

INTERSTATE COMMERCE COMMISSION

Ex Parte 186

ACCIDENT IN PENNSYLVANIA NEAR CONNEAUT, OHIO

Submitted April 3, 1953

Decided May 25, 1953

Accident in Pennsylvania near Conneaut, Ohio, on March 27, 1953, caused by damaged track as a result of improperly secured lading falling from a car.

H. H. McLean and O. J. Graham for the New York Central Railroad Company.

Howard A. Weaver for the Pennsylvania Public Utilities Commission.
George Flackus of Marsh, Spaeder, Bauer and Spaeder for Jones and Laughlin Steel Company.

Harry Grey for Brotherhood of Locomotive Engineers.

A. B. McLaughlin and Charles B. Whitlatch for Brotherhood of Locomotive Firemen and Enginemen.

L. E. Gerard for Order of Railway Conductors.

E. F. Kruse for Brotherhood of Railroad Trainmen.

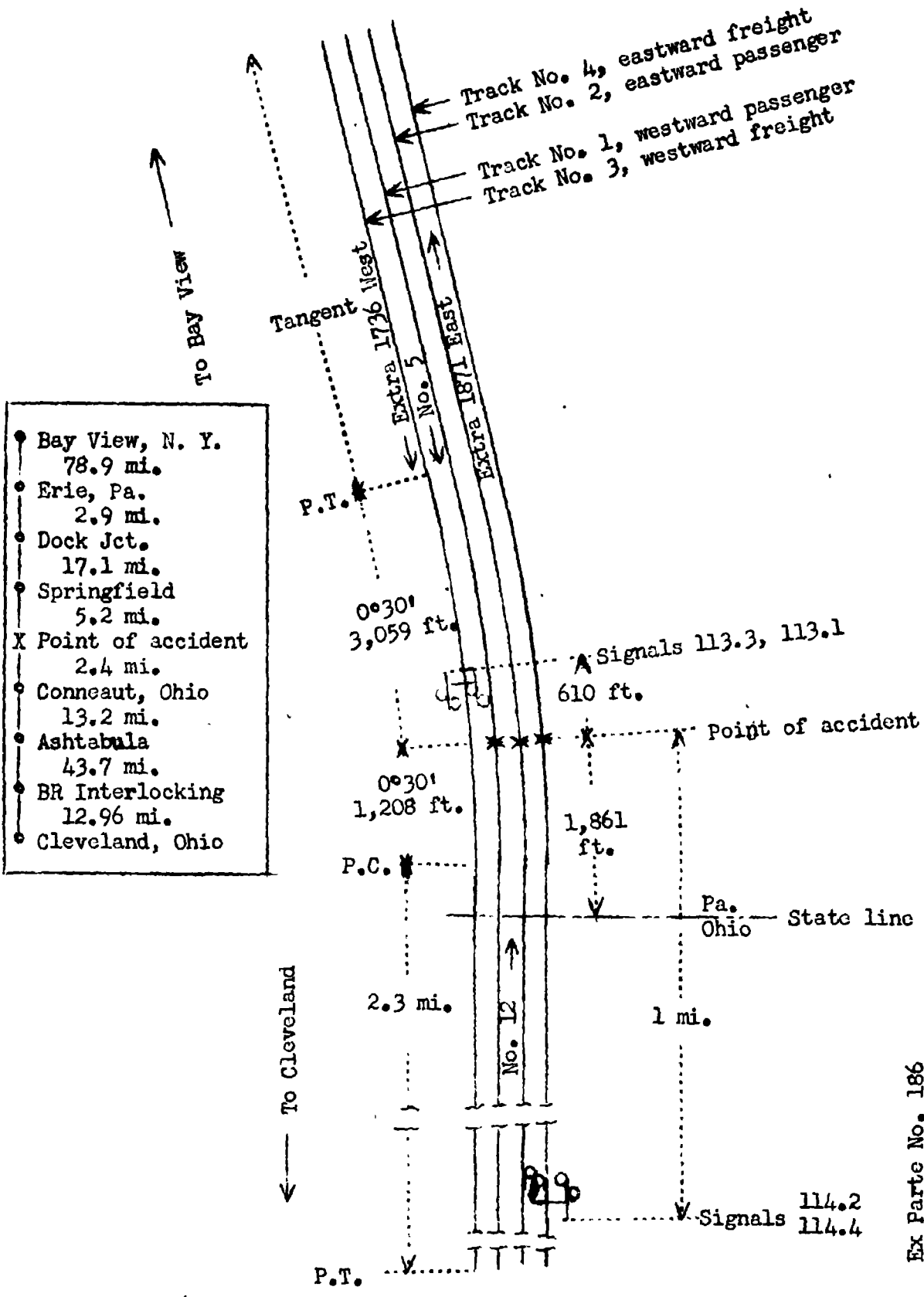
L. J. Maison, C. A. Rhodes, Don S. Tryon and J. K. Williams labor representatives.

