INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2887

THE NEW YORK CENTRAL RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT ROCHESTER, N. Y., ON

MAY 2, 1945

SUMMARY

Railroad:	New York Central
Date:	May 2, 1945
Location:	Rochester, N. Y.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	8
Engine number:	5413
Consist:	10 cars
Estimated speed:	40 to 75 m. p. h.
Operation:	Signal indications and automatic train-stop system
Tracks:	Four; 5°54' curve; 0.367 percent descending grade eastward
Weather:	Clear
Time:	About 1:32 a. m.
Casualties:	1 killed; 12 injured
Cause:	Excessive speed on sharp curve

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2887

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

THE NEW YORK CENTRAL RAILROAD COMPANY

June 5, 1945.

Accident at Rochester, N. Y., on May 2, 1945, caused by excessive speed on a sharp curve.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On May 2, 1945, there was a derailment of a passenger train on the New York Central Railroad at Rochester, N. Y., which resulted in the death of one employee, and the injury of six passengers, three railway-mail clerks, one dining-car employee, one train-service employee and one person in a building adjacent to the track. This accident was investigated in conjunction with a representative of the New York Public Service Commission.

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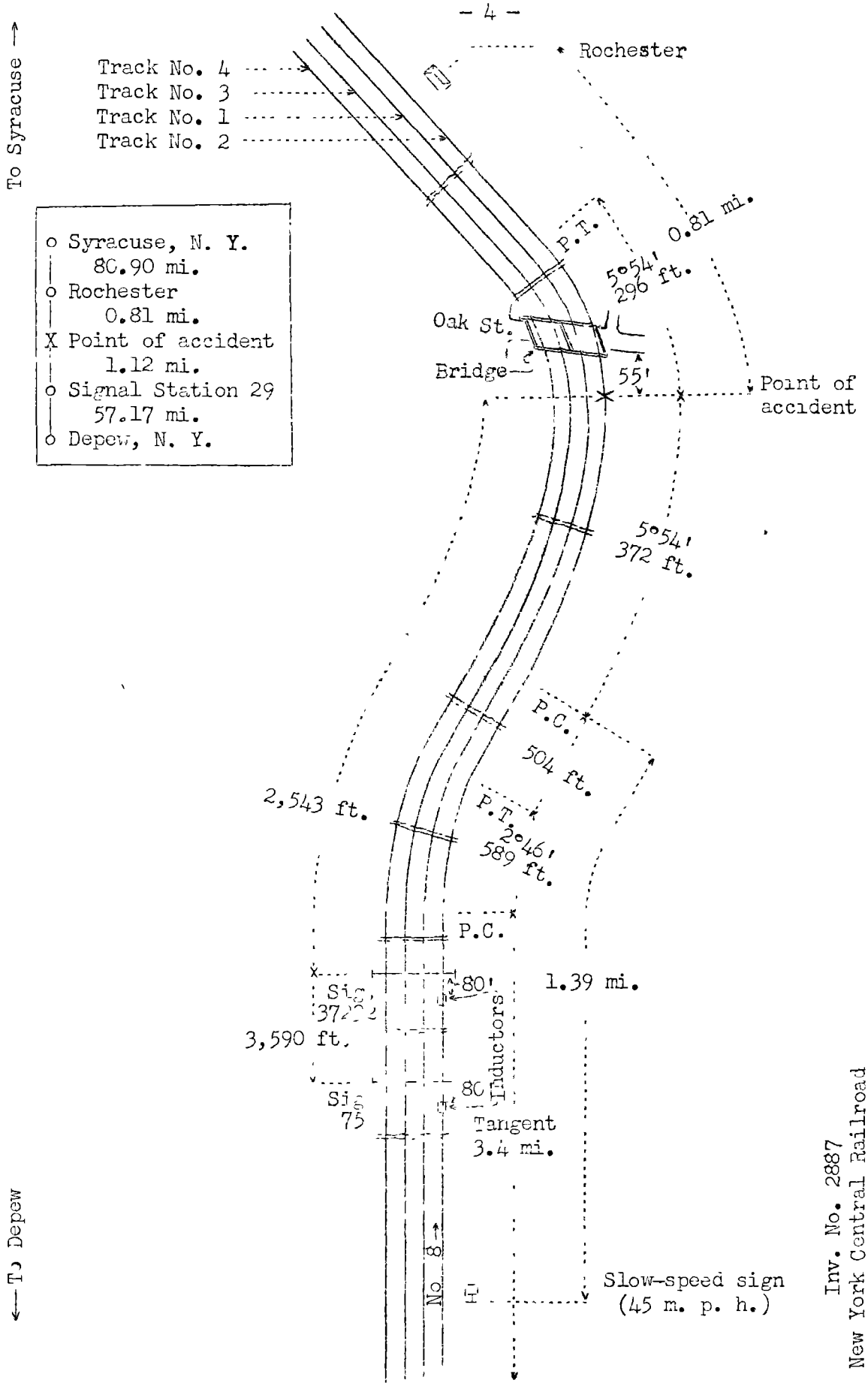
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 2887
New York Central Railroad
Rochester, N. Y.
May 2, 1945

