of the yard where the switchman aligned the switches for a northward movement to the Seaboard Coast Line outbound tracks. As the northward movement commenced, he boarded the leading car by means of the side sill step installed near the car's northwest corner, and mounted to the deck of the car.

At the point of the accident, the engineer was at the controls of the locomotive, a second switchman was in the locomotive cab, and the switch foreman was standing on the deck of the leading car, between its northwest corner and its center, grasping an end-door latch of a semi-trailer. The locomotive, a single unit switcher, was pushing the 14 cars northward at an estimated speed of four to six miles per hour. The front, or long hood, end of the locomotive was coupled to the cars being pushed. Air brakes were operative throughout the consist of locomotive and cars.

Immediately prior to the accident, the switchman was standing on the deck of the leading car, between the end of a semi-trailer and the car's bridge plate, facing the direction of movement and casually conversing with the switch foreman. The switchman, while holding the bridge plate, moved around that plate onto the side sill and lost his hold on the bridge plate. He then fell between the rails into the path of the car on which he had been riding. The switch foreman, who was standing five feet distant, saw the switchman fall but was unable to take any action to prevent the accident. The switch foreman instructed the engineer, by radio, to initiate an emergency application of train brakes. The switchman was fatally injured by the wheels of the leading car before the brake application brought the consist to a stop. The switchman's body was found 207 feet north of the point where he had fallen; the leading car stopped 220 feet farther northward.

Applicable Rule

629. When climbing onto or from TOFC or COFC cars, care should be taken to have a firm footing. ...(L&N Operating Department Safety Rules).

Analysis

The train crew members all stated that the switchman acted normally in every respect throughout that portion of the tour of duty which preceded the accident. They said that no slack action or braking occurred immediately prior to the accident, and that the consist was moving smoothly at the time the switchman fell. At the time of the accident, he was wearing leather gloves and rubber rain boots provided with anti-slip cleats. He had last completed a rules examination in February 1977.

Cause

The switchman lost his grasp on the bridge plate of the leading end of the car on which he had been riding. His fall brought him into the path of that same car.

84. RAILROAD: Detroit and Mackinac Railroad
LOCATION: Cheboygan, Michigan
DATE : December 1, 1977

The Accident

On December 1, 1977, at approximately 12:10 p.m., a Detroit and Mackinac Railroad yard brakeman, age 43 with 5 years and 10 months service, was killed during a switching operation at the Cheboygan Yard in Cheboygan, Michigan. Due to rain at the time of the accident, visibility was limited.

Circumstances Involved in the Accident

The carrier's Cheboygan Yard lies north to south, and has five tracks numbered 1 through 5 from the west. Track No. 3 is the carrier's north-south main track, which has tracks 1 and 2 to its west, and 4 and 5 to its east.

At 5:00 a.m., on the day of the accident, the crew of the Cheboygan Yard Job, consisting of an engineer, a front brakeman, a rear brakeman and a conductor, went on duty. At approximately 12:00 noon the crew, equipped with radios for communication and utilizing locomotive DM 466 for motive power, began to assemble six cars on Track 3, which were to be delivered to a local industry. The crew, riding in the locomotive, went northward off of Track No. 3 onto Track

No. 2 and coupled the locomotive to 10 cars about 500 feet north of the switch. The yard brakeman coupled the trainline air hoses between the locomotive and the southernmost car of the ten. Working on the west side of the train, the brakeman walked to the north end of the third car from the locomotive and instructed the engineer to pull the train southward. The train moved southward approximately 110 feet before the brakeman instructed the engineer to stop the train's movement. The brakeman then instructed the engineer to back up. The engineer proceeded to move the train northward approximately seven feet when he felt the impact of a collision. The conductor attempted to contact the brakeman by radio, but there was no response. The conductor found the brakeman crushed between the closed knuckles of the third and fourth cars.

Applicable Rules

12..When radio communication is used to direct the movements the instructions to the engineman must be given in car lengths, and movement must not exceed such distances. Should contact with the employee directing the movement be lost, the movement must be stopped immediately... (D&M Operating Rule).

220.49..When radio communication is used in lieu of hand signals in connection with the switching, backing or pushing of a train, engine, or car, the employee directing the movement shall give complete instructions or keep continuous radio contact with the employees receiving the instructions when backing or pushing a train, engine or car, the distance of the movement must be specified, and the movement must stop in one half the remaining distance unless additional instructions are received...(CFR 49 Part 200 to 999).