REPORT OF THE COMMISSION

DIVISION 3, COMMISSIONERS PATTERSON, JOHNSON, AND KNUDSON

PATTERSON, Commissioner:

This is an investigation by the Commission on its own motion with respect to the facts, conditions, and circumstances connected with an accident which occurred on the New York Central Railroad in Pennsylvania 2.4 miles east of Conneaut, Ohio and 1,861 feet east of the Ohio-Pennsylvania state line, on March 27, 1953. Said investigation and an investigation by the Pennsylvania Public Utility Commission were heard on a common record. Hearing was had at Erie, Pa., on April 1, 2, and 3, 1953. The accident was the derailment of a passenger train and collisions between this train and a moving freight train and between derailed passenger equipment and another passenger train on an adjacent track. It resulted in the death of 16 passengers, 1 express messenger, 2 train-service employees and 2 other employees and the injury of 30 passengers, 1 Pullman Company employee, 1 person carried under contract, 9 train-service employees and 8 other employees.



Ex Parte No. 186
 New York Central Railroad
 Near Conneaut, Ohio
 March 27, 1953

Location of Accident and Method of Operation

This accident occurred on that part of the Erie Division extending between BR interlocking, near Cleveland, Ohio, and Bay View, N. Y., 163.4 miles. In the vicinity of the point of accident this is a four-track line, over which trains moving with the current of traffic are operated by signal indications supplemented by an automatic train-stop system. The main tracks from south to north are designated as No. 4, eastward freight; No. 2, eastward passenger; No. 1, westward passenger; and No. 3, westward freight. At Ashtabula, Ohio, 43.7 miles east of BR interlocking, there is a junction with a line which extends southward from Ashtabula to Youngstown, Ohio, 62.8 miles. The initial derailment occurred on track No. 1 at a point 59.3 miles east of BR interlocking, and 2.4 miles east of Conneaut, Ohio. The collisions occurred on tracks No. 3 and No. 2 in close proximity to the point of derailment. From the west on all tracks there are, in succession, a tangent 2.3 miles in length and a $0^{\circ}30'$ curve to the left 1,203 feet to the point of accident and 3,059 feet eastward. From the east all tracks are tangent throughout a considerable distance immediately east of the curve on which the accident occurred. The grade is practically level.

The track structure consists of 127-pound rail, 39 feet in length, laid on an average of 24 treated ties per rail length. It is fully tieplated, double-spiked, provided with 2-hole joint bars and an average of 12 rail anchors per rail length. Tracks Nos. 1 and 2 are ballasted with crushed stone to a depth of 12 inches below the bottoms of the ties and tracks Nos. 3 and 4 are similarly ballasted with crushed slag. The distance between the center-lines of adjacent tracks is 13 feet.

Automatic signal 114.2, governing east-bound movements on track No. 2, is 1 mile west of the point of accident. Automatic signals 113.1 and 113.3, governing west-bound movements on tracks No. 1 and No. 3, respectively, are mounted on a bracket mast 610 feet east of the point of accident. These signals are of the 2-unit color-light type and are approach lighted. Each displays four aspects.

This carrier's operating rules read in part as follows:

701. * * *

The forward trainmen of freight trains, and engineers and firemen when practicable, must be on the lookout for signals from the rear after meeting or passing trains, also when approaching and passing stations, * * * and frequently at other points.

When trains are passing, signalmen and operators must observe the general condition of trains. Trackmen, * * * and other employes must make similar observations.

If any indication of conditions endangering a train is observed, "Stop" signal must be given. If there are no apparent defects, employes, * * * must give "Proceed" signal.

* * *

The rules of this carrier conform to interchange requirements and loading rules of the Association of American Railroads. These rules read in part as follows:

Rule 1. Inspection * * * Cars must be inspected to see that they are in suitable condition to safely carry loads to destination and that loads are properly and safely secured before being accepted from shippers. * * *

Rule 10.--Stakes * * *

* * *

(d) Unless otherwise specified, each pair of side stakes must be tied together across the top of load with either of the following items:

* * *

High tension band - One - Load strength 2,000 lbs.

