INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3431

THE PENNSYLVANIA RAILROAD COMPANY

IN RE ACCIDENT

AT BRADY'S LAKE, OHIO, ON

SEPTEMBER 20, 1951

SUMMARY

Date:	September 20, 1951	
Railroad:	Pennsylvania	
Location:	Brady's Lake, Ohio	
Kind of accident:	Derailment and collision	
Trains involved:	Freight	: Freight
Train numbers:	Extra 9717 East	: Extra 9499 West
Engine numbers:	Diesel-electric units 9717A, 9594B and 9595A, and helper unit 8940	: Diesel-electric units 9499A, 9498B and 9498A
Consists:	97 cars, caboose	: 18 cars, caboose
Estimated speeds:	28 m. p. h.	: 35 m. p. h.
Operation:	Interlocking	
Tracks:	Double; tangent; 0.25 percent ascending grade eastward	
Weather:	Clear	
Time:	10:39 p. m.	
Casualties:	7 injured	
Cause:	Broken journal, and derailed cars obstructing adjacent main track in front of approaching train	

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3431

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

THE PENNSYLVANIA RAILROAD COMPANY

November 19, 1951

Accident at Brady's Lake, Ohio, on September 20, 1951, caused by a broken journal, and by derailed cars obstructing an adjacent main track in front of an approaching train.

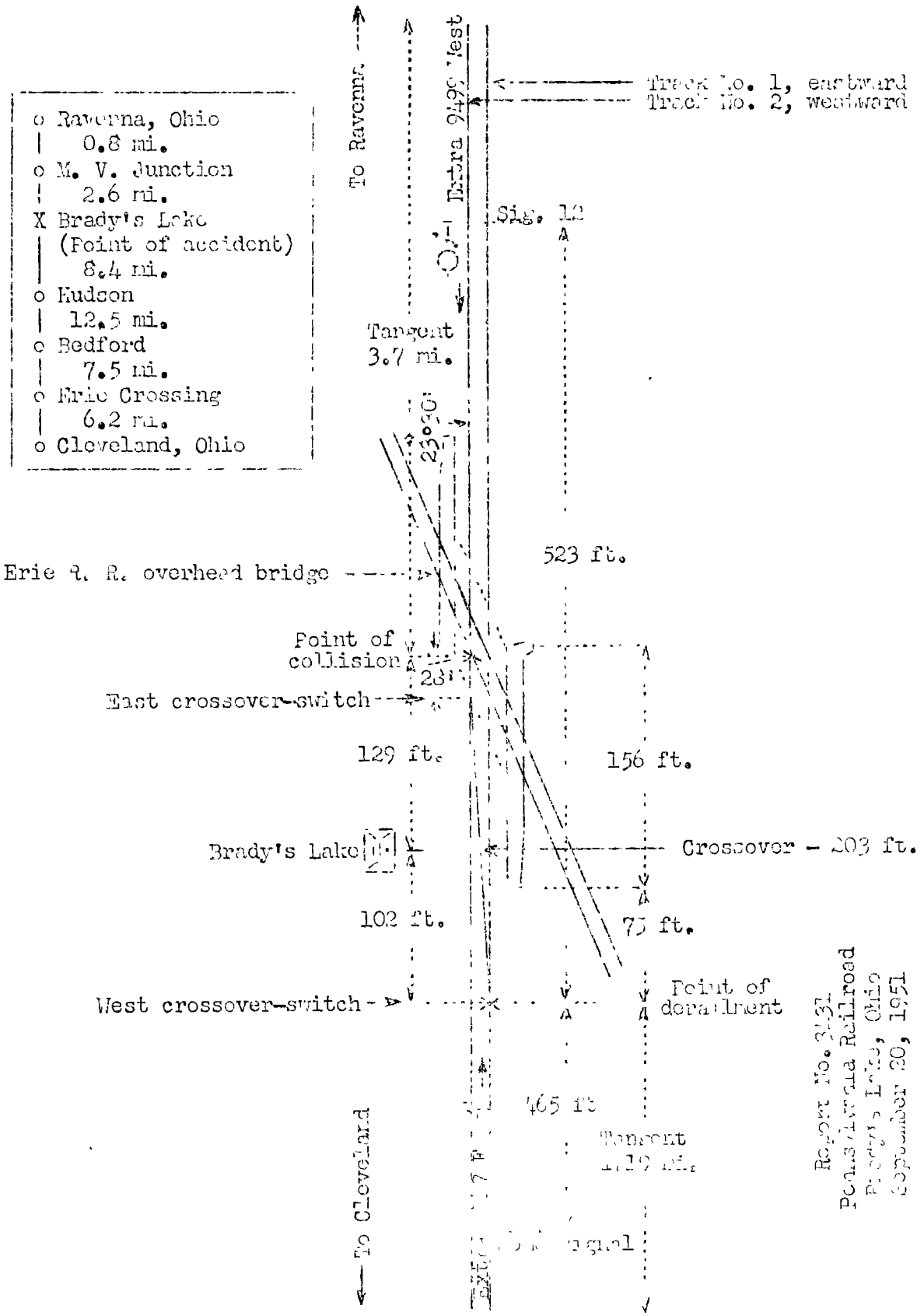
REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On September 20, 1951, there was a derailment of a freight train on the Pennsylvania Railroad at Brady's Lake, Ohio, and derailed cars were struck by another freight train on an adjacent track. This accident resulted in the injury of seven employees.

