

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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REPORT NO. 3477  
THE BALTIMORE AND OHIO RAILROAD COMPANY  
IN RE ACCIDENT  
AT NORTH BALTIMORE, OHIO, ON  
JULY 31, 1952

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SUMMARY

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Date: July 31, 1952  
Railroad: Baltimore and Ohio  
Location: North Baltimore, Ohio  
Kind of accident: Derailment  
Train involved: Passenger  
Train number: 245  
Engine number: 5311  
Consist: 5 cars  
Speed: 76 m. p. h.  
Operation: Interlocking  
Tracks: Double; tangent; 0.05 percent  
descending grade westward  
Weather: Cloudy  
Time: 6:32 a. m.  
Casualties: 1 killed; 7 injured  
Cause: Train entering crossover at high rate  
of speed

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3477

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

THE BALTIMORE AND OHIO RAILROAD COMPANY

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September 12, 1952

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Accident at North Baltimore, Ohio, on July 31, 1952, caused  
by a train entering a crossover at a high rate of speed.

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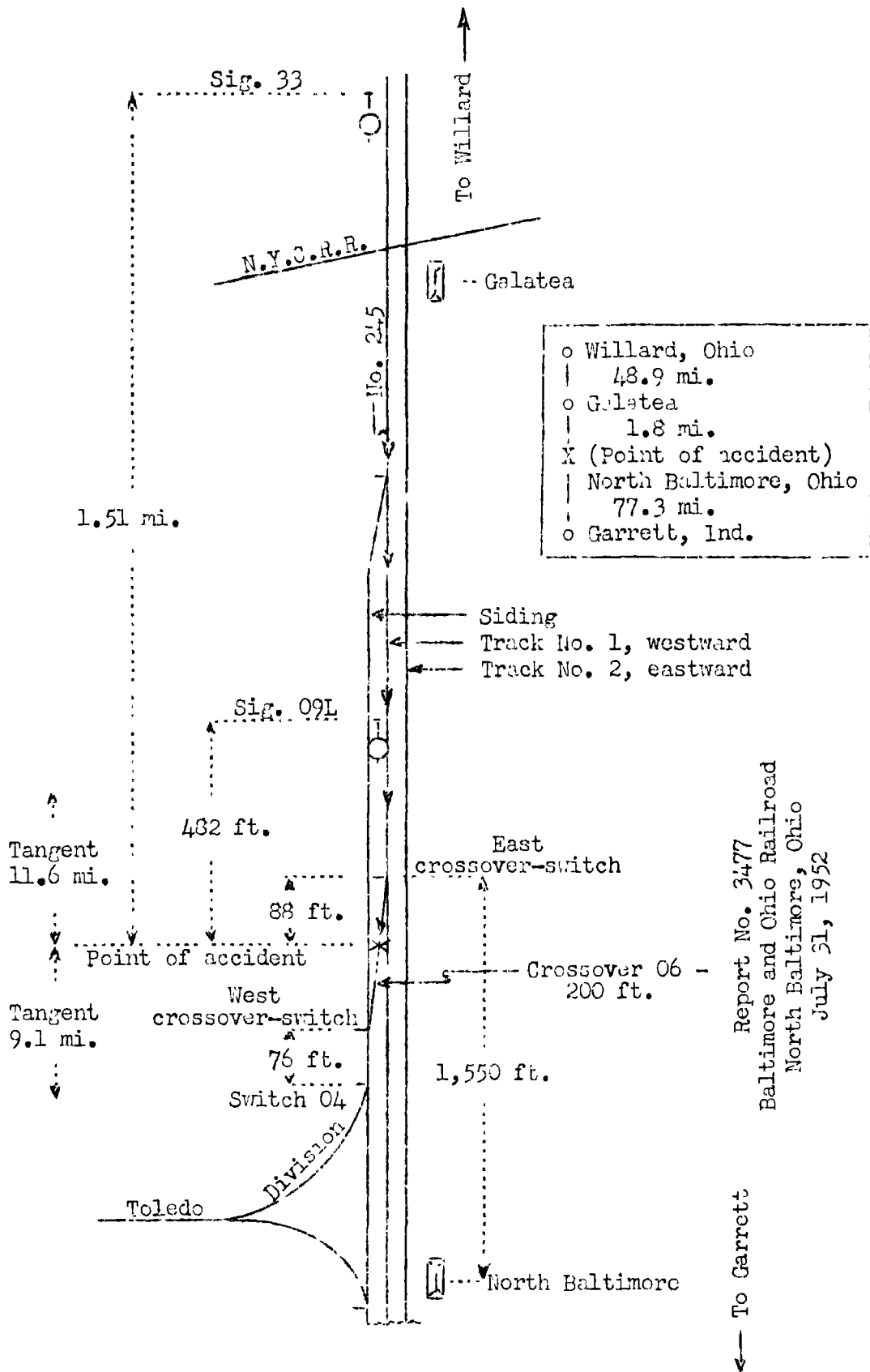
REPORT OF THE COMMISSION<sup>1</sup>

