

RAILROAD ACCIDENT INVESTIGATION

Report No 3833

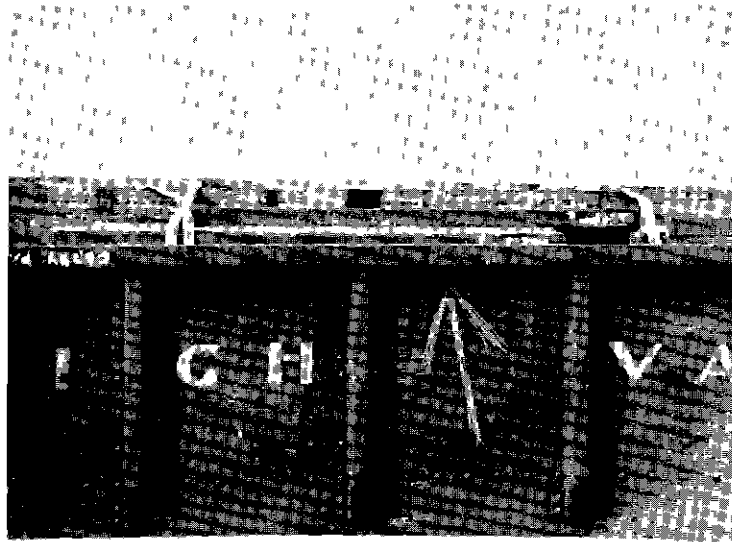
THE PENNSYLVANIA RAILROAD COMPANY

MIDDLE RIVER, MD

FEBRUARY 12, 1959

INTERSTATE COMMERCE COMMISSION

Washington



LV 34002 Side view showing structural steel lading extending above car sides. Channel slid from under high tension band on left and over top of car side (arrow). Note channel loaded above car side and adjacent to high tension band on right.

SUMMARY

§ § §

DATE	February 12, 1959
RAILROAD	Pennsylvania
LOCATION	Middle River, Md
KIND OF ACCIDENT	Deraiment
TRAIN INVOLVED	Passenger
TRAIN NUMBER	120
LOCOMOTIVE NUMBER	Electric locomotive 4886
CONSIST	11 cars
ESTIMATED SPEED	80 m p h
OPERATION	Signal indications
TRACKS	Four, spiral, level
WEATHER	Clear
TIME	8 04 a m
CASUALTIES	100 injured
CAUSE	Damaged track resulting from improperly secured lading falling from a car

INTERSTATE COMMERCE COMMISSION

REPORT NO 3833

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS UNDER
THE ACCIDENT REPORTS ACT OF MAY 6, 1910