Analysis

Apparently, the brakeman had closed the angle cock on the north end of the third car intending to uncouple the third and fourth cars. The desired uncoupling was accomplished when the engineer bunched the slack between the cars by stopping the train with the independent locomotive brake. After the uncoupling was made, the seven north cars stopped after their air brakes were applied in emergency application. When the two sections of the train stopped after the uncoupling was made, only seven feet separated them. At the time, the brakeman stepped between the separated cars and simultaneously instructed the engineer to back up.

Cause

The yard brakeman, after uncoupling two cars from the train, instructed the engineer to move the train in the wrong direction. Factors contributing to the accident are (1) that the yard brakeman had never been tested by the carrier on the Book of Rules, and (2) that the yard brakeman had rested only 1 1/2 hours from the time he went off duty until the time that he was called back on duty and the accident occurred.

85. RAILROAD: Seaboard Coast Line Railroad
LOCATION: Tampa, Florida
DATE : December 3, 1977

The Accident

On December 3, 1977, at approximately 6:15 p.m., a Seaboard Coast Line laborer, age 49 with 37 months service, was fatally injured when he fell seven feet from the service platform of a gantry sand crane to the concrete apron of the fueling facility at the Uceta Diesel Shop in Tampa, Florida. The laborer died nine hours after the accident. The weather was clear and dark.

Circumstances Involved in the Accident

On the day of the accident, the laborer finished his regular tour of duty at 3:30 p.m. Later, he was called in on overtime for the specific purpose of operating the gantry sand crane. He reported to the foreman at 5:30 p.m., and was to sand the four locomotive units spotted in No. 2 Fuel Track.

At 6:00 p.m. the foreman saw the laborer moving the crane in an easterly direction, and believing that the laborer was nearing completion, he instructed a hostler and a helper to move the locomotive units into the diesel shop. The hostler went to raise the diesel shop platform ramp, and the helper went outside to move the locomotive units. As the helper neared the fueling facility, he observed the crane moving alongside the locomotive units, and the laborer standing on the service platform. After hearing a loud crashing sound, the helper looked again in the direction of the crane and did not see the laborer on the platform. While moving the service platform toward the rear of the

locomotive, the laborer had struck the left back vertical stairwell handhold of the locomotive with a force severe enough to dislodge him from the platform.

The helper ran to the crane and found the laborer lying unconscious on the apron of the fuel track. The laborer was taken by ambulance to Tampa General Hospital, where he died later.

Applicable Rules

General Rule 53

When on equipment standing or moving, employees must be alert and protect against sudden or unexpected start, stop, lurch or jerk...(Seaboard Coast Line Safety Rules).

General Rule 59

Operating power tools, appliances, machinery, or other equipment before being properly instructed as to their use and care is prohibited...(Seaboard Coast Line Railroad Safety Rules).

Analysis

The gantry sand crane is a bridge type crane that moves on railroad rails spanning two service tracks. It has a service platform approximately six feet by eight feet that can be raised or lowered and moved sideways. Raising or lowering of the platform is accomplished by the operation of a hoist unit. The hoist unit controls a 5/16-inch diameter cable threaded from the hoist drum through a sheave wheel on the platform guide and returned to a dead end on the hoist frame. Four lower guide rollers were provided to guide the cable. The service platform is equipped with four corner posts with safety chains which hook between the posts. One safety chain could not be properly used due to a missing securement hook. At the time of the accident, the end safety chains in the direction of movement were not in place.

The four guide rollers were missing, with two of them found near the crane and appearing to have been broken recently. The other two could not be found. The hoisting cable consisted of six strands of steel wire wound around a hemp core. Examination after the accident disclosed that four of the six strands and the hemp core were broken.

Post-accident investigation revealed that the laborer positioned the service platform too close to the locomotive, allowing the edge of the platform to extend over the edge of the locomotive walkway. When the crane was moved to the next sanding position at the rear of the locomotive, the platform did not clear the handhold.

The laborer had received no formal instructions or training on the operation of this crane. It was disclosed that he had been injured 14 months earlier while operating this crane and had not operated it again until the day of the accident.