* * *

Rule 15. * * * Bands * * *

* * *

(b) * * *

High tension bands * * * encircling pile, must be machine tensioned, sealed * * * on top of load, when possible, and located as far away from ends of load as practicable.

* * * Seal each high tension band with sufficient seals to provide 85 percent of load strength of band.

* * *

(h) The following are the dimensions and load strength of HIGH TENSION BANDS * * *

HIGH TENSION BANDS * * *	LOAD STRENGTH * * *
1-1/4 inch by .035 inch * * *	4000 pounds * * *

Specifications for securing loads of WROUGHT IRON AND STEEL PIPE, 26 IN. OR LESS IN DIAMETER, WITH HIGH TENSION BANDS--GONDOLA CARS

Pile over 3 ft. 6 in. high above car side:

4 high tension bands per pile 34 ft. long or less
* * *

1-1/4 inch by .035 inch bands, suitably spaced, with two seals each. For piles exceeding 7 ft. 6 in. in height, tie upper portion into a unit including all pipe extending wholly or partially above top of car sides, forming a unit not less than 3 ft. 6 in. high, * * * For pile 7 ft. 6 in. high or less, pass bands around entire load. If desired, these bands may pass underneath pipe below top of car sides, provided the pipe, so tied, forms a unit not less than 3 ft. 6 in. high * * *

The maximum authorized speeds were 30 miles per hour for freight trains moving on track No. 3 and 80 miles per hour for passenger trains moving on either track No. 1 or track No. 2.

Description of Accident

Extra 1736 West, a west-bound freight train, consisted of Diesel-electric units 1736 and 1735, coupled in multiple-unit control, 120 cars and a caboose. This train passed Dock Jet., 22.3 miles east of the point of accident and the last open office, at 9:16 p. m., passed signal 113.3 which indicated Proceed and while it was moving on track No. 5 at a speed of 31 miles per hour the seventy-sixth car was struck by the derailed locomotive and equipment of No. 5 and the seventy-fifth to the ninetieth cars, inclusive, were derailed.

No. 5, a west-bound first-class passenger train, consisted of Diesel-electric units 4018 and 4003, coupled in multiple-unit control, one mail car, two express cars, one baggage car, two coaches, one sleeping car, one club-sleeping car, two sleeping cars and one observation-sleeping car, in the order named. All cars were of conventional steel construction, except the fifth car which was of stainless steel construction. The fourth to the seventh cars, inclusive, and the ninth and tenth cars were equipped with tightlock couplers. This train departed from Erie, 25.2 miles east of the point of accident at 9:36 p. m., 4 minutes late, passed Dock Jet. at 9:41 p. m., passed signal 113.1 which indicated Proceed and while it was moving on track No. 1 at a speed of 76 miles per hour the locomotive and the first 10 cars were derailed and collided with Extra 1736 West. Immediately after the collision occurred the derailed equipment of No. 5 which obstructed track No. 2 was struck by No. 12.

No. 12, an east-bound first-class passenger train, consisted of Diesel-electric units 4020 and 4111, coupled in multiple-unit control, one baggage-dormitory car, two coaches, one dining car, two sleeping cars, one coach, four sleeping cars and one observation-sleeping car, in the order named. The first car, the third to the sixth cars, inclusive, and the eleventh and twelfth cars were of stainless steel construction and the other cars were of conventional steel construction. All cars were equipped with tightlock couplers. This train passed ER interlocking at 9:11 p. m., on time, passed CD interlocking at Ashtabula, the last open office, at 9:46 p. m., passed signal 114.2 which indicated Proceed and while moving on track No. 3 at a speed of 71 miles per hour it struck the derailed equipment which obstructed that track.

In the immediate vicinity of the point of accident the four tracks were destroyed. The derailed cars of Extra 1736 West stopped in various positions on or near

the westward main tracks. The seventy-eighth, eighty-first, eighty-second and eighty-fourth cars were destroyed. The seventy-sixth, seventy-seventh and eightieth cars were badly damaged and the other derailed cars of this train were somewhat damaged.

A separation occurred between the locomotive and the first car of No. 5. The Diesel-electric units remained coupled and stopped about in line with the track and with the front end about 740 feet west of the point of accident. Both Diesel-electric units were badly damaged. A separation occurred at each end of each of the first six cars and these cars stopped in various positions on and across the tracks and intermingled with the derailed equipment of Extra 1788 West. The seventh car stopped with the front end against derailed equipment on track No. 3 and the rear end on the track structure of track No. 1 and the other derailed cars stopped in line with that track. The first six cars were destroyed and the other derailed cars of this train were badly damaged.

