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INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3132
THE PENNSYLVANIA RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR SCIO, OHIO, ON
SEPTEMBER 30, 1947

SUMMARY

Railroad: Pennsylvania
Date: September 30, 1947
Location: Scio, Ohio
Kind of accident: Rear-end collision
Trains involved: Passenger : Freight
Train numbers: 267 : Extra 8524 West
Engine numbers: 830 : 8524
Consists: 9 cars : 8 cars, caboose
Estimated speeds: Standing : 15 m. p. h.
Operation: Automatic block and cab-signal
systems
Tracks: Double; 1°30' curve; 0.08 percent
ascending grade westward
Weather: Clear
Time: 12:32 p. m.
Casualties: 15 injured
Cause: Failure to operate following train
in accordance with signal indication

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3132

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

THE PENNSYLVANIA RAILROAD COMPANY

October 31, 1947

Accident near Scio, Ohio, on September 30, 1947, caused
by failure to operate the following train in
accordance with signal indication.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On September 30, 1947, there was a rear-end collision between a passenger train and a freight train on the Pennsylvania Railroad near Scio, Ohio, which resulted in the injury of four passengers, four railway-mail clerks, five dining-car employees and two train-service employees. This accident was investigated in conjunction with a representative of the Public Utilities Commission of Ohio.

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.

To Pittsburgh ↑

Track No. 1, eastward freight →
 Track No. 2, eastward passenger →
 Track No. 3, westward passenger →