The carrier has not issued bulletins or posted instructions for the operation of the crane, but has relied on handed-down verbal instructions given in 1971. Each employee is issued a Book of Safety Rules, and weekly safety meeting is held. The laborer attended the weekly safety meeting prior to the accident.

Cause

The accident was caused by the forceful impact of the service platform with the locomotive handhold. Contributing to the accident were the absence of safety chains, the defective condition of the crane, and the failure of the carrier to issue standard operating instructions for this piece of equipment.

86. RAILROAD: Missouri Pacific
LOCATION: Muscotah, Kansas
DATE : December 6, 1977

The Accident

On December 6, 1977, at approximately 3:45 p.m., a Missouri Pacific Railroad brakeman, age 50 with 19 years service, was fatally injured when the car on which he was riding was struck by a grain combine at Muscotah, Kansas. The weather was clear.

Circumstances Involved in the Accident

At Muscotah, the single main track is crossed at grade by Arrington Road (County Road No. 18) and is protected by conventional reflectorized crossbuck signs. In addition, railroad crossing warning signs are located 150 feet on either side of the crossing. However, on the day of the accident, the railroad warning sign to the north of the main track had been broken at the base and was lying on the ground. The sign could not be observed by a person operating a southbound vehicle. Visibility of the crew members on an eastbound train is somewhat obstructed to the north by vegetation extending parallel and adjacent to the railroad right of way for a distance of about 300 feet west of the 33 foot plank highway crossing.

On the day of the accident, the crew of Train No. 529 consisting of a conductor, two brakemen, a fireman, and an engineer went on duty at Atchison, Kansas. This westbound local freight, of four locomotive units and five cars, departed Atchison at 2:30 p.m. en route to Muscotah where they intended to unload the five cars of ballast at a bridge located about one mile west of Muscotah. Just prior to the accident, the crew was using their locomotive units to push the five cars eastward over Arrington Road crossing en route to the bridge where the cars of ballast were to be unloaded. One brakeman was riding on the east end of the lead car and the other brakeman was on the west end of the lead car. This reverse movement was being made at a speed of about five m.p.h. When the lead car reached a point approximately 10 feet into the road crossing, it was struck by a southbound farm combine. The brakeman riding on the lead end of the car was killed when the collision occurred. His body was found underneath the combine.

Just prior to the accident, a 1967 C-2 model Allis-Chalmers combine was being operated in a southern direction on Arrington Road by a local farmer. The speed of the combine as it approached the immediate vicinity of the track was about 15 m.p.h., and the speed was apparently not reduced when it struck the lead car being pushed over the crossing. The operator of the combine was not injured.

Applicable Rule

When cars are shoved...over a public crossing at grade, a member of the crew must protect the crossing from a point

on the ground at the crossing until the crossing is occupied, and each movement over crossing must be made only on his signal...(Missouri Pacific Safety Rule).

Analysis

Employees of this carrier are issued a copy of Operating Rules and Safety Rules when they are initially employed. The fatally injured brakeman was last examined on the carrier's operating rules on January 4, 1977. He had been on duty about 1 hour and 45 minutes when the accident occurred.

Cause

The accident was caused by the failure of the combine operator to yield the right-of-way to the train involved. The failure of the crew members to protect the crossing from a point on the ground until the crossing was occupied was a contributing factor.

87. RAILROAD: Patapsco and Back Rivers Railroad
LOCATION: Sparrows Point, Maryland
DATE : December 8, 1977

The Accident

On December 8, 1977, at approximately 5:30 a.m., a Patapsco and Back Rivers Railroad brakeman, age 54 with 26 years and 8 months service, was fatally injured when he was crushed between a stairway guard rail and the side of a gondola inside the Bethlehem Steel Corporation plant, Sparrows Point, Maryland. The weather was dark and clear and the temperature was 21 degrees.

Circumstances Involved in the Accident

The accident occurred on Track 381 Bethlehem Steel Corporation plant, No. 5 Soaking Pit. Approaching the accident area from the north, Track 381 is tangent for a distance of approximately 300 feet to a point where a dirt road crosses the track at grade and for an additional 108 feet beyond. A stairway parallel with Track 381, leading to an underground inspection pit, is located just south of the crossing on the west side of the track. This stairway is protected by a 2-inch diameter metal pipe guard rail 4 feet 9 1/2 inches in height from top of rail, 25 feet in length, and 6 feet 8 1/2 inches from centerline of Track 381.