The locomotive and the first nine cars of No. 12 were derailed. A separation occurred between the locomotive and the first car and between the Diesel-electric units. The units stopped in diagonal positions with the front end of the first unit south of the westward main tracks and about 96 feet east of the point of accident. The second unit stopped at right angles to the tracks and with the front end against the left rear corner of the first unit. Both units were badly damaged. The first four cars stopped in diagonal positions intermingled with the derailed cars of the other two trains and the other derailed cars stopped about in line with the track. The first two cars were destroyed and the other derailed cars of this train were badly damaged.

The assistant conductor and the brakeman of No. 5 were killed. The engineer, the fireman, the baggageman and the flaman of No. 5, and the engineer, the fireman, the conductor, the assistant conductor and the baggageman of No. 12 were injured.

It was raining at the time of the accident, which occurred about 10:02 p. m.

Discussion

The investigation disclosed that on the day of the accident, a train which assumed identity as Extra 1871 East at Ashtabula, departed from the Pittsburg and Lake Erie Railroad yard at East Youngstown, Ohio at 5:34 p. m., and was routed to the New York Central Ashtabula line. This train consisted of a helper engine, a two-unit Diesel-electric road

locomotive, 103 cars and a caboose. The train stopped at Hartford, 16.5 miles north of Youngstown, where the helper engine was detached, and at signal Y3.2 and NP signal station, respectively, 59.6 miles and 61.8 miles north of Youngstown. At OD interlocking at Ashtabula, the train was routed to track No. 4 and departed eastward at 9:18 p. m. As this train was approaching the point where the accident occurred the speed was 36 miles per hour as indicated by the tape of the speed-recording device. The enginemen and the front brakeman were in the control compartment at the front of the locomotive and the conductor and the flagman were in the caboose. The conductor had received and acknowledged a Proceed signal given by the agent at Conneaut to indicate that no defective condition had been observed as his train passed that station. Immediately east of the point where the accident occurred Extra 1871 East met Extra 1736 West moving on track No. 3. The flagman of Extra 1871 East observed that stop signals were being given with a white light from the rear platform of the caboose of the west-bound train. He acknowledged the signals and immediately informed his conductor. The brakes of the train were then applied from the caboose by the use of the conductor's valve. The train stopped with the front end in the vicinity of Springfield, Pa., 3.2 miles east of the point of accident. The flagman immediately proceeded westward to provide flag protection and the conductor inspected the train. The seventy-third car, Baltimore and Ohio 254619, was loaded with 58 pieces of pipe and the conductor found the side stakes had broken on the north side of the car and part of the lading had fallen from the car. He observed that the ends of high tension bands used to secure the load were trailing over the sides of the car, counted 49 pieces of pipe on the car, and later made a notation on the waybill that nine pieces of pipe were missing. After he completed his examination of the car he uncoupled it from the rear portion of the train and instructed the front brakeman to assist in the movements necessary to set out the car on an adjacent auxiliary track. Before the car was set out he communicated by telephone with the train dispatcher to inform him of the delay to his train and that some pipe were missing from the car. The dispatcher then informed him that the accident had occurred.

Extra 1736 West approached the point of accident on track No. 3 at a speed of 31 miles per hour. The headlight was lighted and had been dimmed because of an approaching east-bound train. The enginemen and the front brakeman were in the control compartment at the front of the locomotive and the conductor and the flagman were in the caboose. When the locomotive passed the point at which the accident occurred the enginemen did not observe any defective condition of the

tracks or any obstruction on or near the tracks. The flagman proceeded to the rear platform of the caboose to inspect Extra 1871 East moving on track No. 4. He observed sparks flying from the vicinity of the running gear of a car about midway of that train. When its caboose passed he gave stop signals with a white light which were acknowledged. He then entered the caboose and informed his conductor of the defective condition he had observed. Immediately afterwards, No. 5, moving on track No. 1, passed the rear end of his train. The brakes of Extra 1736 West became applied in emergency as a result of the collision with No. 5.