PATTERSON, Commissioner:

On July 31, 1952, there was a derailment of a passenger train on the Baltimore and Ohio Railroad at North Baltimore, Ohio, which resulted in the death of one train-service employee, and the injury of one passenger, one railway-express messenger, one mechanical-department employee, and four train-service employees. This accident was investigated in conjunction with a representative of the Public Utilities Commission of Ohio.

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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.



Report No. 3477  
 Baltimore and Ohio Railroad  
 North Baltimore, Ohio  
 July 31, 1952

### Location of Accident and Method of Operation

This accident occurred on that part of the Chicago Division extending between Willard, Ohio, and Garrett, Ind., 128 miles, a double-track line, over which trains moving with the current of traffic are operated by signal indications. The main tracks from north to south are designated as No. 1, westward, and No. 2, eastward. At Galatea, 48.9 miles west of Willard, a single-track line of the New York Central Railroad crosses the tracks of the E. & O. at grade. Between Galatea and North Baltimore, 1.8 miles west of Galatea, a siding parallels the main tracks of the E. & O. on the north. At North Baltimore a crossover 200 feet in length, designated as crossover 06, connects track No. 1 and the siding. The east crossover-switch, which is 1,550 feet east of the station, is facing-point for west-bound movements on track No. 1. A line of the Toledo Division diverges northward from the siding at switch 04, located 76 feet west of the west switch of crossover 06. Switch 04 is facing-point for west-bound movements on the siding. Crossover 06 and switch 04 are within interlocking limits. The accident occurred on the crossover at a point 88 feet west of the east switch. The main tracks are tangent throughout a distance of 11.6 miles immediately east of the point of accident and 9.1 miles westward. The grade is 0.05 percent descending westward at the point of accident.

In the vicinity of the point of accident the structure of track No. 1 consists of 140-pound rail, 39 feet in length, laid new in 1949 on an average of 22 treated hardwood ties to the rail length. It is fully tieplated with double-shoulder canted tieplates, single-spiked, and is provided with 6-hole 36-inch joint bars and an average of 10 rail anchors per rail. It is ballasted with crushed limestone to a depth of 17 inches below the bottoms of the ties. The track structure between the heel of the switch and the toe of the frog of the east turnout of crossover 06 is of the same general description as that of the main track. The turnout is provided with a No. 10 spring-rail frog and with two manganese 1-piece guard rails. The degree of curvature of the lead curve is 7°08'20".