Crew C-10, consisting of an engineer, a locomotive helper, conductor, and two brakemen went on duty at 11:00 p.m., December 7, 1977, after having completed the required off duty period. At approximately 5:30 a.m., on December 8, the crew pulled two loaded gondola cars from Track 381 and set them out in the yard. An empty gondola car was then coupled to the front end of locomotive unit 124 and pulled north onto Track 381 to clear the switch. The four cars were then shoved south on Track 381. The locomotive was being operated by a locomotive helper, who was also an engineer. The engineer was located on the left side of the locomotive cab and the brakeman was riding the lead end of the lead car on the right side of the movement. The conductor and the other brakeman remained at the switch leading to Track 381. The switching movement proceeded southward at a speed of two to three miles per hour. Upon reaching the center of the dirt crossing, the lead car derailed and moved away from the track, trapping the brakeman between the car and the guard rail. The locomotive helper had observed the lead car move sideways and immediately stopped the movement. The injured brakeman was found lying directly south of the guard rail. An ambulance was summoned, and the injured employee was taken to a hospital where he died six hours later of massive injuries to the pelvic area.

Applicable Rules

Rule 6.5 - Crews must take proper precautions to protect leading end of movements. (Patapsco and Back Rivers Safety Rule 6.5).

Rule 18.1 - Ride the side ladder on the leading end of a car whenever possible. Look forward and stay close to side of car. Be alert to conditions in the area. (Patapsco and Back Rivers Safety Rule 18.1).

Analysis

A post-accident investigation developed that due to the cold weather prevailing on the night of December 7, the mud in the dirt crossing froze over in the flange way. When the lead car was about mid-way over the dirt crossing, the wheels of the lead truck right side crossed over on the opposite side and derailed. The trailing truck of the lead car and the lead truck of the second car derailed in the same manner. Distance from the initial point of derailment to the point where movement came to rest was 60 feet. It is apparent that the injured employee was unaware that the car on which he was riding had become derailed prior to the time that his body came in contact with the guard rail.

Train and engine serivice employees of the Patapsco and Back Rivers Railroad are furnished a copy of the Carrier's Safety Rules at the time of employment. They are not instructed in operating of safety rules and no record is kept of compliance with these rules. Safety meetings are conducted weekly by yardmasters. No record of attendance is kept. There are no requirements for periodic physical examinations.

Cause

The brakeman was crushed between the lead car and the guard rail after the derailment. The derailment was attributed to an accumulation of frozen mud in the flangeway at the dirt crossing.

88. RAILROAD: Consolidated Rail Corporation
LOCATION: Stemmers Run, Maryland
DATE : December 11, 1977

The Accident

On December 11, 1977, at approximately 8:30 p.m., a Consolidated Rail Corporation brakeman with 13 years service was fatally injured when he was struck by an Amtrak passenger train at Stemmers Run, Maryland, Northeast Corridor. The weather was dark and clear, temperature 20 degrees.

Circumstances Involved in the Accident

In the accident area, there are four main tracks over which trains are operated by timetable and an automatic block signal system, supplemented by cab signals. From the east, the main tracks are designated as No. 1, 2, 3, and 4. The current of traffic on Tracks 1 and 2 is north, and the current of traffic on Tracks 3 and 4 south. The accident occurred on No. 4 main track, 130 feet north of Mile Post 87 and 25 feet north of Stemmers Run Station. In the accident area the grade is .29% ascending southward, curvature zero degrees 57 minutes to the left.

On the day of the accident, the crew of NW1 went on duty at 11:00 a.m. The fireman and brakeman reported at Meadows Yard Kearny, New Jersey, and the conductor and flagman reported to the Robert Treat Hotel in Newark, New Jersey. The train, consisting of 2 locomotive units and 84 cars departed from the Meadows Yard at 1:05, en route to the Potomac Yard. Train NW1 stopped on No. 3 track at Stemmers