THE PENNSYLVANIA RAILROAD COMPANY

May 19, 1959

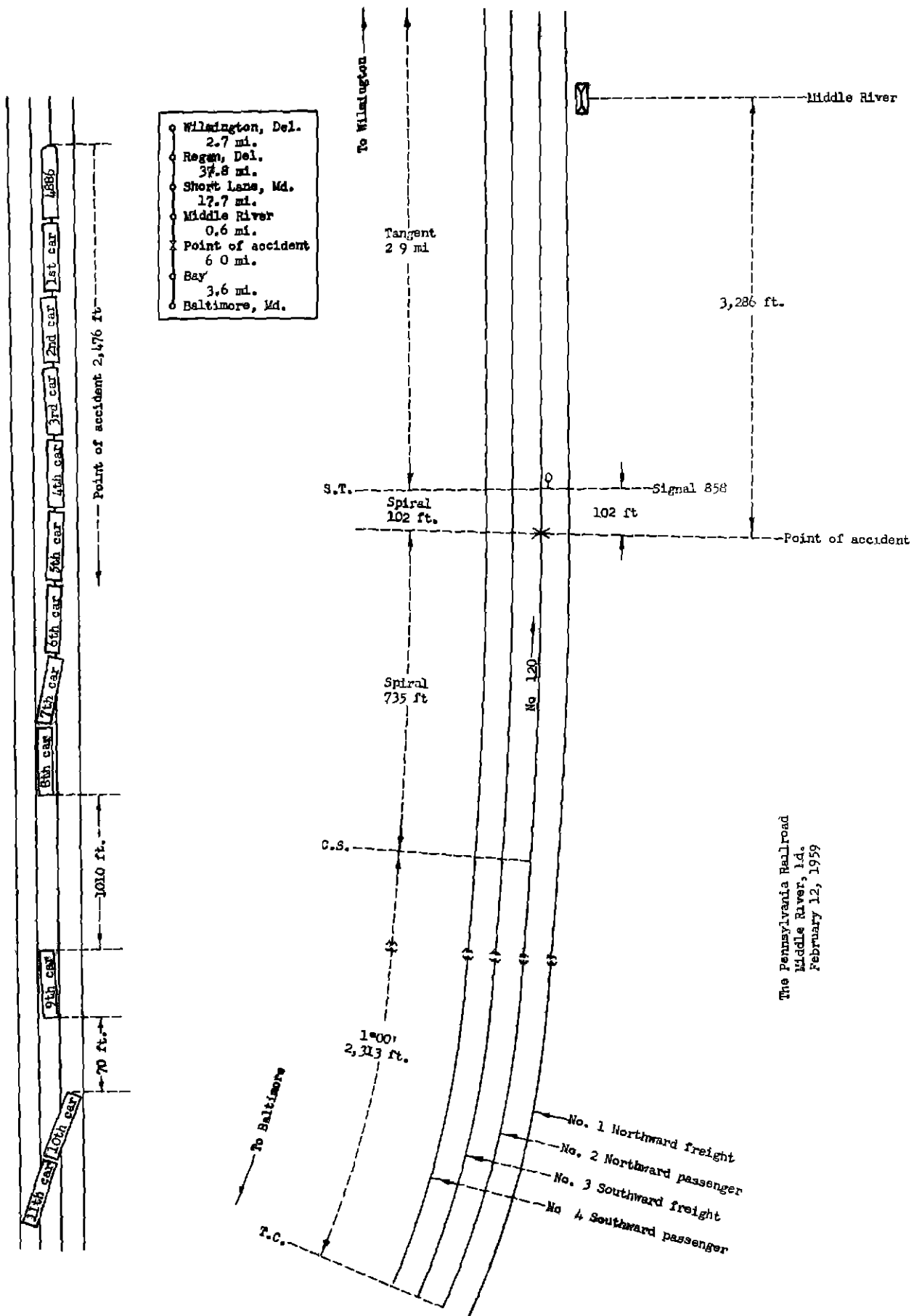
Accident at Middle River, Md , on February 12, 1959, caused by damaged track resulting from improperly secured lading falling from a car

REPORT OF THE COMMISSION¹

FREAS, Commissioner

On February 12, 1959, at Middle River, Md , there was a derailment of a passenger train on the Pennsylvania Railroad which resulted in the injury of 84 passengers, 9 dining-car employees, 3 parlor-car employees, 1 Pullman Company employee, and 3 train-service employees. This accident was investigated in conjunction with representatives of the Public Service Commission of Maryland

¹Under authority of section 17 (2) of the *Interstate Commerce Act* the above-entitled proceeding was referred by the Commission to Commissioner Freas for consideration and disposition



- Wilmington, Del.
- Regan, Del.
- Short Lane, Md.
- Middle River
- Point of accident
- Bay
- Baltimore, Md.

The Pennsylvania Railroad
 Middle River, Md.
 February 12, 1959

Location of Accident and Method of Operation

This accident occurred on that part of the Chesapeake Region extending between Baltimore, Md, and Wilmington, Del, 68.4 miles. In the vicinity of Middle River, Md, 10.2 miles north of Baltimore, trains are operated with the current of traffic on a four-track line by signal indications. A catenary system is provided for the electric propulsion of trains. From east to west the main tracks are designated as No. 1 northward freight, No. 2 northward passenger, No. 3 southward freight, and No. 4 southward passenger.

