INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

LEHIGH VALLEY RAILROAD

JUTLAND, N. J.

FEBRUARY 10, 1939

INVESTIGATION NO. 2330

SUMMARY

Inv-2330

Railroad:	Lehigh Valley
Date:	February 10, 1939
Location:	Jutland, N. J.
Kind of accident:	Break-in-two and buckling
Train involved:	Freight
Train number:	Extra 443 West
Engine numbers:	457 (helper engine); 443 (road engine)
Consist:	112 empty cars, caboose
Speed:	20-25 m.p.h.
Operation:	Timetable, train orders and automatic block-signal and automatic train-stop system.
Track:	Three-track; ascending grade westward
Weather:	Cloudy, misty
Time:	2:35 p. m.
Casualties:	1 injured
Cause:	Low coupler

March 15, 1939.

To the Commission:

On February 10, 1939, a freight train on the Lehigh Valley Railroad parted and buckled near Jutland, N. J., resulting in the injury of one employee.

Location and Method of Operation

This accident occurred on the Lehigh District which extends between Jersey City, N. J., and Penn Haven Junction, Pa., a distance of 129.8 miles. In the vicinity of the point of accident this is a three-track line over which trains are operated by timetable, train orders, and an automatic block-signal and automatic train-stop system. The tracks from north to south are: No. 3, westward freight; No. 1, westward passenger and freight; No. 2, eastward passenger and freight. The accident occurred on No. 3 track as the train was ascending the grade at Jutland, shortly after the caboose passed the station.

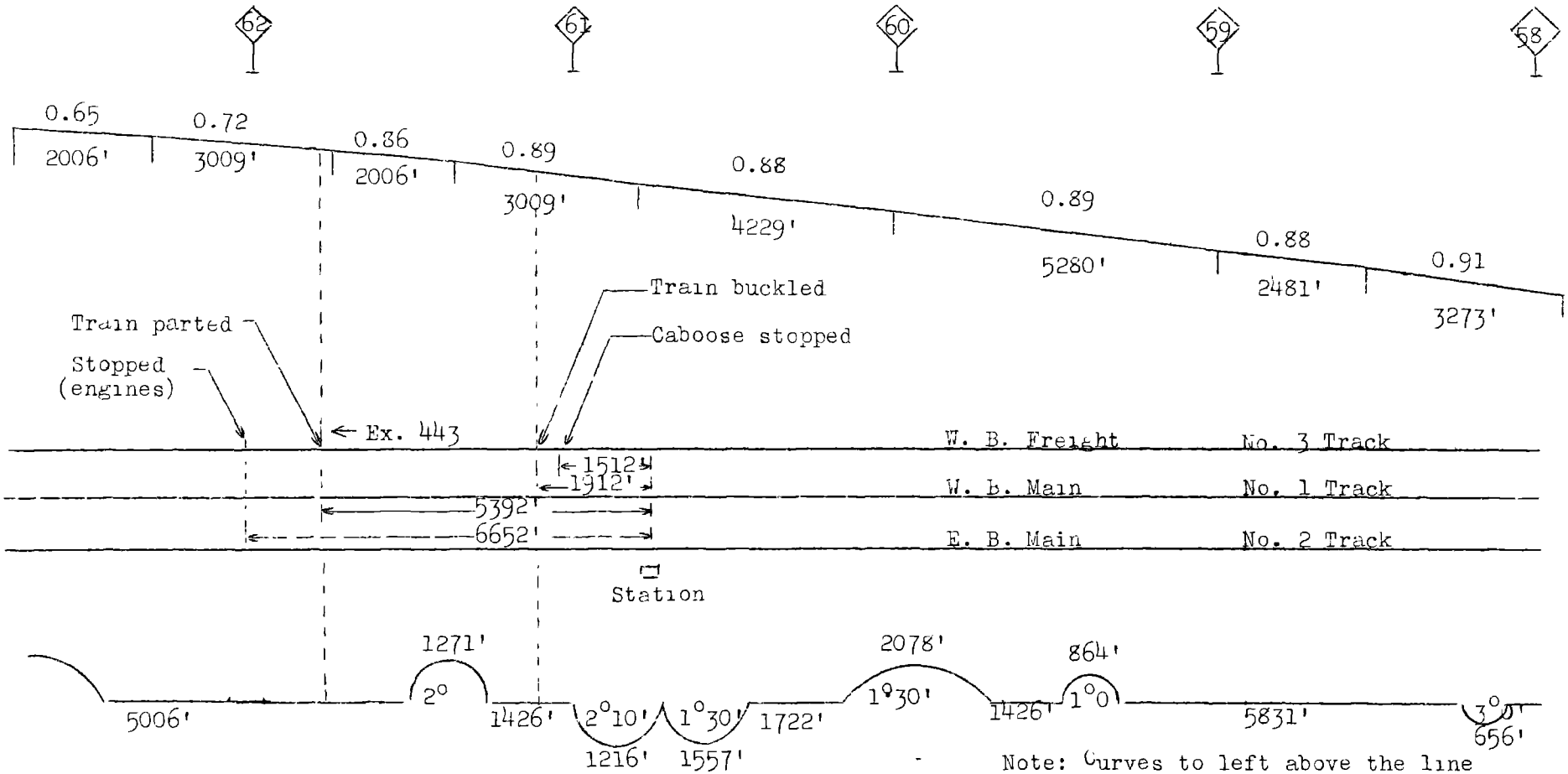
Beginning at Jutland station and approaching the point of accident from the east, there is a $2^{\circ}10'$ curve to the right 1,216 feet long, followed by a tangent 1,426 feet long, a 2° curve to the left 1,271 feet long and a tangent 5,006 feet long; the forward portion of the train parted on the last-mentioned tangent at a point 5,392 feet west of the station, and the rear portion buckled on the first-mentioned tangent at a point 1,912 feet west of the station.