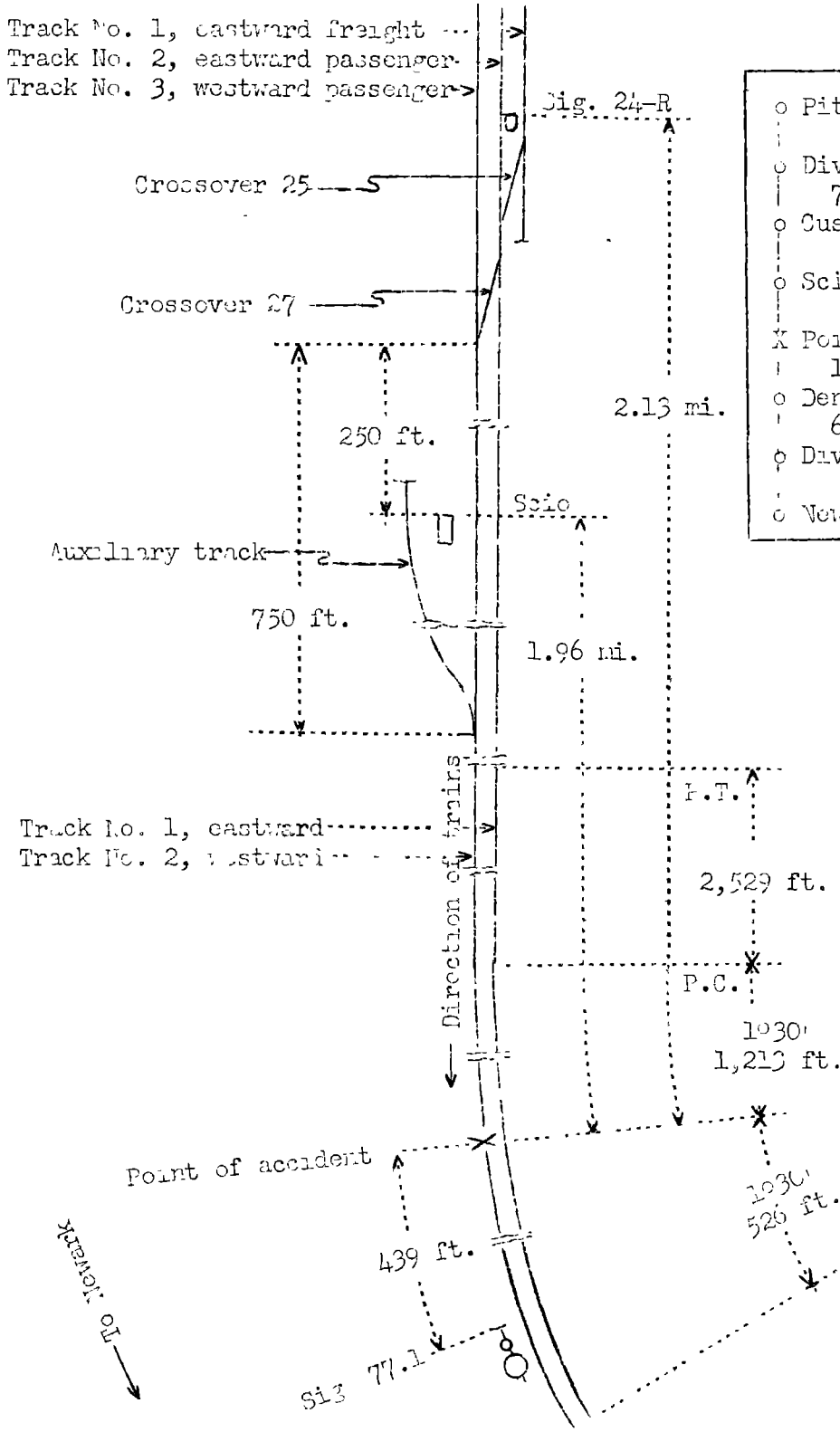


Fig. 24-R

o	Pittsburgh, Pa.	0.20 mi.
	Division Post	70.90 mi.
o	Custer, Ohio	4.00 mi.
o	Scio	1.90 mi.
X	Point of accident	13.44 mi.
o	Dennison	67.10 mi.
o	Division Post	0.20 mi.
o	Newark, Ohio	

Track No. 1, eastward →
 Track No. 2, westward →

Direction of traffic ↓

Point of accident

To Newark ↓

Inv. No. 3132
 Pennsylvania Railroad
 Scio, Ohio
 September 30, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Panhandle Division extending between Division Post, Pittsburgh, Pa., and Division Post, Newark, Ohio, 157.4 miles, a double-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by automatic block-signal and cab-signal indications. The main tracks from south to north are designated as No. 1, eastward, and No. 2, westward. Within interlocking limits at Scio, 75.1 miles west of Pittsburgh, a three-track line converges with the double-track line at a point 250 feet east of the station. From this point eastward the tracks are designated as No. 1, eastward freight; No. 2, eastward passenger; and No. 3, westward passenger. West-bound movements from track No. 1 to track No. 3 and thence to track No. 2 are made through crossovers 25 and 27. The switches of the crossovers are controlled from the interlocking machine at Custer, 4 miles east of Scio. In the vicinity of the station at Scio an auxiliary track parallels track No. 2 on the north. The west switch of the auxiliary track is trailing-point for west-bound movements on track No. 2. This switch is located 750 feet west of the west switch of crossover 27, and is hand operated. The accident occurred on track No. 2 at a point 1.96 miles west of the station at Scio. From the east on track No. 2 there are, in succession, a tangent 2,529 feet in length, and a 1°30' curve to the left 1,213 feet to the point of accident and 526 feet westward. The grade is 0.08 percent ascending westward.

Semi-automatic signal 24-R, governing the movement of the freight train involved, and automatic signal 77.1, governing west-bound movements on track No. 2, are, respectively, 2.13 miles east and 439 feet west of the point of accident. Signal 24-R is controlled from the interlocking machine at Custer. These signals are of the position-light type. The cab signals are of the four-indication position-light type. The involved aspects and corresponding indications and names of these signals are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
24-R and cab signal	Two white lights in diagonal posi- tion to the left	Proceed at Restricted speed.	Restricting.

77.1	Three white lights in horizontal posi- tion over white marker	Stop; then proceed at Restricted speed.	Stop-and- proceed. proceed.
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The controlling circuits are so arranged that when a west-bound train is occupying track No. 2 in the block extending between the west switch of crossover 27 and signal 77.1 and the switches of crossovers 25 and 27 are lined for a west-bound movement to proceed from track No. 1 to track No. 2, signal 24-R and the cab signals of a following train display proceed-at-restricted-speed.

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

DEFINITIONS

* * *

Cab Signal--A signal located in engineman's compartment or cab indicating a condition affecting the movement of a train or engine.

* * *

Speeds

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.

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes, and when necessary, in addition, displaying lighted fuses.

* * *

When a train is moving under circumstances in which it may be overtaken by another train, the flagman must take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fuses must be thrown off at proper intervals.

* * *

Note--When trains are operating under Automatic Block System Rules, the requirements of Rule 99, in so far as protecting against following trains is concerned, will have been complied with when full protection is afforded against trains moving at Restricted speed.