Location of Accident and Method of Operation

This accident occurred on that part of the Syracuse Division extending eastward from Depew to Syracuse, N. Y., 140 miles, a four-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by signal indications and an automatic train-stop system. The main tracks from south to north are designated as No. 2, eastward passenger, No. 1, westward passenger, No. 3, westward freight, and No. 4, eastward freight. The accident occurred on track No. 2, at a point 58.29 miles east of Depew and 0.81 mile west of the station at Rochester. From the west there are, in succession, a tangent 3.4 miles in length, a 2°46' curve to the right 589 feet, a tangent 504 feet, and a 5°54' curve to the left 372 feet to the point of accident and 296 feet eastward. The grade is 0.367 percent descending eastward.

On the curve on which the derailment occurred the tracks are laid on a fill, the maximum height of which is 12 feet. The track structure consists of 127-pound rail, 39 feet in length, laid new in July, 1943, on 24 treated ties to the rail length. It is fully tieplated with double-shoulder canted tie plates, single-spiked, provided with 36-inch 6-hole angle bars, 12 rail anchors per rail length on the south rail and 8 rail anchors per rail length on the north rail, and is ballasted with crushed stone to a depth of 14 inches. The superelevation at the point of derailment was 5-5/8 inches, and the gage was 4 feet 8-5/8 inches. In this vicinity the tracks are laid on several bridges which span streets. The west end of a through-girder solid-floor ballast-deck bridge 79 feet 1-1/4 inches long which spans Oak Street is 55 feet east of the point of derailment. The deck is supported by concrete abutments. The south girder is 10 feet 10-1/2 inches high, and the cover plate is 20 inches wide. Knee braces and end-stiffening members are provided. The clearance above the street level is 11 feet 9 inches. Throughout the curve there is a guard rail 1 foot inside the low rail of track No. 2. A guard rail 1 foot inside the high rail of track No. 2 extends across the bridge. In the vicinity of Oak Street the fill is retained on the north by a vertical concrete wall. On the south the embankment slopes at an angle of 45 degrees, and the toe of the slope is 20 feet south of the south rail of track No. 2.

Semi-automatic signal 75 and automatic signal 37232, governing east-bound movements on track No. 2, are, respectively, 6,133 and 2,543 feet west of the point of accident. Signal 75 is of the three-arm, upper-quadrant, semaphore type, and signal 37232 is of the two-unit, color-light type. Signal 75 is continuously lighted, and signal 37232 is approach lighted. The

automatic train-stop system is of the intermittent-inductive type. Engines are provided with acknowledging devices. Train-stop inductors for east-bound movements on track No. 2 are located 80 feet west of signal 75 and 80 feet west of signal 37232. All indications displayed by signals 75 and 37232 require an engineer to operate the forestalling device in order to prevent an automatic train-stop brake application.

Time-table special instructions prescribe the maximum authorized speed on track No. 2 for the train involved between points 1 mile west and 1 mile east of the station at Rochester as 45 miles per hour. A speed-limit sign 36 inches by 48 inches bearing the words and numerals "SPEED LIMIT ROCHESTER CVS 45 MILES TRACK NO. 2" in black on a yellow background is located 1.39 miles west of the west end of the curve involved and 10 feet south of the south rail of track No. 2. On tangent track immediately west of this territory the maximum authorized speed on track No. 2 for the train involved was 80 miles per hour.

Description of Accident

No. 8, an east-bound first-class passenger train, consisted of engine 5413, one mail car, one dormitory-baggage car, three coaches, three Pullman sleeping cars, one dining car and one Pullman sleeping car, in the order named. The fifth and the seventh cars were of light-weight steel construction and the remainder were of conventional steel construction. This train passed Depew at 12:40 a. m., 9 minutes late, passed Signal Station 29, 1.13 miles west of the point of accident and the last open office, at 1:30 a. m., 8 minutes late, and while moving on track No. 2 at a speed of not less than 75 miles per hour it was derailed.

The engine overturned to the right and stopped with the front end 337 feet east of the point of derailment and 25 feet south of track No. 2. The tender, remaining coupled, stopped on its left side and practically in line with the engine. The first car stopped upright against a building at the foot of the embankment and about 10 feet south of the engine. The second car and the sixth to tenth cars, inclusive, remained upright and practically in line with the track. The fourth to tenth cars remained coupled. The second car stopped with the front end 1,087 feet east of the point of derailment. The third to fifth cars, inclusive, stopped down the embankment. The engine, the tender, and the first seven cars were badly damaged.

The weather was clear at the time of the accident, which occurred about 1:32 a. m.

The engineer was killed and the fireman was injured.