The grade involved is ascending westward about 12 5/8 miles, varying from 0.09 to 0.91 percent, being 0.72 percent at the point where the train parted and 0.89 percent at the point where it buckled. The track is well maintained.

The maximum authorized speed for trains on No. 3 track is 30 miles per hour.

Helper engines are used to assist west-bound trains from Flax Mill, 8.43 miles east of Jutland, to Bloomsbury, a distance of 16.34 miles.

The weather was cloudy and misty at the time of the accident, which occurred about 2:35 p. m.



Note: Curves to left above the line
Curves to right below the line

Jersey City, N.J.
7.60 mi.
Oak Island
43.71 mi.
Flax Mill
5.39 mi.
Landsdown
3.00 mi.
X Jutland (P of A)
7.90 mi.
Bloomsbury, N.J.
52.10 mi.
Packerton, Pa.
10.10 mi.
Penn Haven Jct., Pa.

Inv. No. 2330
Lehigh Valley R.R.
Jutland, N. J.
February 10, 1939

Description

Extra 443 West arrived at Flax Mill at 2 p. m. and helper engine 457 was coupled ahead of the road engine. This train consisted of 112 empty cars and a caboose, in the order named, and was in charge of Conductor Yenser and Enginemen McGary and Miller; it departed from Flax Mill at 2:10 p. m. While ascending the grade at a speed estimated to have been between 20 and 25 miles per hour it parted as a result of the coupler on the west end of the tenth car slipping under the coupler on the east end of the ninth car, and the air brakes became applied in emergency; the resultant run-in of slack caused the train to buckle vertically between the one-hundred third and one-hundred fourth cars, and the train stopped after moving a short distance.

The forward portion of the train was separated from the rear portion, but the coupler knuckles remained closed; there was no derailment. The rear end of the one-hundred third car mounted the front end of the one-hundred fourth car and rested on the end sill; the brake pipe on the one-hundred twelfth car was broken. The caboose was knocked off center from the forward truck and was otherwise damaged. The employee injured was the flagman.

Summary of Evidence

Engineman McGary, of helper engine 457, stated that when Extra 443 arrived at Flax Mill his engine was coupled ahead and then the air brakes were tested. The train departed and while ascending the grade sand was used to prevent the slipping of the driving wheels on the wet rails. No air-brake application was made en route, the wheels did not slip, the speed was from 20 to 25 miles per hour, and both engines were working steam when, without warning, there was a sudden lurch and the train parted, causing the air brakes to become applied in emergency. The front portion of the train stopped smoothly. Later, the front portion of the train was recoupled to the rear portion and the engines proceeded with approximately 100 cars to Bloomsbury, while another engine pulled back the rear cars. He did not notice anything wrong with track conditions.

The statement of Fireman Harrigan, of helper engine 457, as to what transpired was similar to that of Engineman McGary.

Engineman Miller, of road engine 443, stated that his engine coupled to the train of 112 cars at Oak Island, 43.71 miles east of Flax Mill; the air brakes were tested and they worked properly; the train brakes were not used en route to Flax Mill and the stop

at this point was made by means of the independent brake. He then made a brake-pipe reduction of 25 pounds, closed the double-heading cock, and the helper engine was coupled ahead; the air then was under the control of the helper engineman who released the brakes and the train started up the hill. No slack action took place and there was just a steady pull prior to the accident; sand was used on the wet rails and the driving wheels on either engine did not slip. A speed of 20 or 25 miles per hour was attained and both engines were working steam when the train parted and stopped. Later, after recoupling, the engines with about 100 cars proceeded and no further trouble was experienced; the cars involved in the coupler slip-over were set off at Bloomsbury, and the train continued westward.