* * *

297. Cab signals will not indicate conditions ahead when engine is:

* * *

(c) Not equipped for backward running and is running backwards.

501a. Interlocking home signals governing the use of routes leading to a block will in addition govern the use of the block in direction for which traffic has been established for a train to the next block signal.

515. The movement of trains not equipped with cab signal apparatus, including whistle and acknowledger, in operative condition for the movement, is prohibited except as provided on the time-table or in emergency when authorized by the superintendent, and then as provided by Rule 516.

516. * * *

* * *

Unless the train is authorized by Cab Signal Clearance Card (Form CS) or train order to proceed at the speed of an equipped train, it will proceed on fixed signal indications and permission of the signalman but not exceeding medium speed.

Note--When Cab Signal Clearance Card (Form CS) or train order is addressed to the train at the next block station in advance, train may proceed to that station in conformity with such clearance card or train order upon verbal permission of the signalman.

This carrier's Brake and Train Air Signal Instructions read in part as follows:

10-c. When one or more cars are added to a train at any point subsequent to a terminal test, the cars added, when in the position in the train where they are to be hauled, must be tested * * *

In the vicinity of the point of accident the maximum authorized speed was 60 miles per hour for the passenger train and 30 miles per hour for the freight train.

Description of Accident

No. 267, a west-bound first-class passenger train, consisted of engine 830, two baggage cars, one baggage-mail car, one passenger-baggage car, two coaches, one sleeping car, one dining car and one baggage car, in the order named. All cars were of steel construction. This train passed Custer, the last open office, at 12:15 p. m., 54 minutes late, passed Scio and stopped on track No. 2 about 12:23 p. m., with the rear end standing 1.93 miles west of the station at Scio. About 9 minutes later the rear end of this train was struck by Extra 8524 West.

Extra 8524 West, a west-bound freight train consisting of engine 8524, headed eastward, 8 cars and a caboose, in the order named, was into clear at the west end of track No. 1 at Scio when No. 267 passed that point. Immediately afterward, the route was lined for movement from track No. 1 through crossovers 25 and 27 to track No. 2, and Extra 8524 West proceeded, passed signal 24-R, which displayed proceed-at-restricted-speed, and stopped in the vicinity of the auxiliary-track switch, where a flying-switch movement was made and the engine was coupled to the west end of the train. This train departed at 12:28 p. m., and was moving on track No. 2 at an estimated speed of 15 miles per hour when it collided with No. 267.

The force of the impact moved No. 267 westward about 5 feet. The coupler head at the front end of the first car of No. 267 was broken and a separation occurred between the tender and the first car. The front pair of wheels of the front truck of the first car and the front pair of wheels of the rear truck of the rear car were derailed. The rear end of the rear car was badly damaged. The center sill and the end sill were bent, the rear coupler and draft gear were torn loose, and the rear truck was forced out of place a distance of about 15 feet toward the center of the car.

The rear end of the tender of Extra 8524 West was badly damaged. The front end of the tender telescoped the engine cab, which was torn loose and practically demolished.

The engineer and the fireman of Extra 8524 West were injured.

The weather was clear at the time of the accident, which occurred about 12:32 p. m.

Engine 8524 is provided with two 9-1/2 inch single-stage air compressors and No. 6-ET brake equipment. The feed valve, which is of the C6 type, was adjusted to supply brake-pipe pressure of 80 pounds, and the compressor governor was adjusted to supply main-reservoir pressure of 102 pounds. Sandpipes are arranged in front of the No. 1 pair of driving wheels and to the rear of the No. 3 pair of driving wheels. The cars and the caboose of Extra 8524 West were provided with AB-type brakes. The cab-signal equipment of engine 8524 is inoperative when the engine is moving backward.

Discussion

No. 267, a west-bound passenger train, stopped on track No. 2, because of a brake application resulting from a broken steam-supply pipe to the air compressor, about 12:23 p. m., with the rear end standing 1.96 miles west of the station at Scio and 439 feet east of signal 77.1. About 9 minutes later the rear end of this train was struck by Extra 8524 West.