As No. 5 was approaching the point where the accident occurred the speed was 76 miles per hour. The train was moving on a curve to the right and was passing Extra 1736 West moving on track No. 3. The headlight was lighted brightly. The engineer and the fireman were in the control compartment at the front of the locomotive and the members of the train crew were in various locations in the cars of the train. The engineer had started to operate the switch to dim the headlight for No. 12 which was approaching on track No. 2 when he observed that the track immediately in front of his locomotive had been shifted northward toward track No. 3 a distance of about 18 inches. Before he could move the brake valve to emergency position the locomotive was derailed and collided with Extra 1736 West and about the same time the locomotive of No. 12 passed the locomotive of No. 5.

As No. 12 was approaching the point where the accident occurred the speed was 71 miles per hour. The engineer and the fireman were in the control compartment at the front of the locomotive and the members of the train crew were in various locations in the cars of the train. The engineer was injured in the accident and could not be questioned during the investigation. The fireman called the Proceed indication of signal 113.2 and observed that the engineer had dimmed the headlight for No. 5 which was approaching on track No. 1. The engineer made an emergency application of the brakes when the locomotive was passing the locomotive of No. 5. The fireman observed fire flying as derailed equipment obstructed track No. 2 immediately in front of the locomotive. The collision occurred before the speed of the train was materially reduced.

The four tracks were destroyed throughout a distance of approximately 200 feet. Six pieces of pipe which had fallen from Extra 1871 East were found in the wreckage at the point of accident and three pieces of pipe were found on the track structure at a point approximately 2 miles east of the point of accident. Examination of Baltimore and Ohio 254645

disclosed that three pieces of pipe were missing from both the seventh and eighth layers, two pieces from the sixth layer, and one piece from the fifth layer on the north side of the car. The side stakes on the north side of the car were broken off flush with the top of the car side. The top portion of the stake nearest the front end of the car was suspended from the high tension band to which it was fastened but the tops of the other stakes on the north side of the car were missing. All stakes on the south side of the car, except the stake nearest the front end, were broken at the top, apparently, as a result of inward pressure on the high tension bands as the lading shifted and fell from the opposite side of the car. The top high tension band was missing at each stake location except on the pair of stakes at the front end of the car. The intermediate high tension bands had slipped and separated and only the high tension bands which extended through the load immediately above the top of the car sides held. All high tension bands which encircled the load had slipped and separated. All seals except one were missing from the encircling bands and the seal which remained was not properly crimped. Three seals, none of which had been crimped properly, were found on the high tension bands. All other seals were missing or covered by the load. Four of the high tension bands bore indications of slight crimping where a seal had been applied and had slipped but the other bands showed no indications of crimping. Loading inspectors from the Association of American Railroads examined the car and found that it had been loaded in conformity with the loading specifications in all respects except that the high tension bands securing the load had not been properly sealed. They examined the seals which remained on the car and were accessible for inspection and found that none had been crimped properly to provide 25 percent of the load strength of the band, as required by the loading rules. It was their opinion that because of the faulty application of the seals, the high tension bands had loosened during the movement of the car and the load had shifted sufficiently to exert excessive pressure on the side stakes which then broke on the north side of the load and permitted part of the lading to fall from the car. A fresh batter mark, evidently caused by contact with a heavy metallic object, was found at the corner of the end sill on the north side of the car at the west end. No other defective condition of the car or load was found.

Baltimore and Ohio 254645 is a drop-end gondola type car, built in July 1925. Its lightweight, capacity and load limit are, respectively, 49,600 pounds, 140,000 pounds, and 160,400 pounds. The height of the car is 6 feet 10 inches above the tops of the rails. The inside length, width and height are, respectively, 46 feet, 9 feet 6 inches and 3 feet. The trucks are of the 4-wheel type and are provided with 33-inch multiple-wear wrought steel wheels, solid steel axles with 6-inch by 11-inch

journals and a 5 helical spring cluster at each side of each truck. The pipes in this car were threaded steel casing with outside diameter of 13-3/8 inches and weighed 61 pounds per foot. The average length of the pipe was about 31 feet. The total weight of the car and lading was 158,575 pounds. The lading rested on four 4-inch by 4-inch bearing pieces laid in transverse positions on the floor of the car. Four pairs of 4-inch by 4-inch hardwood stakes which extended to a height of approximately 1 foot above the top of the load were provided. They were located, respectively, 12 feet 4 inches, 19 feet 2 inches, 27 feet 6 inches and 35 feet from the west end of the car. The pipes were loaded in eight layers. The first layer, on the bearing pieces, and the third, fifth and seventh layers, each consisted of eight pipes. The second, fourth and sixth layers each consisted of seven pipes and the top layer consisted of 5 pipes. Each layer above the first was nested in the layer beneath and the top of the load was 8 feet 8 inches above the floor of the car and 12 feet 3 inches above the tops of the rails. Four 1-1/4 inch by .035 inch steel high tension bands were fastened between each pair of side stakes and extended through the load above the third, fifth and seventh layers of pipe and across the top of the load. At each side stake location a high tension band of similar dimensions encircled all of the load except the two pipes at the north end of the bottom layer of pipe.