Fireman Bartholomew, of road engine 443, corroborated the statement of Engineman Miller.

Head Trainman George was on the helper engine when the train parted; he went back and closed the angle cock on the rear end of the ninth car and there was a space of from 15 to 18 car lengths between the ninth and tenth cars. The couplers were closed and the locks were down. There were marks on top of the knuckle on the west end of the tenth car indicating that the knuckle on the east end of the ninth car had passed over it. After the train was recoupled and had pulled ahead, he made an inspection of the couplers while they were stretched; the knuckle on the west end of the tenth car appeared to be about 2 inches low. The carrier irons appeared normal; he did not make any observation of the truck springs or draft gear.

Conductor Yenser was in the caboose when the accident occurred; he said that there was a severe jolt and a hard stop. Shortly afterwards he went forward and found the forward end of the body of the one-hundred fourth car crushed in and the rear end of the one-hundred third car raised about 2 feet and also that the train had parted between the ninth and tenth cars. There were scars on the knuckles and one drawhead where the coupler slip-over occurred. En route to the point of accident there was no rough handling of the train and the movement was normal.

Flagman Wentz stated that he was thrown to the floor of the caboose as a result of the severe shock when the accident occurred.

Roundhouse Foreman Cougle stated it was his opinion that the train buckled between the one-hundred third and one-hundred fourth cars, hopper cars L. V. 19561 and P.R.R. 158159, respectively, as a result of slack action caused by the air brakes becoming applied in emergency when the train parted between the ninth and tenth

cars, hopper cars B. & O. 725038 and B. & O. 329372, respectively. He inspected the two cars involved in the coupler slip-over after they were placed on the repair track. Measurements showed the coupler on the east or B-end of the ninth car to be 34 inches high; this was a 6-by-8-inch type D keyway coupler with a 9-inch knuckle face. The coupler on the west or A-end of the tenth car was only 30½ inches high; this was a 6-by-8-inch type D coupler with a 9-inch knuckle face. The low coupler involved was repaired with one 1¼-by-20-inch carrier-iron bolt and nut, one 1¼-inch lock nut; one 3/8-by-3-inch draft-key retaining cotter; one 3/8-by-4-by-9 inch shim welded under the coupler, which raised it to 34 inches. The coupler at the east or B-end of the tenth car had shims under it and they were beginning to work out. He did not make any further examination of the draft gears and springs, and he did not test the couplers at each end of the cars involved for free slack. He further stated that he thought the coupler at the west end of the tenth car had had a shim under it, as marks on the edge of the coupler carrier indicated that a shim had been on this iron. Examination of the track disclosed it to be in good condition and there were no marks to indicate that anything had been dragging. He thought the accident was due to the low coupler.

Wreckmaster Roth stated that the height of the coupler on the east end of the ninth car measured 34 inches, and when raised by hand it measured 37 inches; the coupler on the west end of the tenth car was only 30½ inches high, and when raised by hand was 35¼ inches high. Scars were plainly visible where the slip-over occurred. The free slack in the coupler at the west end of the tenth car measured 1¼ inches. He did not measure the free slack in the coupler at the east end of the ninth car as its coupler was 34 inches high, and it appeared to be in good order. The side bearings were not examined on any of the cars involved in the accident. He thought that the cars at the rear of the train were damaged as a result of slack action and that there was nothing about the condition of them that contributed to the cause of the accident. He corroborated the statement of the roundhouse foreman with respect to a shim having been in the west end of the tenth car. The springs were properly nested in these cars. System cars are measured for free slack on an average of about once a year and they are stencilled for draft gear and inspection. It was his opinion that the train parted as a result of the low coupler on the west end of the tenth car.

General Foreman Nickisher stated that the two cars involved were inspected at Newark on February 8 and at Oak Island on February 9, at which time they were empty and coupled to each other, and both were approved for coal; there was no low coupler. They were placed in Extra 443 West during the morning of February 10, and were again inspected, and there was no low coupler, and, as customary, the car inspectors observed the train at the time it departed and nothing wrong was noted. Both cars remained coupled in all the yard movements to and from unloading point and in placing in train and the cars did not become uncoupled in any instance even though they were handled around curves, over yard joints, up hill and down, and subjected to varied conditions in their particular handling. He thought it was possible that the car with the low coupler involved was equipped with a shim which dropped out while the train moved from Oak Island to Jutland.

Assistant Trainmaster Dorsey stated that information received from the Western Maryland Railroad showed that B. & O. 329872 was shopped at Hagerstown, Md., because of inoperative knuckle lock lift, A-end; the car was repaired and knuckle lock lifts applied to both ends of the car because they were worn out. No other record was established of any other repairs having been made to either of the cars involved en route.