---

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


o Ravenna, Ohio
0.8 mi.
o M. V. Junction
2.6 mi.
X Brady's Lake
(Point of accident)
8.4 mi.
o Hudson
12.5 mi.
o Bedford
7.5 mi.
o Erie Crossing
6.2 mi.
o Cleveland, Ohio
To Ravenna
Track No. 1, eastward
Track No. 2, westward
Sig. 12
Extra 9499 West
Tangent
3.7 mi.
23°30'
Erie R. R. overhead bridge
523 ft.
Point of collision
East crossover-switch
129 ft.
156 ft.
Brady's Lake
Crossover - 203 ft.
102 ft.
75 ft.
West crossover-switch
Point of derailment
465 ft
Tangent
To Cleveland
Report No. 3437
Pennsylvania Railroad
Brady's Lake, Ohio
September 30, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Lake Division extending between Cleveland and Ravenna, Ohio, 38 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by signal indications. The main tracks from south to north are designated as No. 1, eastward, and No. 2, westward. Within interlocking limits at Brady's Lake, 34.6 miles east of Cleveland, a crossover 203 feet in length connects tracks Nos. 1 and 2. The switches of this crossover are facing-point for movements with the current of traffic. The derailment occurred on track No. 1 at the turnout of the west crossover-switch, 102 feet west of the interlocking station at Brady's Lake, and the collision occurred 231 feet eastward. From the west there is a tangent 1.19 miles in length to the point of derailment and a considerable distance eastward. From the east there is a tangent 3.7 miles in length to the point of collision and a considerable distance westward. The grade is 0.25 percent ascending eastward.

The structure of track No. 1 consists of 131-pound rail, 39 feet in length, laid on an average of 24 ties per rail length. It is fully tieplated, spiked with 4 spikes per tieplate, provided with 6-hole joint bars and an average of 8 rail anchors per rail length. It is ballasted with crushed slag to a depth of about 18 inches below the bottoms of the ties. A bridge of steel construction bearing a double-track line of the Erie Railroad spans tracks Nos. 1 and 2 at an angle of 25°30' in the vicinity of the point of accident. The bridge abutments are 156 feet in length. The west end of the south abutment is 75 feet east of the point of the crossover switch on track No. 1. The west end of the north abutment is 28 feet east of the point of the crossover switch on track No. 2. The distance between the inner faces of the abutments is 33 feet 6 inches.

Signal 12, governing west-bound movements on track No. 2, is located 523 feet east of the point of derailment and is controlled from Brady's Lake interlocking station. It is a two-unit position-light signal, displays 5 aspects and is continuously lighted. The aspects applicable to this investigation and the corresponding indications and names are as follows:

Signal	Aspect	Indication	Name
12	Three amber lights arranged vertically.	Proceed.	Clear.
	Three amber lights arranged horizontally.	Stop.	Stop-signal.

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

77. So far as practicable and other duties permit, employes will observe passing trains for defects and should there be any indication of conditions endangering the train they must take necessary measures for its protection.

Train and engine crews on moving trains will be on the lookout for signals when passing other trains and while passing stations, * * * and points where * * * other employes are working and when practicable exchange hand signals with them.

Supplemental instructions to operating, signal and interlocking rules read in part as follows:

4077-A. Referring to Rule 77, a train must be stopped when it is observed with any of the following defects * * *

Hot Journal
* * *
Defective Truck
* * *

The maximum authorized speed for freight trains was 50 miles per hour. Because its consist was made up entirely of cars containing ore, the east-bound train was restricted to a speed of 35 miles per hour.

