INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3424

THE PENNSYLVANIA RAILROAD COMPANY

IN RE ACCIDENT

NEAR CAIRNBROOK, PA., ON

AUGUST 19, 1951

SUMMARY

Date:	August 19, 1951
Railroad:	Pennsylvania
Location:	Cairnbrook, Pa.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 4524 South
Engine number:	4524
Consist:	64 cars, engine 4239, caboose
Estimated speed:	12 m. p. h.
Operation:	Timetable and train orders
Track:	Single; 8° curve; 1.11 percent ascending grade southward
Weather:	Clear
Time:	9:15 a. m.
Casualties:	1 killed; 3 injured
Cause:	Open switch

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3424

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

THE PENNSYLVANIA RAILROAD COMPANY

October 26, 1951

Accident near Cairnbrook, Pa., on August 19, 1951, caused by an open switch.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On August 19, 1951, there was a derailment of a freight train on the Pennsylvania Railroad near Cairnbrook, Pa., which resulted in the death of one employee and the injury of three employees.

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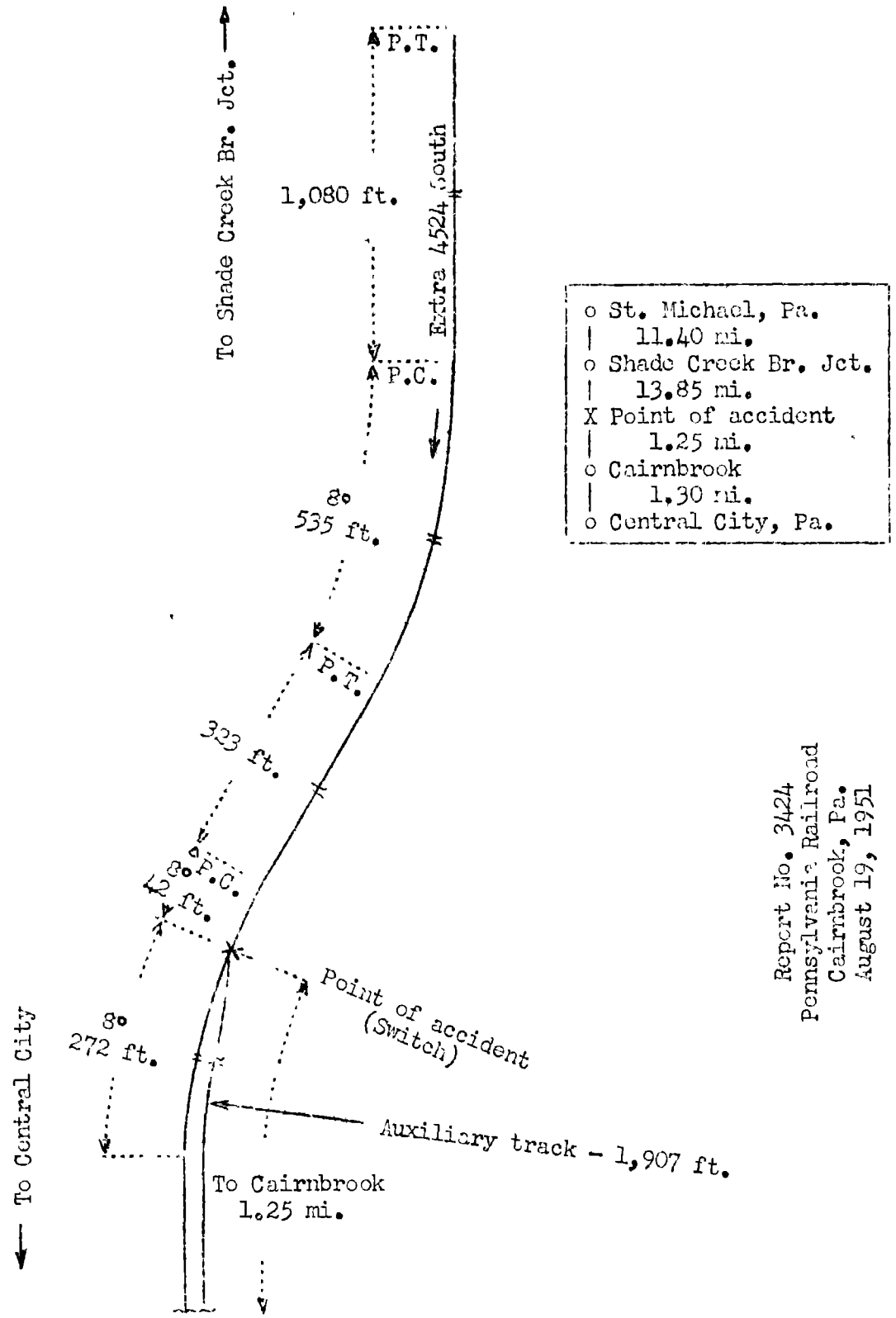
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3424
Pennsylvania Railroad
Cairnbrook, Pa.
August 19, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Pittsburgh Division extending between Shade Creek Br. Jct. and Central City, Pa., 16.4 miles, a single-track line, over which trains are operated by timetable and train orders. There is no block system in use. Near Cairnbrook, 15.1 miles south of Shade Creek Br. Jct., an auxiliary track 1,907 feet in length parallels the main track on the east. The north switch of this track is 1.25 miles north of Cairnbrook. Entry to the track at the north switch is made through a No. 10 turnout. The accident occurred at the north auxiliary-track switch. In the vicinity of the point of accident the main track is laid in a side-hill cut. From the north on the main track there are, in succession, a tangent 1,080 feet in length, an 8° curve to the right 535 feet, a tangent 323 feet, and an 8° curve to the left 42 feet to the point of accident and 272 feet southward. The superelevation of the main track at the point-of-switch is 1-1/4 inches. In the vicinity of the point of accident the grade is 1.11 percent ascending southward. The grade on the auxiliary track immediately south of the turnout is 5 percent descending southward.