Run Station, 8.7 miles north of Penn Station, Baltimore, Maryland, at approximately 6:55 p.m. because of a train ahead. At about 7:40 p.m., the conductor and the engineer left the train to call the train movement director at Baltimore, Maryland, on a public telephone located about 600 feet southeast of the locomotive units. The purpose of this call was to determine where the crew would be relieved so that the engineer and the front brakeman could manage their return to Newark. About 40 minutes later, the cab signal on locomotive unit 4429 displayed an approach aspect, indicating that the train ahead was moving. The fireman attempted to alert the conductor and the engineer of the approach signal by sounding the locomotive horn several times. He received no response from the two trainmen outside the train. The brakeman then descended from the locomotive unit on the east side, attempting to notify the conductor and the engineer that the train ahead was moving. He crossed No. 3 track in front of his locomotive unit and was struck by the right front end of the Amtrak locomotive as he stepped onto Track No. 4. Amtrak Train No. 87 consisted of 2 locomotive units and 18 cars, moving south at a speed of 40 miles per hour.

Applicable Rules

Safety Rule 1052(c) - When walking or standing for any purpose maintain sufficient lookout in both directions to know of approaching equipment or close clearance.

General Rule G - The use of alcoholic beverages, intoxicants or narcotics by employees subject to duty is prohibited. Being under the influence of alcoholic beverages, intoxicants or narcotics while on duty, or their use or possession while on duty prohibited.

Analysis

The brakeman was last seen when he departed the cab of locomotive 4429. Laboratory reports revealed a blood alcohol level of .07%. A blood alcohol level of .10% is considered "evidence of impairment" when operating a motor vehicle in the State of Maryland.

The injured employee was last examined in the Book of Operating Rules July 13, 1977. There was no record of rules compliance tests, attendance at safety meetings or safety talks during the previous 18 months.

Cause

The brakeman, while attempting to cross the tracks, was struck by the southbound train. The alcohol in his system could possible have been a contributing factor to the accident.

89. RAILROAD: Southern Pacific Transportation Company
LOCATION: Baldwin, Louisiana
DATE : December 14, 1977

The Accident

On December 14, 1977, at approximately 2:01 a.m., a Southern Pacific Transportation Company flagman, age 57 with 33 years service, was fatally injured when he was run over by a freight car while engaged in a switching operation at Baldwin, Louisiana. The weather was clear.

Circumstances Involved in the Accident

The road freight crew of Extra 239 West, consisting of an engineman, front brakeman, conductor and flagman, went on duty at Avondale, Louisiana at 8:00 p.m. on the day prior to the accident. After departing Avondale enroute to Layfayette, Louisiana, they performed switching operations at several stations and arrived at Baldwin at 1:55 p.m. The conductor was in the caboose, and the other crew members were in the control compartment of the locomotive. The train consisted of 3 locomotive units in multiple-unit control, 75 cars and a caboose.

Baldwin yard consists of three tracks, Nos. 1, 2 and 3 which parallel the main track on the south. The crew intended to set out eight cars on Track No. 2 and pick up all of the cars on Track No. 1.

As the train closely approached Baldwin, the crew members discussed their assignments in connection with the switching movements. The switching movements were to be made mainly by radio communication. As the train arrived at Baldwin, the crew members observed that Track No. 2 was clear and that the cars were on Tracks No. 1 and No. 3. As the train

slowed, the flagman alighted from the locomotive on the fireman's side in position to uncouple the eight cars which were immediately behind the locomotive. The front brakeman alighted from the locomotive on the fireman's side in position to reverse the main track switch of the crossover from the main track to Track No. 1. When the train stopped, the conductor alighted from the caboose and began to couple air hoses of the 24 cars standing on Track No. 1.

After uncoupling the eight cars, the flagman used his walkie-talkie to instruct the engineer to pull ahead, and was then observed as he reversed the inside switch of the crossover. It could not be determined whether the flagman operated the switch to Track No. 2. After the cars were pulled over the main track crossover switch, the flagman radioed the engineer to stop. The front brakeman reversed the main track crossover switch, and crossed the main track to the engineer's side.

The flagman's final radio transmission instructed the engineer to shove back. The front brakeman, who was on the engineer's side near the main line switch, was unable to see the flagman. However, from the position of his light, he was under the impression that the flagman had boarded the leading end of the cars being shoved. The front brakeman, who was to ride the locomotive and cut off the eight cars being shoved into Track No. 2, was still standing by the main track switch when the movement suddenly stopped. Investigation disclosed that the backward movement had been into Track No. 1 instead of Track No. 2, and had struck four standing cars. The flagman's body was found between Tracks Nos. 1 and 2.