Description of Accident

Extra 9717 East, an east-bound freight train, consisted of Diesel-electric units 9717A, 9594B and 9595A, coupled in multiple-unit control, 97 cars, helper Diesel-electric unit 8940 and a caboose, in the order named. This train departed from Erie Crossing, 28.4 miles west of Brady's Lake, at 8:04 p. m., passed Hudson, the last open office, 8.4 miles west of the point of derailment, at 10:20 p. m., and was moving on

track No. 1 at an estimated speed of 28 miles per hour when the sixth to the twenty-sixth cars, inclusive, were derailed at the turnout of the west crossover-switch at Brady's Lake interlocking. These cars obstructed track No. 2 and a few seconds later were struck by Extra 9499 West.

Extra 9499 West, a west-bound freight train, consisted of Diesel-electric units 9499A, 9498B and 9498A, coupled in multiple-unit control, 18 cars and a caboose. This train departed from Ravenna, 3.4 miles east of Brady's Lake, at 10:29 p. m., passed M. V. Junction, the last open office, 2.6 miles east of Brady's Lake, at 10:35 p. m., passed signal 12, which indicated Stop, and while moving on track No. 2 at an estimated speed of 35 miles per hour it struck the derailed cars of Extra 9717 East. The Diesel-electric units and the first 10 cars were derailed.

The derailed equipment of Extra 9717 East stopped in various positions on or near both main tracks. The engine and the first 5 cars were not derailed and stopped with the front end of the engine about 1,500 feet east of the point of derailment. Sixteen of the derailed cars were destroyed and the other derailed cars were badly damaged.

Extra 9499 West stopped with the front end of the first Diesel-electric unit 13 feet east of the point of the crossover switch in track No. 2 and against the derailed cars of Extra 9717 East. The Diesel-electric units remained in line with the track and leaned to the north against the north bridge abutment. The derailed cars of this train stopped in various positions or or near both main tracks. The first and the second Diesel-electric units were considerably damaged and the third unit was somewhat damaged. The third, the fourth and the sixth cars were badly damaged, and the seventh car was destroyed. The fifth and the eighth cars were somewhat damaged and the other derailed cars of this train were slightly damaged.

The conductor and the flagman of Extra 9717 East, the fireman and the flagman of helper Diesel-electric unit 8940, and the engineer, the fireman and the front brakeman of Extra 9499 West were injured.

The weather was clear at the time of the accident, which occurred about 10:39 p. m.

The cab of the first Diesel-electric unit of each train was equipped with trainphone apparatus with loud speaker for communication with similarly equipped engines, cabooses and stations. Trainphone apparatus was provided in the station at M. V. Junction.

The sixth car of Extra 9717 East was P.R.R. 189697, an all-steel hopper car, built in September, 1916. It was 42 feet long over the end sills, 10 feet 2-1/4 inches wide and 10 feet 6-1/2 inches high. Its stencilled lightweight and load limit were, respectively, 51,400 pounds and 158,600 pounds or a maximum allowable weight of 210,000 pounds on the rails. When the accident occurred the lading consisted of iron ore, and the total weight of the car and the lading was 209,900 pounds. The trucks were of the 4-wheel type, having 6-inch by 11-inch journals, steel wheels and crown-type cast-steel side frames.

Discussion

Extra 9717 East was moving on track No. 1 at an estimated speed of 28 miles per hour in territory where the maximum authorized speed for this train was 35 miles per hour, when the sixth to the twenty-sixth cars, inclusive, were derailed. As this train was approaching the point where the accident occurred the enginemen were in the control compartment of the first Diesel-electric unit. The front brakeman was in the cab at the rear of the third unit and the conductor and the flagman were in the caboose. A Diesel-electric unit, assigned to helper service, was assisting at the rear of the train, immediately ahead of the caboose. The enginemen of the helper unit were in the cab and the flagman of the helper unit was in the caboose. The headlight was dimmed because of an approaching train on track No. 2. The brakes were applied in emergency as a result of the derailment. The front brakeman said that he observed sparks flying above the side of a car but the derailment occurred immediately afterward. The fireman of the helper unit said that he observed fire flying from a car as the train was approaching Brady's Lake and warned the engineer. The engineer of the helper unit said that he immediately instructed the fireman to inform the conductor but the brakes became applied in emergency before the fireman reached the caboose. The flagman of a west-bound freight train on track No. 2 gave signals indicating a hot journal as he passed the caboose but the accident occurred before action could be taken to stop the train. A few seconds after the derailment occurred the derailed equipment, which obstructed track No. 2, was struck by Extra 9499 West.