The accident occurred on track No. 2 at a point 3,286 feet south of the station at Middle River. From the south there are, in succession, a 1° curve to the left 2,313 feet in length, a spiral 735 feet to point of accident and 102 feet northward, and a tangent 2.9 miles. In the vicinity of the point of accident the grade is level.

The structure of track No. 2 in the vicinity of the point of accident consists of 152-pound rail, 39 feet in length, laid new in 1944 on an average of 24 treated ties to the rail length. It is fully tieplated with double-shoulder tie plates, spiked with 2 rail-holding spikes and 3 plate-holding spikes per tie plate. It is provided with 6-hole, 36-inch joint bars, and an average of 16 rail anchors per rail. The track is provided with a standard stone ballast section extending to a depth of 18 inches below the bottoms of the ties. The specified superelevation of the spiral at the point of accident was 3/4 inch.

Automatic signal 858, governing northbound movements on track No. 2, is 102 feet north of the point of accident. This signal is of the position-light type.

Rules of the Association of American Railroads governing the loading of steel products on open top cars read in part as follows:

Fig. 42

STRUCTURAL STEEL SHAPES AND FLEXIBLE REINFORCING RODS, SECURED WITH HIGH TENSION BANDS ON ONE CAR WITH OR WITHOUT OVERHANGS, TWO CARS OVERHANGING THIRD CAR, OR THREE CARS—FLAT OR GONDOLA CARS

*** 2 in. x .050 in. high tension bands, locate *** about 5 ft. from each end of load and space intermediate bands not over 9 ft. apart in gondola cars ***

Height of load must not *** extend above top of car sides when loaded in gondola cars and in no case must the height exceed the width at the base.

When necessary to prevent cutting of bands, place metal or wood protectors under bands at points of contact. Band protectors, when used, must be secured to prevent displacement.

The maximum authorized speed for passenger trains in the vicinity of the point of accident was 80 miles per hour.

Description of Accident

No. 120, a northbound first-class passenger train, consisted of electric locomotive 4886, 3 sleeping cars, 4 coaches, 1 dining car, and 3 parlor cars, in the order named. The cars were of all-steel construction. The 4th to the 8th cars, inclusive, and the 10th and the 11th cars were

equipped with tightlock couplers. This train departed from Baltimore at 7 51 a m , 8 minutes late, passed Bay Interlocking station, 6 6 miles south of Middle River, at 7 56 a m , 7 minutes late, and while moving on track No 2 at an estimated speed of 80 miles per hour the driving wheels of the locomotive, and the 2nd to the 11th cars, inclusive, were derailed at a point 3,286 feet south of the station at Middle River.

Separations occurred at both ends of the 9th car. The locomotive and cars stopped upright and in various positions as shown in the sketch. The locomotive was somewhat damaged and the derailed cars were slightly damaged.

The conductor, the front brakeman, and the flagman of No 120 were injured.

The weather was clear at the time of the accident, which occurred at 8 04 a m.

Electric locomotive 4886 is of the 4-6-6-4 type, 79 feet 6 inches in length, and has a total weight of 468,400 pounds. The specified diameters of the engine-truck wheels and the driving wheels are, respectively, 36 inches and 57 inches. The rigid wheelbase of each driving truck is 13 feet 8 inches, and the total wheelbase is 69 feet.

Discussion

As No 120 was approaching the point where the accident occurred the speed was about 80 miles per hour. The enginemen were in the control compartment at the front of the locomotive. The conductor and the front brakeman were in the 6th car and the flagman was in the 10th car. The brakes had been tested and had functioned properly when used en route.