Movements over the crossing at Galatea and movements over the power-operated switches at North Baltimore are governed by interlocking signals. Semi-automatic signal 33, governing west-bound movements on track No. 1 at Galatea, and semi-automatic

signal 09L, governing west-bound movements on track No. 1 and from track No. 1 to the main track of the Toledo Division at North Baltimore, are located, respectively, 1.51 miles and 482 feet east of the point of accident. These signals are of the color-position-light type and are approach lighted. Aspects applicable to this investigation and the corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
33 09L	Two green lights in vertical position under one white light	Proceed.	Clear.
33	Two green lights in vertical position under and to the left of one yellow light	Proceed, approach- ing next signal at slow speed. Train exceeding medium speed must at once reduce to that speed.	Approach Slow.
09L	Two green lights in vertical position	Proceed at slow speed until entire train passes through switches. * * *	Slow Clear.

The controlling circuits are so arranged that when the blocks of signals 33 and 09L are clear and the routes are lined for west-bound movements on track No. 1 at both Galatea and North Baltimore, each signal indicates Proceed. When the routes are lined for a west-bound movement on track No. 1 at Galatea and for a movement from track No. 1 to the main track of the Toledo Division at North Baltimore, signal 33 indicates Approach Slow and signal 09L indicates Slow Clear.

The interlocking station at Galatea is provided with a 36-lever mechanical machine for operating the interlocking appliances at Galatea and a 10-lever desk-type machine for operating the appliances at North Baltimore. Mechanical, approach, route, indication, and traffic locking are provided. A track diagram in the interlocking station is equipped with visual indicators which indicate track occupancy and whether controlled signals display aspects to proceed or to stop. The

controlling circuits of signal 09L are so arranged that when lever 09 is placed in position to cause the signal to display an aspect to proceed, the indication of the signal will depend upon the route which is lined through the interlocking. When the signal displays any aspect more favorable than Stop, the visual indicator in the interlocking station indicates only that an aspect to proceed is displayed.

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

#### DEFINITIONS.

Normal Speed--The maximum speed permitted by timetables for main track movements.

Medium Speed--One-half the normal speed, not to exceed thirty (30) miles per hour.

Slow Speed--One-quarter of the normal speed not to exceed fifteen (15) miles per hour.

34. All members of train and engine crews will, when practicable, communicate to each other the indication of each signal affecting the movement of their train or engine.

Special instructions governing the operation of interlockings read in part as follows:

4. To insure that a train will be properly routed do not clear signal without first checking the position of switch-levers in the desired route.

The maximum authorized speed for passenger trains is 75 miles per hour, but it is restricted to 10 miles per hour while moving through crossover 06 and switch 04 and immediately west of switch 04 at North Baltimore.

#### Description of Accident

No. 245, a west-bound first-class passenger train en route from Willard to Garrett, Indiana, consisted of engine 5311, one express car, two baggage cars, one combination baggage-passenger car, and one coach, in the order named. All cars were of all-steel construction. This train departed from Willard on track No. 1 at 5:30 a. m., on time, passed signal 35, passed the interlocking station at Galatea at 6:31

a. m., 3 minutes late, passed signal 09L, entered crossover 06 at North Baltimore, which was lined for movement from track No. 1 to the siding, and while moving at a speed of 76 miles per hour the entire train was derailed at a point 80 feet west of the east crossover-switch.

The engine stopped on its left side, about 40 feet north of track No. 1 and approximately parallel to it, with the front end toward the east and 375 feet west of the point of derailment. The tender tank was separated from the underframe. The tank stopped on track No. 1 about 550 feet west of the engine. The underframe remained coupled to the engine. The first car stopped on its right side with its top against the running gear of the engine. There was no separation between the other cars of the train. None of them overturned. They stopped with the front end of the second car against the front end of the engine and the rear end of the fifth car 20 feet east of the west crossover-switch. The engine and tender and the first car were badly damaged. The other cars were somewhat damaged.

The fireman was killed. The engineer, an instructor of fuel economy who was on the engine, the conductor, the front brakeman, and the train baggageman were injured.

The weather was cloudy and it was daylight at the time of the accident, which occurred about 8:32 a. m.

