

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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INVESTIGATION NO. 3093  
THE PENNSYLVANIA RAILROAD COMPANY  
REPORT IN RE ACCIDENT  
AT COLUMBIA CITY, IND., ON  
APRIL 7, 1947

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SUMMARY

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Railroad: Pennsylvania  
Date: April 7, 1947  
Location: Columbia City, Ind.  
Kind of accident: Derailment  
Train involved: Passenger  
Train number: 54  
Engine number: 5514  
Consist: 15 cars  
Estimated speed: 55 m. p. h.  
Operation: Movements with current of  
traffic by signal indications;  
movements against current of  
traffic by train orders and  
manual-block system; interlocking  
limits  
Tracks: Double; tangent; 0.31 percent  
descending grade eastward  
Weather: Clear  
Time: 12:27 a. m.  
Casualties: 10 injured  
Cause: Train entering crossover at high  
rate of speed

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 3093

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

THE PENNSYLVANIA RAILROAD COMPANY

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April 30, 1947

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Accident at Columbia City, Ind., on April 7, 1947, caused  
by a train entering a crossover at a high rate of  
speed.

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REPORT OF THE COMMISSION<sup>1</sup>

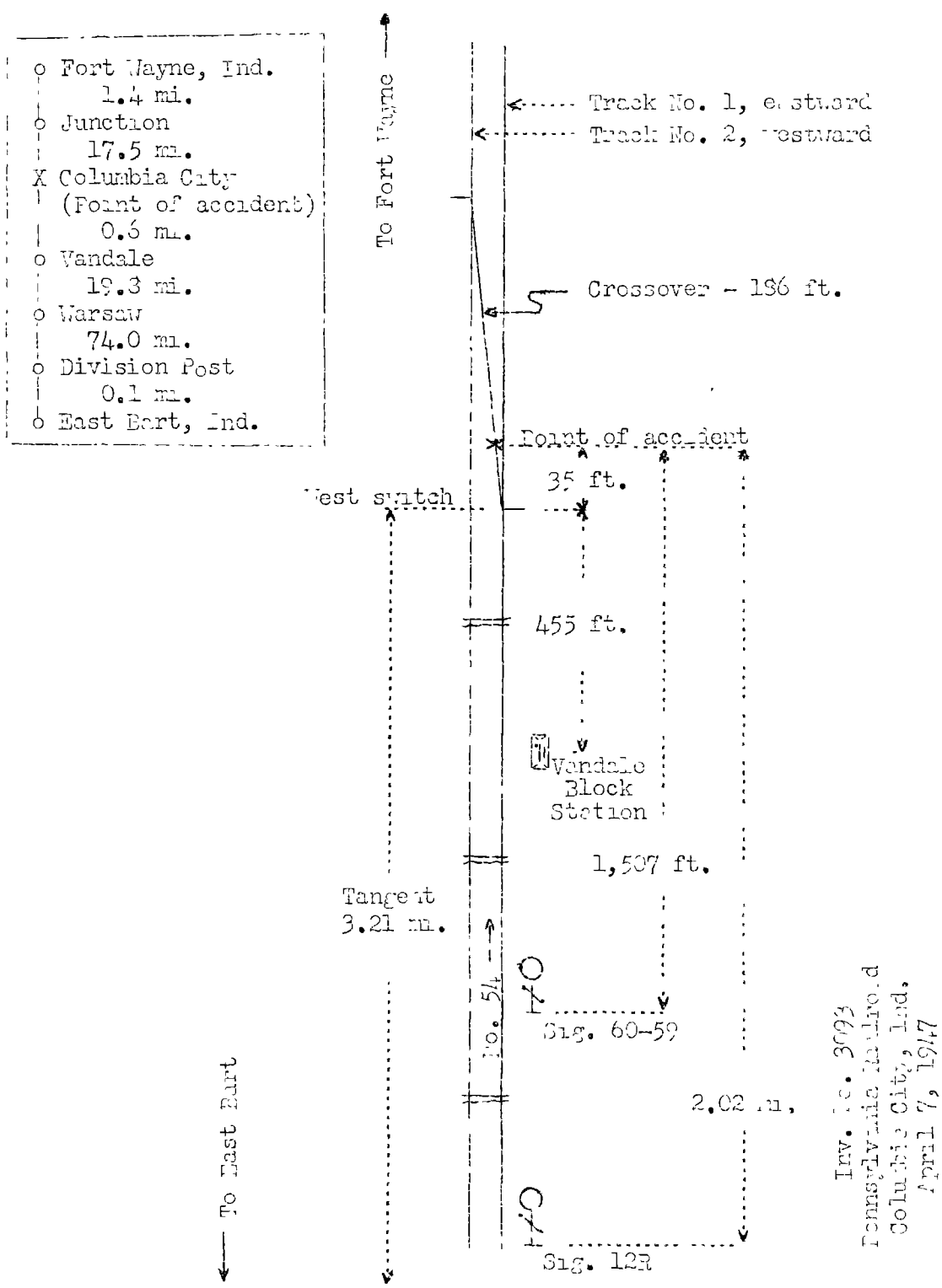
PATTERSON, Commissioner:

On April 7, 1947, there was a derailment of a passenger train on the Pennsylvania Railroad at Columbia City, Ind., which resulted in the injury of six passengers, two railway mail clerks and two Pullman employees. This accident was investigated in conjunction with a representative of the Indiana Public Service Commission.