The structure of the main track consists of 130-pound rail, 30 to 39 feet in length, relaid in its present location in 1940 on an average of 20 ties to the rail length. The high rails of curves are fully tieplated with heavy-duty tieplates and other main-track rails are tieplated with heavy-duty and single-shoulder tieplates. All tieplates are fully spiked. It is provided with 4-hole 26-inch joint bars and 4 rail anchors per rail. It is ballasted with cinders to an average depth of 6 inches below the bottoms of the ties. The north turnout of the auxiliary track is constructed of 131-pound rail relaid in its present location in 1949, and is provided with a No. 10 131-pound railbound manganese-steel frog, one-piece manganese guard rails and 20-foot switch rails. The switch stand is of the ground-throw low-stand type, and is located 6 feet 4 inches east of the center-line of the track. When the switch is in normal position a white banner, 4-1/2 inches wide and 18-1/2 inches long, is displayed at right angles to the track. This banner is pointed at each end and is attached to the spindle in a diagonal position with the lower end pointing toward the main track. A green reflector lens 3 inches in diameter is provided on each face of the banner. When the switch is lined for entry to the auxiliary track a red banner, 7 inches wide and 15-1/2 inches long, is displayed at right angles to the track.

This banner is rounded at each end and is attached to the spindle in a horizontal position. A red reflector lens 3 inches in diameter is provided on each face of the banner. The operating lever is of the ground-throw type, 19 inches in length, and is provided with a 30-pound weight attached to the end. When the switch is in normal position the operating lever is in a horizontal position to the north. When the switch is lined for entry to the auxiliary track the operating lever is in a horizontal position to the south. A latch stand is provided to hold the operating lever in either the normal or reverse position. Holes are provided in each latch stand for locking the latch with a padlock.

The maximum authorized speed for the train involved was 20 miles per hour.

Description of Accident

Extra 4524 South, a south-bound freight train, consisted of engine 4524, a 2-10-0 type, 64 cars, engine 4239 and a caboose, in the order named. While this train was moving at an estimated speed of 12 miles per hour the first engine, the first and second cars, the rear truck of the fifty-fourth car, and the fifty-fifth to the sixty-fourth cars, inclusive, were derailed.

The engine stopped on its left side and down the embankment, with the front end against the most northerly car of a cut of cars standing on the auxiliary track, about 175 feet south of the switch. The rear end stopped about 29 feet east of the center-line of the main track. The tender remained coupled to the engine and stopped on its left side with the rear end about 21 feet east of the center-line of the main track. The first and second cars stopped across the main track and the auxiliary track. The other derailed cars stopped in various positions along the main track. The third and the fourth cars stopped on the turnout and the fifth to the fifty-third cars, inclusive, stopped north of the switch. The engine was badly damaged. The tender and the derailed cars were somewhat damaged.