As the train was closely approaching the point where the accident occurred an irregular alinement of the track was observed by the enginemen, who said that track No 2 was moved eastward toward track No 1 throughout a distance of about one rail length. The engineer immediately applied the brakes in emergency, however, the speed was not materially reduced before the locomotive moved over the out-of-line portion of the track and became derailed.

After the accident occurred an examination of the track structure disclosed that the ballast between track No 2 and track No 3 was displaced at points 146 feet and 161 feet south of signal 858. In addition, a gouge mark was found on the west side of the base of the west rail of track No 2 at a point about 185 feet south of signal 858, which indicated that a heavy object had fallen to the ballast, rebounded, and struck the west rail. Track No 2 was out-of-alinement a distance of 8 inches at the gouge mark and 24 inches at the point of derailment. The initial mark of the derailment was a flange mark across the head of the west rail beginning at a point 80 feet north of the gouge mark.

Beginning at a point 145 feet north of the point of derailment, tracks No 2 and No 3 were destroyed throughout a distance of approximately 610 feet and 580 feet, respectively.

A steel channel 1/2-inch in thickness, 15 inches in width and 7 feet 9 inches in length, with 3-1/2-inch flanges, was found between track No 2 and track No 3 about 95 feet south of the point of accident. The weight of the steel channel was about 310 pounds. Both ends of the steel channel were extensively battered.

The investigation disclosed that the steel channel had fallen to the track structure from LV 34002, the 87th car of Extra 4718 South. It apparently came in contact with the sill step at the northeast corner of GATX 25373, the 88th car, and then became wedged between the side sill and the door rail of Erie 97278, the 89th car, and the base of the west rail of track No. 2, forcing track No. 2 out-of-alignment.

Extra 4718 South, a southbound freight train, consisted of electric units 4718 and 4942, coupled in multiple-unit control, 152 cars and a caboose. This train passed Regan, 2.7 miles south of Wilmington, at 2:52 a.m., and was stopped at Short Lane, 37.8 miles south of Regan, at 4:08 a.m., to make repairs to a defective brake rigging on IHB 8062, a flat car, the 86th car in the train. A brake beam was removed from a truck of IHB 8062 by the conductor and the front brakeman, with the assistance of two car inspectors from Baltimore, and the train departed at 7:08 a.m. While the train was stopped at Short Lane, LV 34002 was observed by the employees working on the car ahead and no exceptions were taken to the lading. Approaching Middle River, Extra 4718 South was moving southward on track No. 3 at a speed of about 35 miles per hour. The members of the crew did not observe anything falling from the cars of the train nor did they observe any unusual condition of the tracks.

After the accident occurred the train was stopped at Gwynn, 3.5 miles south of Baltimore, and the members of the crew were instructed to inspect the train. The inspection disclosed that a steel channel of the same dimensions as that found in the vicinity of the point of accident was missing from LV 34002.

No. 120 was the first train to move over the tracks in the vicinity of the point of accident after Extra 4718 South.

LV 34002, a steel drop-end gondola, is 67 feet 9 inches in length, 9 feet 6 inches in width, and having sides extending 3 feet 6 inches above the floor. Its load limit is 144,400 pounds.