Observations of the Commission's Inspectors

The equipment involved in the accident had been repaired and moved from the line of this carrier before arrival of the Commission's inspectors. Examination of the track from the point where the break-in-two occurred to a point 2 miles east thereof disclosed nothing to indicate dragging equipment, or any marks of derailment.

Inspection of B. & O. 725038 at Bath, Pa., on February 21, on the line of the Lehigh & New England Railroad, developed that the height of the coupler on the B-end of the car with the slack pulled forward was 34 inches, and when pushed in it was 34-3/8 inches; the distance from the horn of the coupler to the striking casting with the slack pulled forward was 4 inches, and when pushed in it was 3 inches, the free slack in the draft gear being 1 inch. The space between the top of coupler shank and the bottom of the striking casting was 1-1/8 inches. The coupler on the B-end was an A.R.A. type D keyway coupler with a 9-inch knuckle; the keyway appeared to be in good condition. There were scars on the bottom of this knuckle to indicate that it had slipped over another knuckle.

Discussion

At Oak Island the air brakes were tested on Extra 443 West, which consisted of 112 empty freight cars and a caboose, and the brakes operated properly. The train departed and the trip to Flax Mill, 43.7 miles distant, was made without incident. At Flax Mill the train stopped and a helper engine was coupled ahead of the road engine to assist the train up the hill. The air brakes were then controlled from the helper engine. The train started up the hill and according to the evidence no rough handling or slack action occurred prior to the accident, there being a steady pull. Sand was used on the wet rails and no slipping of the driving wheels of either engine occurred. Both engines were working steam, the speed was about 20 or 25 miles per hour and the caboose had just passed Jutland station, 8.43 miles west of Flax Mill, when the train parted between the ninth and tenth cars because of a low coupler, resulting in the air brakes becoming applied in emergency. When the front and rear portions stopped they were separated a distance of between 15 and18 car lengths. As a result of the heavy run-in of slack the train buckled vertically between the one-hundred third and one-hundred fourth cars. The coupler knuckles between the ninth and tenth cars remained closed. Later, the train was recoupled and proceeded and the cars involved in the coupler slip-over were set off at Bloomsbury.

According to the evidence the two cars involved had been inspected by car inspectors on February 8, 9 and 10, as well as at the time they departed from Oak Island; there was no low coupler at the time of these inspections. Both cars remained coupled in yard movements and they did not become uncoupled notwithstanding that they were handled around curves, over yard joints, and up and down hill. There was no indication of dragging equipment and the track was in good condition.

Scrape marks appeared on top of the low coupler involved at the west or A-end of tenth car and on the bottom of the coupler at the east or B-end of the ninth car. The requirements of the Interstate Commerce Commission prescribe a minimum height of 31½ inches and the maximum height of 34½ inches for drawbars of freight cars. The evidence was to the effect that after the accident the coupler on the tenth car measured only 30½ inches in height, and when raised by hand it measured 35¼ inches; the other coupler involved, on the ninth car, measured 34 inches in height, and when raised by hand it measured 37 inches, making a maximum variation of 6½ inches in the two couplers. These were 6-by-8-inch type D couplers with 9-inch knuckle faces. At the east or B-end of the tenth car shims under the coupler were beginning to work out; apparently the coupler involved at the opposite or A-end of this car had had a shim under it, according to marks on

the edge of the carrier iron but evidently the shim on the carrier iron at the forward end of this car dropped out at some point en route. After the accident the low coupler involved was repaired with a carrier-iron bolt and nut, a lock nut, a draft key retaining cotter, and a shim 3/8 by 4 by 9 inches welded under the coupler, which raised the coupler to 34 inches. There was no excessive free slack.

This investigation disclosed that the low coupler on the tenth car resulted from a shim on the carrier iron dropping out en route; also, that a shim on the carrier iron of ninth car was partly out and had to be repaired. This evidence discloses a serious lack of adequate coupler supports on these cars to retain the couplers within the lawful limits of height, and directs attention to the need for establishing requirements for properly securing shims on carrier irons, if permitted to be used.

The evidence also clearly shows that there was a space of 1-1/8 inches between the top of the coupler shank of the ninth car and the bottom of its striking casting, which permitted this coupler to be raised by hand to a height of 37 inches. This condition no doubt contributed to this accident, and the facts in this case point to the necessity for establishing a maximum permissible vertical movement of the pulling face of the knuckle.

Conclusion

This accident was caused by Extra 443 West parting between the ninth and tenth cars because of a low coupler.

Respectfully submitted,

W. J. PATTERSON,

Director.