Applicable Rule

When switch is lined, employee setting it must see that both points have moved to proper position...(Southern Pacific Safety Rule, 104C, paragraph 5).

Analysis

It could not be determined why the movement was made into Track No. 1 instead of Track No. 2. The front brakeman was under the impression that the flagman had boarded the leading end of the cars being shoved. However, since the front brakeman was to ride the locomotive and cut off the eight cars being shoved into Track No. 2, it appears more likely that the flagman first checked the cars in Track No. 3 for clearance with the movement being made into Track

No. 2, and then walked between the Tracks No. 1 and 2 toward the four cars in Track No. 1. He expected the cars being shoved back to be on Track No. 2, and was walking close to Track No. 1. He was struck by the leading end of the car, rolled under the truck side frame and crushed by a wheel, incurring massive injuries.

Investigation showed that the last rules examination taken by the flagman was June 5, 1953, and the last safety meeting he attended was May 14, 1977. The carrier holds safety meetings on a random basis when officials can gather operating employees for that purpose.

Cause

The flagman was struck and fatally injured during a switching operation. A contributing factor was the failure of the crew to properly line the switch which directed the movement onto Track No. 1 instead of Track No. 2.

90. RAILROAD: Consoldiated Rail Corporation
LOCATION: Crestline, Ohio
DATE : December 16, 1977

The Accident

On December 16, 1977, at approximately 9:57 a.m., a 56 year old ConRail car repairman with 27 years service, was fatally injured when he was crushed beneath a freight car at Crestline, Ohio. At the time of the accident, the weather was clear.

Circumstances Involved in the Accident

The two carmen reported for duty at 7 a.m., at the Crestline engine house. After some preliminary work the two carmen departed for Track No. 14 where they had been assigned to repair defective freight cars. The regular block truck was disabled, and the two employees used a pick-up truck to get to the work site. At the work site they were joined by an employee of the Ralph Kittle Construction Company. The carrier had rented a Case Model 310 tractor with a rear-mounted fork lift to assist in the repair of the cars. The Kittle employee had towed an air compressor to the work site. Upon instructions from the two carmen,

the fork lift was positioned at the east end and south side of CBQ 40218, a loaded box car. One air jack had been positioned underneath the yoke at the middle of the center sill. The car was raised and the first carman went under the car where the two men attempted to replace hangerless brake beams in the truck. They experienced difficulty and fastened a chain around the fork lift and the truck side of the east truck of the car. One carman remained beneath the car. The lateral pressure exerted by the fork was not sufficient to allow the brake beam to fit. The other carman, in order to provide more clearance, put a ratchet jack under the south truck frame from the outside, with the base of the jack against the field side of the rail, and jacked the south truck frame. As the truck frame rose, the flange of the south wheels cleared the rail and the lateral force pulled the truck, causing the car to slew to the south. This movement pinned the carman between the center sill and the east axle of the car. The employee was removed from the scene and taken to Crestline Hospital where he died at 11:07 a.m.

Applicable Rules

Rule 4093 - Before going under equipment raised on one or both ends with jacks other than APPROVED STATIONARY SCREW JACKS or OTHER APPROVED JACKS EQUIPPED WITH SAFETY DEVICES, Support the load with Trestles, blocks, or other approved means...(Conrail Safety Rules - Maintenance of Equipment Employees).

Rule 4094 - When foundation is insecure, place suitable blocking under trestle before allowing it to support the load.

Analysis

The two carmen were repairing the car on other than a designated repair track. Testimony in the carrier's investigation cites that the employees had requested to use the designated track for this type of operation, but were instructed, in this particular instance, to use a set-off and pick-up track. In jacking the defective car, the employees did not provide sufficient protection before attempting to work underneath the car. Another jack was at the work site, but the trestles remained located on the designated track. The lateral force exerted by the fork lift caused the car to slew southward off the one jack and pin the victim between the center sill and axle. According to statements by employees, this method of jacking cars has been used before, and no exception was taken by supervisors who had witnessed the operation.

The carman had received a copy of Conrail Safety Rules for Maintenance of Equipment Employees. In addition, periodic observations are made by supervisors. Rule of the Day is in effect on this carrier.

Cause

The jacking coupled with the lateral pull by the forklift forced the wheels off the rails. This movement caused the car to slew off the jacks and crush the employee working underneath.

