

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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INVESTIGATION NO. 2617  
THE NEW YORK CENTRAL RAILROAD COMPANY  
AND  
THE WABASH RAILROAD COMPANY  
REPORT IN RE ACCIDENT  
AT RAISIN CENTER, MICH., ON  
AUGUST 17, 1942

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## SUMMARY

Railroads: New York Central : Wabash

Date: August 17, 1942

Location: Raisin Center, Mich.

Kind of accident: Side collision

Trains involved: Freight : Passenger

Train numbers: Extra 1130 North : 1

Engine numbers: 1130 : 667

Consist: 15 cars, caboose : 10 cars

Speed: 20 m. p. h. : 35 m. p. h.

Operation: Automatic interlocking

Track: Single; tangent; : Double; tangent  
0.60 percent as- 0.429 percent as-  
cending grade cending grade  
northward westward

Weather: Clear

Time: 9:35 a. m. E. W. T.

Casualties: 2 killed; 16 injured

Cause: Accident caused by failure properly  
to control speed of the Wabash train  
in compliance with interlocking  
signal indications

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 2617

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

THE NEW YORK CENTRAL RAILROAD COMPANY  
AND  
THE WABASH RAILROAD COMPANY

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October 9, 1942.

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Accident at Raisin Center, Mich., on August 17, 1942, caused  
by failure properly to control speed of the Wabash train  
in compliance with interlocking signal indications.

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

PATTERSON, Commissioner:

On August 17, 1942, there was a side collision between a freight train of the New York Central Railroad and a passenger train of the Wabash Railroad at Raisin Center, Mich., which resulted in the death of two train-service employees and the injury of six passengers, one Railway Express Agency employee, seven dining-car employees and two train-service employees. This accident was investigated in conjunction with a representative of the Michigan 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.

- WABASH
- o Detroit, Mich. 52.4 mi.
  - o Holloway 2.4 mi.
  - X Raisin Center, Mich. (Point of accident) 42.1 mi.
  - o Montpelier, Ohio

To Detroit

- N.Y.C.
- o Jackson, Mich. 40.30 mi.
  - X Raisin Center (Point of accident) 2.15 mi.
  - o Lenawee Jct., Mich.

30.6 miles of tangent

East end of approach circuit 3,931 ft.

Signal 534

7,003 ft.

Signal 546

519 ft.

Point of accident

Wabash No. 1

Point of accident

To Lenawee Jct.

585 ft.

Signal 13331

4,257 ft.

Signal 13321

South end of approach circuit 2,538 ft.

To Jackson

N.Y.C. Extra 11301

P.T.

106 ft.

P.T.\*

1,047.51  
1,103 ft.

P.C.

Tangent

To Montpelier

Inv-2617  
 New York Central Railroad  
 and  
 Wabash Railroad  
 Raisin Center, Mich.  
 August 17, 1942

Location of Accident and Method of Operation

This accident occurred at an intersection of the New York Central Railroad and the Wabash Railroad, hereinafter referred to, respectively, as the N. Y. C. and the Wabash. Raisin Center is located on that part of the Toledo Division of the N. Y. C. which extends between Lenawee Jct. and Jackson, Mich., a distance of 42.45 miles, and on that part of the Montpelier Division of the Wabash designated as the 3rd District and extending between Detroit, Mich., and Montpelier, Ohio, a distance of 96.9 miles. In the vicinity of the point of accident the N. Y. C. is a single-track line and the Wabash is a double-track line. On the N. Y. C., trains are operated by timetable, train orders and a manual block system. On the Wabash, trains are operated by timetable, train orders and an automatic block system. Time-table directions on the N. Y. C. are north and south, and on the Wabash, east and west. The tracks intersect at an angle of 70°42'. As the crossing is approached from the south on the N. Y. C. there is a 1°47.5' curve to the left 1,103 feet in length and then a tangent 106 feet to the crossing and 94 feet beyond. The grade for north-bound trains varies between 0.063 and 1.32 percent ascending a distance of 3,760 feet to the crossing where it is 0.60 percent ascending. As the crossing is approached from the east on the Wabash there is a tangent 30.6 miles to the crossing and 193 feet beyond. The grade for west-bound trains is, successively, 0.121 percent descending 4,000 feet, 0.022 percent descending 1,700 feet, and 0.429 percent ascending 737 feet to the crossing.