When the pipe fell from the car one piece became wedged between the track structure of track No. 1 and Canadian National 487579, the next car. As the train was proceeding at a speed of 36 miles per hour the resultant thrust transmitted by the pipe to track No. 1 moved track No. 1 northward a distance of about 18 inches before the pipe fell clear of the cars. The damaged condition of the track was not observed before No. 5 arrived at the point of accident. Canadian National 487579 is an all-steel box car with corrugated ends. It was loaded with wire nails and destined to Albany, N. Y. This car was inspected at Albany on March 31, 1953 by members of the mechanical force of the carrier. The inspection disclosed that the front end of this car bore marks which indicated that it had been in contact with a piece of the pipe which had fallen to the track structure at the scene of the accident from the preceding car. A triangular shaped indentation in the corrugated metal extended horizontally inward from a point 1 foot 6-1/2 inches from the north side of the car at the front end. The depression was 1 foot 10 inches long, and 3 inches and 7-1/4 inches high at the outer and inner ends, respectively. The bottom of the indentation was 6-3/4 inches above the bottom of the end sheet of the car. The depression had a maximum depth of 5 inches from a plane over the corrugations and evidently was caused by contact with the periphery of a metallic object of approximately the diameter of the steel pipe. There were two smaller marks above and

parallel to the large depressed area in the car end and small batter marks were found on the end handhold and on the top of the coupler on the same side. All of these marks were of recent origin and from the grouping appeared to have been caused by contact with the same object.

Baltimore and Ohio 254645 was loaded at the Jones and Laughlin Steel Company plant at Aliquippa, Pa., on the Aliquippa and Southern Railroad, and was delivered in interchange in a cut of 34 cars to the Pittsburgh and Lake Erie at West Blacks Run yard, 39.7 miles east of Youngstown, at 6:55 p.m., March 24, 1953. The car was destined to New York, N. Y. via Pittsburgh and Lake Erie, the New York Central and the Delaware, Lackawanna and Western railroads. The records of the carrier indicate that the car was inspected by interchange inspectors between 6:55 p.m. and 8:15 p.m. on the day it was received and no defective condition was found. Several cars in the same cut were loaded with pipe and the inspectors took no exception to the manner in which any car was loaded. It was their practice to climb on cars to inspect the manner in which the load was secured whenever they observed that the load had shifted or the side stakes or the bands were not in place. They could not recall if either of them had climbed this car to inspect the load. The car was moved westward on March 26, 1953 in No. 203 which departed from West Blacks Run yard at 9:23 p.m. and arrived at East Youngstown at 11:55 p.m. It was inspected after arrival and no defective condition was found. The inspector who made this inspection climbed on the end of the car and observed the load. He took no exceptions to its condition but did not examine the high tension bands or seals. East Youngstown is an interchange point with the New York Central and joint inspections are performed by employees of the mechanical force of the Pittsburgh and Lake Erie. This car was assembled in the rear portion of the train of Extra 1871 East on March 27, 1953, and the forward portion of the train was assembled on another track. The car was last inspected by members of the mechanical force before the train departed from the yard at 5:34 p.m., and no defective condition was observed.

The members of the crew of Extra 1871 East had not noticed any defective condition in their train before stop signals were given by a member of the crew of Extra 1736 West. The members of the crew in the caboose then took action to stop their train for inspection.

We find that:

1. The lading of Baltimore and Ohio 254645 was not properly secured for movement when loaded because the high tension bands were not properly sealed.

2. Baltimore and Ohio 254645 was accepted from the shipper by the Aliquippa and Southern and in turn accepted in interchange by the Pittsburgh and Lake Erie and the New York Central without adequate inspection to determine that the lading was properly secured for movement.

3. Because the lading was not properly secured, a portion fell from the car while in transit, damaged the westward passenger track sufficiently to cause the derailment of No. 5 which in turn caused the derailment of Extra 1736 West.

4. No. 12 struck the derailed equipment of No. 5 before protection could be provided.

By the Commission, Division 3.

(SEAL)

GEORGE W. LAIRD,
Acting Secretary.