91. RAILROAD: Union Pacific Railroad
LOCATION: Cheyenne, Wyoming
DATE : December 17, 1977

The Accident

On December 17, 1977, at approximately 6:05 a.m., a Union Pacific yard brakeman, age 31 with 4 months and 20 days service, died due to asphyxiation during yard operations. The weather was clear and cold.

Circumstances Involved in the Accident

Cheyenne is a yard consisting of 14 parallel tracks numbered, from the north, and North 5, 4, 3, 2 and 1, and South 1 through 9. Extending westward from the yard are three parallel tracks designated as, the North Lead, and the West Drill. The two lead tracks and the drill track are connected by crossovers.

A yard crew, comprised of an engineer, a yard foreman and two yard brakemen, went on duty in Cheyenne at 11:59 p.m., December 16, 1977. Later, the crew used locomotive No. UP 283 to pull 24 cars westward from track North 3 to clear the west switch of the west crossover. At this time, the brakeman climbed to the top of a standing loaded hopper car of coal on the West Drill, adjacent to the South Lead, in preparation for relaying signals from the field to the engineer. The 24 cars were then pushed westward from the North Lead, through the west and east crossovers, to the South Lead and onto track South 7, where they were coupled to a standing tank car. A reverse movement was then made westward to clear the west switch to track South 7. The brakeman, standing on the hopper car, relayed an eastward

"kick" signal to the engineer and shortly, thereafter, gave a stop signal. The engineer observed the yard brakeman's light disappear and a cloud of coal dust rise. It was then discovered that a minor derailment had taken place during the last movement. A derailed truck had struck a dump door of the standing hopper car, breaking off the lock, which released the coal in the location where the yard brakeman was standing. His body was engulfed in the discharging coal.

Applicable Rule

725...Employes must not ride in or on engines or cars as follows:

> On inside, side or end of car containing load which may shift...(UP Operating Rules).

Analysis

The subject brakeman was last seen by the foreman and the other brakeman of the switch crew several minutes prior to the accident and he appeared normal in all respects. The subject brakeman had been issued an Operating Rules Book and was last examined on the operating rules on July 28, 1977. In addition, a safety rule of the week system is used.

Cause

The brakeman had placed himself on top of the loaded hopper car to relay signals when the accident occurred. A contributing cause of this accident was the derailment and the subsequent striking and breaking of the dump door lock of the hopper car on which the yard brakeman was standing.

92. RAILROAD: Louisiana & North West Railroad Company
LOCATION: Gibsland, Louisiana
DATE : December 21, 1977

The Accident

On December 21, 1977, at approximately 12:20 a.m., a Louisiana & North West Railroad Company brakeman, age 19 with 1 year and 8 months service, was killed when he was run over by a caboose while engaged in a switching operation in the L&NW train yard in Gibsland, Louisiana. The weather at the time of the accident was clear and cool.

Circumstances Involved in the Accident

At Gibsland the main track runs in a general north-south direction. A wye track enters the main track on the west approximately 74 feet south of a road crossing with Louisiana Highway 154. The accident occurred on the main track at a frog in the south leg wye switch.

A crew of L&NW Train No. 15, consisting of a conductor, two brakemen, and an engineer, went on duty at 7:00 a.m. at McNeil, Arkansas. They performed switching services en route southward to Gibsland, Louisiana. On arriving at the Gibsland train yard, the train, consisting of two diesel electric locomotive units with 21 loads and 3 empties, was stopped north of Louisiana Highway 154.

The train moved southward on the main track at approximately three m.p.h. to uncouple the caboose from the cars prior to switching the train. While the train was in motion, the brakeman stepped in between the caboose and the adjacent car in an attempt to close the angle cock. The brakeman caught his left foot in the heel of the frog of the south wye switch, and fell in front of the caboose. He subsequently was run over by all four wheels of the caboose.

Applicable Rule

510 (3)...Employees must not go between moving cars or engines to uncoupled, open or close or adjust knuckles or coupler or to make adjustment of or to operate other appliances...(Uniform Code of Operating Rules).

Analysis

The Louisiana & North West Railroad Company does not conduct regular safety meetings. The train dispatcher includes a different safety rule with the train orders each day.

Cause

The accident was caused by the brakeman attempting to close the angle cock handle while the train was moving.

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