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<sup>1</sup>

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.



Location of Accident and Method of Operation

This accident occurred on that part of the Fort Wayne Division extending between Division Post, near East Bart, and Fort Wayne, Ind., 113.3 miles, a double-track line, over which trains moving with the current of traffic are operated by signal indications, and trains moving against the current of traffic are operated by train orders and a manual-block system. The main tracks from south to north are designated as No. 1, eastward, and No. 2, westward. Within interlocking limits at Vandale Block Station, 93.8 miles east of Division Post and 0.60 mile west of the station at Columbia City, a facing-point crossover 186 feet long connects the two main tracks. The west switch of this crossover is 455 feet east of the block station. The derailment occurred on the turnout of the west crossover-switch, at a point 35 feet east of the switch. The main tracks are tangent throughout a distance of 3.21 miles immediately west of the west crossover-switch and a considerable distance eastward. The grade for east-bound trains varies between 0.38 percent and 0.31 percent descending throughout a distance of 1.94 miles west of the west crossover-switch, where it is 0.31 percent descending.

The structure of the crossover consists of No. 10 turnouts, rigid-type frogs 25 feet in length, 131-pound switch-points and rail sections, and 9-foot guard rails. The curvature of each turnout is  $7^{\circ}32'24''$ , and the angle of each frog is  $5^{\circ}43'29.3''$ . The crossover is laid on about 115 switch ties. No super-elevation is provided. The distance between the centerline of the main tracks is 13 feet. The track is ballasted with crushed stone to a depth of 24 inches.

Approach signal 12R and home signal 60-59, governing east-bound movements, are, respectively, 2.02 miles and 1,507 feet west of the point of accident. These signals are of the position-light type, and are continuously lighted. The involved aspects and corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
12R	Three white lights in diagonal position to the right	Proceed prepared to stop at next signal. Train exceeding Medium speed must at once reduce to that speed.	Approach.

60-59)	Three white lights	Stop.	Stop-signal.
)	in horizontal		
)	position		
)	Three white lights	Proceed at	Restricting.
)	in horizontal	Restricted	
)	position over	speed.	
)	three white lights		
)	in diagonal posi-		
)	tion to the left		

The interlocking at Vandale consists of an electro-mechanical machine having 43 working levers in an 84-lever frame. Electric time, indication and route locking and mechanical locking are provided. Time releases in connection with the time locking are provided. The controlling circuits are so arranged that when the levers in control of the switches of the crossover involved are placed in position for the switches to be lined for movement from track No. 1 through the crossover to track No. 2 and the lever in control of signal 60-59 is placed in position for either a stop indication or a proceed-at-restricted-speed indication to be displayed by that signal, signal 12R displays proceed-prepared-to-stop-at-next-signal. The time release is arranged to operate in 4 minutes 6 seconds.

Operating rules read in part as follows:

#### DEFINITIONS

\* \* \*

Fixed Signal--A signal of fixed location indicating a condition affecting the movement of a train or engine.

\* \* \*

Medium Speed--Not exceeding one-half the speed authorized for passenger trains but not exceeding 30 miles per hour.

\* \* \*

Restricted Speed--Not exceeding 15 miles per hour prepared to stop short of train, obstruction or switch not properly lined and to look out for broken rail.

\* \* \*

221a. When an order is to be delivered to a train at a train order office, the fixed signal must be displayed at Stop for the track and in the direction of the approaching train and a Train-order signal must be displayed in the place provided for the purpose.

The operator must not clear these signals for an approaching train unless he knows that the train is not the one to which orders are addressed.

This combination of signals must be acknowledged by the engineman by two short sounds of the engine whistle.

\* \* \*

When the Train-order signal is displayed, the speed of the train must be reduced sufficiently to enable the operator to deliver the order. If delivery is not effected on the engine the train must be stopped.

#### Forms of Train Orders

\* \* \*

#### D-R

#### Providing for a Movement Against the Current of Traffic

- (1) No 1 Eng 461 has right over opposing trains on No 2 track C to F.

\* \* \*

330. A signalman having train orders for a train, must display the home signal at Stop and in addition the Train-order signal. He may permit trains to proceed under block signal rules after complying with rules for movement by train orders.

663. A train or engine must stop clear of an interlocking signal indicating Stop. A train or engine must not pass a Stop-signal except when authorized \* \* \*

The train-order signal at Vandale consists of a metallic banner painted yellow. At night a lighted yellow lantern is attached to the banner. When there is a train order for delivery to an east-bound train, the signal is displayed from the north wall of the block station, which is 38 feet south of the centerline of track No. 1.