Movements over the crossing are governed by an automatic interlocking. On the N. Y. C., approach signal 13321 and home signal 13331, which govern north-bound movements, are located, respectively, 4,842 and 585 feet south of the crossing. Signal 13321 is of the three-indication, color-light type, and signal 13331 is of the two-indication, color-light type. Those signals are approach lighted. The aspects and corresponding indications of these signals are as follows:

Signal 13321

Aspect

Indication

Green-over-red,  
staggered

Proceed

Yellow-over-red,  
staggered

Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed. Reduction to medium speed must commence before passing signal and be completed before accepting a more favorable indication

Red-over-red, Stop, then proceed at restricted  
staggered speed

Signal 13331

Green-over-red Proceed

Red-over-red Stop

On the Wabash, approach signal 534 and home signal 546, which govern west-bound movements, are located, respectively, 7,522 and 519 feet east of the crossing. Signal 534 is of the three-indication, color-light type, and signal 546 is of the one-arm, three-position, upper-quadrant, semaphore type. These signals are approach lighted. The aspects and corresponding indications and names of these signals are as follows:

Signal 534

<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
Green	Proceed	Clear Signal
Yellow	Proceed preparing to stop at next signal	Approach Signal
Red	Stop; then proceed at caution	Stop and Proceed Signal

Signal 546

Green	Proceed	Clear Signal
Yellow	Proceed preparing to stop at next signal	Approach Signal
Red	Stop	Stop Signal

Each approach signal normally displays approach and each home signal normally displays stop, and if the conflicting route is not occupied these signals clear automatically upon the approach of a train. On each line track circuits are provided in approach of the approach signals. On the N. Y. C. the approach circuit for northward movements extends southward to a point 2,533 feet south of signal 13321, and on the Wabash the approach circuit for westward movements extends eastward to a point 3,931 feet east of signal 534. The interlocking is so arranged that when an approaching train on either line enters its respective approach track-circuit, the approach signal and the home signal automatically display proceed indications, if there is no conflicting train movement on the other line. The first train that enters its approach circuit establishes priority over a train on the other line and the approach signal and

the home signal on the opposing line remain, respectively, at approach and stop until the first train has completed its movement through the interlocking.

Operating rules of the Wabash read in part as follows:

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

98. Trains must approach \* \* \* railroad crossings at grade, \* \* \* prepared to stop, unless the \* \* \* signals indicate proceed, and track is clear.

The maximum authorized speed for freight trains on the N. Y. C. is 40 miles per hour, and for passenger trains on the Wabash, 80 miles per hour.

#### Description of Accident

Extra 1130 North, a north-bound N. Y. C. freight train, consisted of engine 1130, 10 loaded and 5 empty cars and a caboose. This train departed from Lenawee Jct., 2.15 miles south of Raisin Center and the last open office, at 9:30 a. m., Eastern War Time, according to the dispatcher's record of movement of trains, passed signals 13321 and 13331, which displayed proceed, and when it was moving over the crossing at an estimated speed of 20 miles per hour the ninth car was struck by Wabash train No. 1.

No. 1, a west-bound first-class Wabash passenger train, consisted of engine 667, one baggage-mail car, one passenger-baggage car, two chair cars, one club-dining car, one passenger-baggage car, two chair cars, one dining car and one Pullman car, in the order named. All cars were of steel construction. At Detroit, 54.8 miles east of Raisin Center, a terminal air-brake test was made and the brakes functioned properly en route. This train departed from Detroit at 7:25 a. m., Central War Time, according to the dispatcher's record of movement of trains, on time, passed Holloway, 2.4 miles east of Raisin Center and the last open office, at 8:32 a. m., passed signals 534 and 546, and while moving at a speed of 35 miles per hour, as shown by the tape of the speed recorder with which the engine was equipped, it struck the side of N. Y. C. Extra 1130 North.

The ninth car of N. Y. C. Extra 1130 stopped on its side 113 feet west of the crossing, across the Wabash main tracks and at right angles to them. The tenth car stopped between the tender of the Wabash engine and the first car of the Wabash train. The eleventh car stopped south of the crossing with its

front end just west of the crossing on the Wabash eastward main track and its rear end on the N. Y. C. track. The eighth car was slightly damaged. Wabash engine 667 stopped, badly damaged, on its left side, at right angles to the Wabash tracks, with its cab on the westward main track, its front end 34 feet north of that track and its pilot 53 feet west of the crossing. The cistern was torn from the frame of the tender and stopped upright against the bottom of the engine. The first car was badly damaged and stopped upright across the Wabash main tracks and the N. Y. C. main track with its front end against the tender. The second car stopped, considerably damaged, upright and headed southwestward, with its front end on the Wabash eastward main track and against the rear end of the first car, and its rear end on the westward main track and coupled to the third car. The front truck of the third car was derailed and this car was slightly damaged.