Engine 5311 is of the 4-6-2 type. The total length of the engine and tender, coupled, is 87 feet 10-1/2 inches, and the total weight in working order is 544,000 pounds. According to data furnished by the carrier, the theoretical overturning speed of this engine moving on a 7°08'20" curve without super-elevation is 63.5 miles per hour.

#### Discussion

On the day of the accident No. 19, a west-bound passenger train en route from Willard to Toledo via North Baltimore and the Toledo Division, passed Galatea on track No. 1 at 5:26 a. m. This train crossed from track No. 1 to the siding at crossover 03 and entered the main track of the Toledo Division at switch 04. The enginemen said that signal 33 indicated Approach Slow and signal 09L indicated Slow Clear, which were the correct indications for the movement. After the train passed these signals the operator placed the controlling levers in normal position. He did not change the position of the levers controlling switch 04 and the switches of crossover 06, and these switches remained lined for the route



over which No. 19 had moved. After No. 19 passed Galatea, the operator's time was occupied in working with the New York Central train dispatcher and with New York Central and Toledo Division Block operators. During this period, one east-bound B. & O. train and one N.Y.C. train passed Galatea. After the N.Y.C. train passed, the operator lined the switches and derails at Galatea for a west-bound movement on track No. 1. When he observed No. 245 approaching, at a distance of several miles, he placed the levers controlling signals 33 and 09L in position to cause these signals to display aspects to proceed. After noting that the indicators indicated that each signal was displaying an aspect to proceed, he returned to his desk and engaged in a telephone conversation with the crew of a N.Y.C. train. Until after No. 245 had passed signal 09L he did not notice that he had not changed the positions of the switches at North Baltimore after No. 19 passed and that the route was lined for movement from track No. 1 through crossover 06 and switch 04 to the main track of the Toledo Division.

As No. 245 was approaching Galatea the enginemen were maintaining a lookout ahead from their positions in the cab of the engine, an instructor of fuel economy was on the deck of the engine, and the members of the train crew were in various locations throughout the cars of the train. The engineer said that he and the fireman called the indications of signals 33 and 09L and that he was positive that each signal indicated Proceed. After the train passed Galatea the engineer sounded the station-approach whistle signal for North Baltimore, and he was in the act of sounding a grade-crossing whistle signal when the derailment occurred. Until after the derailment occurred he was not aware that the switches of crossover 06 were lined for movement through the crossover. The instructor of fuel economy said that from his position on the engine he was unable to see the aspect of either signal. He said that the engineer called each signal as indicating Proceed and that the fireman responded each time. He said that neither the engineer nor the fireman appeared to be aware that anything was wrong until the derailment occurred. According to the tape of the speed recording device, the train entered the crossover at a speed of 76 miles per hour, 12.5 miles per hour in excess of the theoretical overturning speed of engine 5311 on this crossover.

Signals 33 and 09L displayed the proper aspects when No. 19 passed them about 1 hour before the accident occurred. The Approach Slow indication of signal 33 required that the speed be reduced to not exceeding 30 miles per hour immediately after the train passed the signal and that the speed be further reduced to not exceeding 15 miles per hour as the train approached signal 09L. The Slow Clear indication of signal 09L

required that the train pass the signal at a speed not exceeding 15 miles per hour. The positions of the switches at North Baltimore were not changed after No. 19 passed. Under these conditions the signals should have displayed the same aspects for the movement of No. 245 that they did for the movement of No. 19.

Several hours after the accident occurred the route was lined for movement from signal 33 to signal 09L and the control relays were operated manually to cause signal 09L to indicate Slow Clear. Signal 33 then indicated Approach Slow, the proper indication. The track and signal equipment west of the east switch of crossover 06 were considerably damaged during the derailment. After the damage was repaired, inspection and tests of the signal system failed to disclose any condition which would have caused an improper signal aspect to be displayed.

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 twelfth day of September, 1952.

By the Commission, Commissioner Patterson.

(SEAL)

GEORGE W. LAIRD  
Acting Secretary.