The lading consisted of 10 pieces of structural steel I section beams 36 inches in depth, with 12-inch flanges, and varying from 57 feet 3 inches to 70 feet 2 inches in length, 8 pieces of structural steel Tee section beams 8 inches in width, 8 inches in depth, and 30 feet 5 inches in length, and 48 pieces of structural steel channels 1/2 inch in thickness, 15 inches in width, and 7 feet 9 inches in length. The weight of the lading was 110,912 pounds. A 3-inch by 4-inch wooden bearing piece located near the north end of the car and a 10-inch by 10-inch wooden bearing piece located near the south end of the car extended across the width of the car and were secured to the floor. The 10 pieces of steel I beam were loaded on the bearing pieces with 6 along the west side of the car and 4 along the east side. The beams were stacked horizontally with the flanges interlocked. The 10 beams extended above the west side of the car from 2-3/4 inches on the north end to 12-1/4 inches on the south end. Four of the Tee section beams were banded with two 1-1/4-inch by 0.035-inch high-tension steel bands and were loaded on top of the I section beams, along the east side of the car at the south end. Four Tee section beams were loaded adjacent to the other bundle of Tee section beams. Two of these beams were banded and 2 were not banded. The 48 channels were divided in 8 piles of 6 channels each. These piles were placed on the 4 I section beams in 2 rows extending longitudinally along the east side of the car from the north end towards the center of the car. The flanges of all but the top channel of each pile were interlocked. The pile of channels near the center of the car extended about 5 inches above the top of the car sides.

The entire lading in the car was banded together by means of seven 2-inch by 0.050-inch high-tension steel bands encircling the load. The bands were spaced approximately 9 feet apart beginning at a point about 12 inches from the north end of the load. Four of the bands were so located that one band passed over each two adjacent piles of channels. The difference in height between the top of the 6 I beams along the west side of the car and the top channel of each pile along the east side of the car was such that the 4 bands contacted only the flanges of the I beams and the outside edge of the channels loaded adjacent to the car side. The north end gate was closed and secured. The south end gate was open and the load extended approximately 5 feet beyond the end of the car. IHB 8062, a flat car, was coupled to the south end of LV 34002 as an idler car to protect the overhanging load.

Examination of the car after the accident occurred disclosed that, beginning at the north end of the LV 34002, the first band had moved northward, slipped from the load and was lying on the floor of the car, the 2nd band was tight and intact, the 3rd band was broken, the 4th band was intact, the 5th band was broken, the 6th band was broken, and the 7th band was intact. All the broken bands failed at the point of contact at the bottom of the load along the west side where protection plates, as required by A A R loading rules, were not provided. A channel, which had been placed on top of the 4th pile from the north end and adjacent to the car side, was missing. Skid marks were found on top of the east side of the car indicating that a channel had fallen from the car at this point.

The Association of American Railroads has prescribed methods for the loading of structural steel shapes similar to those loaded in LV 34002. The method used in securing the structural steel in LV 34002 did not comply with these requirements in that the lading extended above the top of the car sides and proper protection against cutting of the high-tension steel bands was not provided.

LV 34002 was loaded at the plant of the Bethlehem Steel Company at Bethlehem, Pa., on February 8, and was destined to Sumter, S. C., via the Lehigh Valley, Pennsylvania, Richmond, Fredericksburg and Potomac, and Atlantic Coast Line Railroads. The car was inspected at the shipper's plant by a car inspector of the Lehigh Valley Railroad who approved the method of securing the lading but discovered a broken coupler. The car was forwarded to the car shop of the Lehigh Valley Railroad in Bethlehem at which time no exceptions were taken to the securing of the lading. After being released from the car shop, the car was interchanged to the Pennsylvania Railroad at Phillipsburg, N. J., on February 9, and no exceptions were taken at that time. However, it was later discovered that the lading had shifted and that the end gate at the north end was damaged. The car was placed in the car shop of the Pennsylvania Railroad at Phillipsburg, where the steel bands securing the lading were examined and found to be intact. The car was released from the car shop on the same day, moved southward to the West Yard, near Wilmington, where it was placed in Extra 4718 South.

Cause

This accident was caused by damaged track resulting from improperly secured lading falling from a car.

3833

9

Dated at Washington, D C , this nineteenth
day of May, 1959

By the Commission, Commissioner Freas

(SEAL)

HAROLD D McCOY,

Secretary

Interstate Commerce Commission

Washington 25, D C

OFFICIAL BUSINESS

RETURN AFTER FIVE DAYS

**POSTAGE AND FEES PAID
INTERSTATE COMMERCE COMMISSION**