The weather was clear at the time of the accident, which occurred about 9:35 a. m., Eastern War Time.

The employees killed were the engineer and the fireman of Wabash No. 1. The train-service employees injured were the conductor and the front brakeman of N. Y. C. Extra 1130 North.

#### Data

Examination after the accident disclosed that the terminal box of the interlocking at the crossing was demolished and the cable pole was dislodged and broken off. The aerial and underground cable connections and the track-circuit connections of the Wabash westward main track were damaged. Tests of the signals after the accident disclosed no abnormal conditions.

At the time these trains were approaching the crossing a track-maintenance crew consisting of 3 men was engaged in welding a frog of the crossing with electric welding equipment. A generator which supplied the energy for the welding equipment was on a truck located on the north side of the Wabash westward main track a short distance west of the N. Y. C. main track. An insulated cable extending from the generator to the welding equipment was under the N. Y. C. track and the Wabash westward main track. After the accident, in tests made with the welding equipment operating at the same location as at the time the trains involved were approaching the crossing, no condition was found that affected the normal functions of the involved signals.

An analysis of the tape of the speed recorder of Wabash engine 667 disclosed that No. 1 was moving at a speed of 60 miles per hour as it entered its approach circuit, 62 miles per hour as it passed signal 534, 65 miles per hour at a point 1,300 feet east of home signal 546, 55 miles per hour as it



passed home signal 546, and 35 miles per hour at the point of collision. Speed was reduced from 65 miles per hour to 35 miles per hour within a distance of 1,819 feet. After the accident the automatic brake valve of engine 667 was found to be in emergency position.

### Discussion

The N. Y. C. approach and home signals displayed proceed when the N. Y. C. train entered the approach circuit, and this train was moving over the crossing at a speed of about 20 miles per hour when the ninth car was struck by the Wabash train, which entered its approach circuit at a speed of 60 miles per hour and was moving at a speed of 35 miles per hour at the time of the accident.

As the engine of the N. Y. C. train was closely approaching the crossing the engineer observed that the westward Wabash home signal was displaying stop. No surviving member of the crew of the Wabash train observed what indications were displayed for their train, and it could not be determined whether the enginemen saw the indications, as they were killed in the accident; however, the tape of the speed recorder on the engine indicated that a heavy application of the brakes became effective at a point 1,300 feet east of the home signal, as the speed was reduced from 65 to 35 miles per hour within a distance of 1,800 feet immediately east of the crossing. The brakes on this train had been tested and had functioned properly en route. The engineer had sounded highway crossing whistle signals a short distance east of the home signal. The weather was clear and there was no condition that would obstruct the view ahead.

The automatic interlocking by which the crossing is protected is so arranged that the first train entering its approach circuit will receive signal indications for movement over the crossing, and the approach and home signals on the other line will remain, respectively, at approach and stop until the first train has completed its movement over the crossing. Since it would take about 4.5 minutes for the engine of the N. Y. C. train to move at a speed of 20 miles per hour from the south end of its approach circuit to the point it had reached at the time of the accident, a distance of 1.5 miles, and since it would take about 1.75 minutes for the Wabash train to move at an average speed of 62.5 miles per hour from the east end of its approach circuit to the point 1,300 feet east of home signal 546 where the air-brake application became effective, a distance of 1.82 miles, and about 0.51 minute to move at an average speed of 40 miles per hour from the point where the air-brake application became effective to the crossing, a distance of 0.35 mile, it follows that the N. Y. C. train entered its approach circuit at least 2.24 minutes before the Wabash

train entered its own approach circuit; therefore, the Wabash train should have received an approach indication at the approach signal and a stop indication at the home signal. Tests made after the accident disclosed that the interlocking was functioning as intended. Under the rules of the Wabash, a train receiving an approach indication must proceed in such manner that it can stop short of the next signal. The investigation disclosed that the approach signal displayed approach and, therefore, the Wabash train was required to stop short of the home signal.

Cause

It is found that this accident was caused by failure properly to control speed of the Wabash train in compliance with interlocking signal indications.

Dated at Washington, D. C., this ninth day of October, 1942.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,  
Secretary.