When No. 267 stopped, the conductor and the engineer proceeded immediately to a telephone, located south of track No. 2 and opposite the point where the fifth car of the train was standing, to inform the train dispatcher of the delay, and the flagman proceeded eastward to provide flag protection against following trains. The flagman had reached a point about 450 feet to the rear of his train when he heard the following train approaching, then he proceeded eastward about 300 feet and gave stop signals with a red flag. These signals were immediately acknowledged by two short blasts on the engine whistle of the following train. The flagman said that when the engine of Extra 8524 West passed him the speed of the train was about 20 miles per hour, and the driving wheels of the engine were sliding. The flagman and the engineer of No. 267 estimated the speed of Extra 8524 West as about 15 miles per hour when the collision occurred.

Extra 8524 West was engaged in performing switching service in the vicinity of the station at Scio, and, when No. 267 passed Scio, the switching had been completed and Extra 8524 West was standing on track No. 1 immediately east of signal 24-R. At that time, the engine of Extra 8524 West was coupled to the east end of the train, and the brake-pipe, auxiliary and emergency reservoir pressures of the train-brake system had been released. About 12:20 p. m., when No. 267 cleared the west switch of crossover 27, the operator at Custer lined the route for movement from track No. 1 through crossovers 25 and 27 to track No. 2. Signal 24-R displayed proceed-at-restricted-speed for Extra 8524 West and this train proceeded through the crossovers, and then westward on track No. 2 to the auxiliary-track switch, where a flying-switch movement was made to place the engine at the west end of the train. During this movement, the conductor communicated by telephone with the operator at Custer and was instructed to fill out a cab-signal message form, which authorized Extra 8524 West to be operated westward with inoperative cab signals between Scio and Dennison, 15.4 miles westward. The fireman, who was operating the engine, said that Extra 8524 West departed westward about 1-1/2 minutes after the brake-pipe hose between the engine and the train had been coupled. When Extra 8524 West departed from Scio it was moving in the block extending from the western limits of the interlocking to signal 77.1, a distance of 2.05 miles, and, because the cab signals were inoperative during the backward movement of the engine, the train was required to be operated in accordance with the proceed-at-restricted-speed indication displayed by signal 24-R. As Extra 8524 West was approaching the point where the accident occurred it was moving at a speed of about 25 miles per hour, in territory where an embankment inside the curve restricted the view of the track ahead to a distance of about 1,000 feet. The fireman was on the right side of the cab and maintaining a lookout to the west, the engineer and the front brakeman were on the left side of the cab, and the conductor and the flagman were in the caboose. The fireman first saw the stop signals being given by the flagman of No. 267 when his engine was about 1,200 feet east of the location of the flagman. Then he sounded the engine whistle in acknowledgment, and made a service brake-pipe reduction. Immediately afterward he moved the brake valve to emergency position, placed the reverse lever in position for forward motion and opened the throttle in an attempt to avert the accident. However, the driving wheels slid and the retarding effect of the brakes was reduced. The fireman understood that his train was required to be operated in such manner that it could be stopped short of a preceding train, but he said he expected that No. 267 would proceed without stopping, and he operated his train

accordingly, regardless of the restrictive signal indication. The engineer was injured in the accident, and it was not possible to obtain a statement from him at the time the investigation was completed.

According to the evidence, no brake test was made after the cars of Extra 8524 West were reassembled in the train in the vicinity of the auxiliary track at Scio. The fireman thought that at the time he made the service brake-pipe reduction the brakes did not appear to have sufficient holding power. The conductor said that after the accident all brake-cylinder pistons of the cars and the caboose were in application position, and the brake shoes appeared to be tight against the wheels. Tests after the accident disclosed that the brake equipment of the engine, the cars and the caboose of Extra 8524 West were in operative condition. The brake-cylinder piston travel of the cars and the caboose varied between 7-3/4 inches and 10 inches. However, the piston travel of one car only was in excess of 9 inches. Because of rust in the charging port of the AB valve on the caboose, the charging time of the auxiliary and emergency reservoirs exceeded 15 minutes. The average time required for a single unit of AB equipment to be charged is between 7 and 8 minutes. Extra 8524 West departed from Scio about 1-1/2 minutes after the brake-pipe hose had been coupled, and the accident occurred approximately 4 minutes later. The brake-pipe feed valve on the engine was of a type having limited port capacity for charging the train-brake system, and it is probable that the brake-pipe, the auxiliary reservoir and the emergency reservoirs of the equipment had not become charged to their maximum pressures at the time the brake application was made.

Cause

It is found that this accident was caused by failure to operate the following train in accordance with signal indication.

Dated at Washington, D. C., this thirty-first day of October, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.