The auxiliary track was destroyed throughout a distance of about 150 feet south of the turnout. From a point about 40 feet south of the frog the east rail of the main track was displaced eastward a maximum of 6 inches throughout a distance of approximately 80 feet. The west rail of the main track was torn out throughout a distance of approximately 400 feet northward from a point about 1,980 feet north of the turnout. The west switch rail was bent eastward a maximum of 1 inch throughout a distance of approximately 8 feet.

The fireman was killed. The engineer, the conductor and the front brakeman were injured.

The weather was clear at the time of the accident, which occurred at 9:15 a. m.

The total weight of engine 4524 in working order is 386,100 pounds, distributed as follows: Engine truck, 35,600 pounds; driving wheels 352,500 pounds. The specified diameters of the engine-truck and the driving wheels are, respectively, 33 and 62 inches. The rigid wheelbase of the engine is 22 feet 8 inches long. The total length of the engine and the tender coupled is 81 feet 10-1/4 inches. The tender is rectangular in shape, and its capacity is 18.7 tons of coal and 10,300 gallons of water. The last class repairs to engine 4524 were completed May 5, 1949. The accumulated mileage since the last class repairs was 50,353 miles.

Discussion

As Extra 4524 South was approaching the point where the accident occurred the speed was about 12 miles per hour. The engineer and the fireman were in the cab of the engine, the front brakeman was in the brakeman's booth on the tender, and the conductor, the swing brakeman and the flagman were in the caboose. The brakes of this train had been tested and had functioned properly when used en route. The engineer said that he did not observe the auxiliary-track switch target. However, as the engine approached the switch he observed nothing unusual. He said that the fireman was looking ahead and that he gave no indication that the switch was not in normal position. He felt the engine lurch when in the vicinity of the switch, and he immediately placed the automatic brake valve in emergency position, but the derailment occurred before the speed of the train was reduced.

Examination of the engine after the accident occurred disclosed no defect which could have contributed to the cause of the accident. The lateral motion in the engine-truck and the driving wheels was within the prescribed limits of the carrier. All tires were tight on their wheel-centers, and were parallel to their companion tires. All wheel-centers were tight on their respective axles. The tread and flange wear of the engine-truck wheels and of the tires were within the prescribed limits of the carrier.

Examination of the track throughout a considerable distance north of the auxiliary-track switch disclosed no indication of dragging equipment or of defective track. The first mark on the track structure was on the point of the east switch-rail of the auxiliary-track switch. This mark indicated that the point had been struck by the left engine-truck wheel. Marks on the track structure indicated that the auxiliary-track switch was partly open as Extra 4524 South was approaching the switch, that the engine-truck wheels proceeded on the main track, and that the driving wheels and the first cars of the train entered the turnout. It is apparent that because of the curvature of the track sufficient force was exerted by the engine-truck wheels of engine 4524 to move the switch rails for entry to the auxiliary track. The engine overturned because of a difference in elevation between the main track and the auxiliary track of about 3-1/2 feet at the point where the engine overturned.

Examination of the switch after the accident occurred disclosed that the switch was lined for entry to the auxiliary track and that the operating lever was in the corresponding position. The switch operating mechanism was in good condition. The switch padlock was missing. When the switch was in normal position and latched, the switch point fitted tightly against the stock rail. When the operating lever was moved through an angle of 45 degrees the switch points began to move. When moved through an angle of 60 degrees the east switch point opened approximately 1/2 inch. When released, the operating lever remained suspended at an angle of about 15 degrees with the switch point slightly open and the white banner on the switch stand at right angles to the main track.

The switch involved was installed in 1949. It was inspected about 3 weeks prior to the accident, at which time a padlock was applied. It was inspected August 3, 1951, by the general track-foreman and was found to be in good condition. The switch was last operated by a brakeman of a freight train about 3 p. m. on August 16, 1951. He said that after the switch was used he operated it to its normal position and latched the lever. At that time the switch was not provided with a padlock.

The investigation of this accident disclosed that padlocks frequently have been removed from main track switches on this branch line. A track foreman said that since the installation of the switch in 1949, the padlock had been replaced at least three times prior to the accident.

Cause

It is found that this accident was caused by an open switch.

Dated at Washington, D. C., this twenty-sixth day of October, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.