As Extra 9499 West was approaching the point where the accident occurred the speed was about 39 miles per hour. The enginemen were maintaining a lookout from the control compartment of the first Diesel-electric unit. The front brakeman was in the cab at the rear of the third unit and the other members of the train crew were in the caboose. The brakes of this train had been tested and had functioned properly when used en route. The headlight was dimmed because of an approaching train on track No. 1. Signal 12, governing west-bound movements on track No. 2 at Brady's Lake interlocking, indicated Proceed. The engineer said that when he observed fire flying from the cars of the approaching train he immediately placed the brake valve in emergency position and warned the fireman. The fireman said that he observed fire flying and left the seatbox. The enginemen said that they observed the indication of signal 12 change from Proceed to Stop after the brakes had been applied in emergency. They said there was some retardation of the train before the collision occurred.

Examination of the track after the accident occurred disclosed that throughout a distance of about 1,900 feet west of the point of derailment spikes, tieplates and the tops of the ties were marked at irregular intervals. The general derailment occurred at the turn-out of the west crossover-switch. From this point eastward the crossover and 390 feet of track No. 1 and 407 feet of track No. 2 were destroyed.

Examination of the equipment of Extra 9717 East after the accident occurred disclosed that the left rear journal of the front truck of the sixth car, P.R.R. 189697, was broken, and that the truck side had dropped sufficiently to be in contact with the tops of the ties and other parts of the track structure on the north side of the north rail of track No. 1. Portions of the journal bearing were found in the vicinity of the initial marks on the track structure. The detached portion of the failed journal was found about 950 feet west of the point of derailment. When it was found, immediately after the accident occurred, the journal was hot. The packing that remained in the journal box was charred. No other defective condition which could have caused the derailment was found.

The failure of the journal involved consisted of a vertical break at a point 7-1/2 inches inward from the collar. The axle involved was provided with 6-inch by 11-inch journals. The diameter adjacent to the collar was 5-15/16 inches, and at the point of failure it was 5-1/2 inches. The end of the journal remaining attached to the wheel assembly was worn smooth by contact with the journal box. The companion journal was in good condition. The records of the carrier indicate that the axle involved received a magnaflux test at the Altoona, Pa. shops November 12, 1950. There was no available record to indicate when the wheels and axle involved were applied to the car. There was no mark on the axle and no available record of the carrier to indicate the date or place of manufacture.

P.R.R. 189697 was loaded at Cleveland, Ohio, on September 18, 1951, and was destined to Midland, Pa., via the Pennsylvania Railroad. The lading consisted of iron ore. The records of the carrier indicate that the car was inspected and serviced by the mechanical force before it was loaded. After it was loaded at the west breakwater ore dock it was moved to Bedford yard, a distance of approximately 16 miles, where it was assembled in the train of Extra 9717 East. The car was last inspected by members of the mechanical force a few minutes before the departure of Extra 9717 East from Bedford yard at 9:28 p. m., at which time no defective condition was found.

The members of the crew of Extra 9717 East said that they made frequent observations of the equipment throughout the trip. They were unaware of any defective condition in their train until a few seconds before the derailment occurred. The operator at Hudson, 8.4 miles west of the point of accident, inspected the train as it passed his office and observed no defective condition. The engineer of a westbound freight train observed a blazing journal box on a car of Extra 9717 East as his train passed it about 1.5 miles west of Brady's Lake. Because he did not know the number of the Diesel-electric unit and could not properly address a warning to it, the engineer immediately communicated by trainphone with the operator at M. V. Junction and informed him of the defective condition in the east-bound train. The operator at Brady's Lake said that when he was informed by telephone by the operator at M. V. Junction of the defective condition, Extra 9717 East was closely approaching the eastward home signal and it was too late to display a Stop signal for it.

He then observed fire flying from beneath the cars as Extra 9717 East was approaching on track No. 1 and took immediate action to cause signal 12 to display a Stop signal for Extra 9499 West. The accident occurred a few seconds later. The enginemen of Extra 9717 East said that they were unable to understand conversations heard on the loud speaker of their trainphone when their train was west of Brady's Lake. They said the Diesel-electric units of Extra 9499 West had passed when the brakes of their train became applied in emergency.

Cause

It is found that this accident was caused by a broken journal, and by derailed cars obstructing an adjacent main track in front of an approaching train.

Dated at Washington, D. C., this nineteenth day of November, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.