The maximum authorized speed for the train involved was 80 miles per hour. The maximum authorized speed for all trains through the crossover involved was 15 miles per hour,

#### Description of Accident

Train order No. 101, Form 19, addressed to the operator at Junction, 18.1 miles east of Vandale, was made complete at 12:13 a. m., and read as follows:

Hold all westward trains  
clear of No 2 track between  
Junction and Vandale

Train order No. 102, Form 19, addressed to all trains west at Junction and to the operator and No. 54 at Vandale, was made complete at 12:16 a. m., and read as follows:

No 54 eng 5514 has right  
over opposing trains on  
No 2 track Vandale to  
Junction

No. 54, an east-bound passenger train, consisted of engine 5514, a non-articulated single-expansion engine of the 4-4-4-4 type, one mail car, one express car, one baggage car, three coaches, one dining car and eight sleeping cars, in the order named. The second car was of steel-underframe construction, and the remainder of the cars were of all-steel construction. This train passed Warsaw, 19.8 miles west of Vandale, at 12:10 a. m., on time, passed signal 12R without reducing speed, passed signal 60-59, which displayed stop, passed the train-order signal which was displayed at the block station at Vandale, and while moving on track No. 1 at an estimated speed of 55 miles per hour it entered the crossover at Vandale, which was lined for movement from track No. 1 to track No. 2, and the engine and the first 13 cars were derailed.

The engine and tender, remaining coupled, stopped practically upright and in line with the main tracks, with the front end of the engine 974 feet east of the west crossover switch. The derailed cars stopped practically upright,



in various positions across the main tracks and in line with them. The engine and the first to ninth cars were considerably damaged, and the tenth to thirteenth cars were slightly damaged.

The weather was clear at the time of the accident, which occurred about 12:27 a. m.

### Discussion

About 11:52 p. m. the operator at Vandale observed an overheated journal on a car of an east-bound freight train moving on track No. 1, and he immediately informed the train dispatcher. No. 54, an east-bound passenger train was due to pass Vandale at 12:27 a. m. and, to avoid possible delay to that train, the train dispatcher issued train orders to the operator at Vandale for delivery to No. 54 and to the operator at Junction, 18.1 miles eastward, authorizing No. 54 to proceed from Vandale to Junction against the current of traffic on the westward main track. The last of these orders was made complete at 12:16 a. m. At that time the lever in control of home signal 60-59, governing east-bound movements through the interlocking at Vandale, was in position for this signal to display stop. About 12:17 a. m. the operator at Vandale placed the levers in control of the crossover switches in position for the switches to be lined for movement from the eastward main track through the crossover to the westward main track, and displayed the train-order signal for No. 54. About 10 minutes later, after No. 54 had passed signal 12R, which should have displayed proceed-prepared-to-stop-at-next signal, this train passed signal 60-59, which displayed stop, passed the train-order signal, and was moving at a speed of about 55 miles per hour when it entered the crossover at the west switch and was derailed. The maximum authorized speed for movement through this crossover is 15 miles per hour. The maximum safe speed and the overturning speed for the engine involved moving on this crossover are, respectively, 33 miles per hour and 61 miles per hour.

The operator said that when No. 54 was approaching signal 60-59 he was in position to observe whether the engineer acknowledged the train-order signal indication by sounding two short blasts on the engine whistle, in compliance with the rules. Because the acknowledging signal was not sounded and because the operator observed that No. 54 was approaching signal 60-59 at an excessive rate of speed, he did not place the lever in control of signal 60-59 in position for this signal to display other than a stop indication, and he was giving stop signals with a lighted white lantern when the engine of No. 54 passed the block station.

The enginemen of No. 54 said that as their train was approaching signal 12R the speed was about 85 miles per hour. They were maintaining a lookout ahead and were positive that this signal displayed proceed for their train. When the engine was about 0.5 mile west of signal 60-59 the engineer observed that this signal was displaying stop, and he immediately made a service brake-pipe reduction. He said that, because he was operating his train as though a proceed indication was displayed by signal 12R until he observed the stop indication displayed by signal 60-59, he did not anticipate that any switch within the interlocking would be lined for a diverging route. Consequently, he did not apply the brakes of the train in emergency.

Under the conditions present, signal 12R should have displayed a proceed-prepared-to-stop-at-next-signal indication for No. 54. The speed of a train operating under this indication is required to be reduced immediately to not exceeding 30 miles per hour, and the train must be so operated that it can be stopped short of a signal displaying a stop indication. Immediately after the accident tests were made of the interlocking, and during a subsequent period of 48 hours the signals were under constant observation to determine whether any condition was present that would cause signal 12R to display a phantom or a false indication. No condition was found that would prevent the display of proper indications by the signals in this territory.

Cause

It is found that this accident was caused by a train entering a crossover at a high rate of speed.

Dated at Washington, D. C., this thirtieth day of April, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.