Engine 5413, a 4-6-4 type, is equipped with a booster engine mounted on the trailer truck. The total weight of the engine in working order is 360,000 pounds, distributed as follows: Engine truck, 63,500 pounds; driving wheels, 201,500 pounds; and trailer truck, 95,000 pounds. The specified diameters of the engine-truck wheels, the driving wheels and the No. 1 and No. 2 trailer-truck wheels are, respectively, 36, 79, 36 and 51 inches. The tender is rectangular in shape, of the cast water-bottom type, with a 4-wheel truck in front and a wheel assembly at the rear of 5 pairs of wheels mounted in a rigid frame which is cast integrally with the tender bed. Its capacity is 46 tons of coal and 18,000 gallons of water. The rigid wheel-base of the engine is 14 feet long and the wheel-base of the rear truck of the tender is 20 feet long. The length of the tender is 51 feet 11-11/16 inches, and the total length of the engine and tender is 106 feet 1-5/16 inches. The center of gravity of the engine is 78 inches above the tops of the rails, and the center of gravity of the tender when fully loaded is 83.4 inches above the tops of the rails. The estimated load of the tender at the time of the accident was 40 tons of coal and 14,500 gallons of water. The last Class 2 repairs were completed on February 16, 1944, and the last monthly inspection and repairs were completed May 1, 1945. The accumulated mileage since the last class repairs was 142,877 miles. The tender was built February 2, 1945, and was placed in service April 27, 1945. Its accumulated mileage was 2,163 miles. The engine is equipped with a speed-recorder, but it was not operative when the train left Buffalo, 66.01 miles west of Rochester, because the drive chain was broken.

Discussion

No. 8 was moving on a 5°54' curve to the left when it was derailed at a point 372 feet east of the west end of the curve, where the superelevation was 5-5/8 inches and the gage was 4 feet 8-5/8 inches. The engine and the tender overturned to the right, and the engine stopped on its right side 337 feet east of the point of derailment. The maximum authorized speed on the curve was 45 miles per hour. Except for the inoperative speed recorder, there was no defective condition of the engine or tender prior to the accident, and there was no indication of dragging equipment, defective track, or of any obstruction having been on the track.

The fireman said that when the engine was about 6,000 feet west of the curve on which the accident occurred the speed was about 80 miles per hour and the engineer made an 8 or 10-pound brake-pipe reduction, which was not released. The brakes appeared to be effective. When the engine reached a point about 3,700 feet east of this point, the engineer made a brake-pipe reduction of about 6 pounds, and the engine entered the curve

at a speed of about 40 miles per hour. The fireman called the indications displayed by signals 75 and 37232, and the engineer used the acknowledging lever in the vicinity of these signals to forestall an automatic train-stop application of the brakes. The first the fireman knew of anything being wrong was when the engine suddenly lurched to the right, then the derailment occurred. The engineer was killed in the accident. The members of the train crew were in various locations throughout the cars of the train. The cars had been riding smoothly, and the first these employees knew of anything being wrong was when the derailment occurred. They were unable to give an accurate estimate of the speed of the train. An east-bound train moving on track No. 2 at a speed of 42 miles per hour passed the point where the derailment occurred about 6 minutes prior to the accident. The engineer of this train said there was no indication of irregular surface or alinement in this vicinity, and his engine rode smoothly throughout the curve.

The surface, alinement and gage of track No. 2 on the curve were well maintained for the maximum authorized speed of 45 miles per hour. The first mark of derailment was a wheel mark on the top of a tie 16-1/2 inches outside the gage side of the high rail at a point 372 feet east of the west end of the curve. This mark indicated that the wheel was inclined to the south at an angle of about 45 degrees. The next tie eastward bore a wheel mark 13-1/2 inches outside the rail. The third tie bore wheel marks at points 15 inches and 19-1/4 inches outside the high rail. There were no flange marks across the head of the high rail, no wheel marks on the ties between the rails and no marks on the guard rails. The south girder of the bridge immediately east of the point of derailment was demolished and bent outward to a horizontal position. From this bridge eastward to the point where the front end of the second car stopped, a distance of about 1,057 feet, the track was forced out of alinement by the derailed cars.

The overturning speed on the curve for engine 5418 was 77.5 miles per hour. The estimated overturning speed for the tender, with the amount of coal and water it was calculated to have had at the time of the accident, was 75 miles per hour. Examination of the engine indicated that it had not been in contact with the south girder of the bridge. However, the right side of the tender was sheared its entire length above the frame. The draw-bar and the safety-bar between the engine and tender were twisted at the tender end about 45 degrees to the right and at the engine end about 180 degrees to the left. Apparently the fireman's estimate of the speed was too low as the absence of marks on the rails, and the manner in which the south girder of the bridge and the tender were damaged indicate that No. 8 was moving on the curve at overturning speed for the tender. The marks on the ties outside the high rail indicate

that the tender overturned to the right 55 feet west of the west end of the bridge and leaned sufficiently to strike the south girder. Apparently, the pull of the tender caused the engine to overturn at a point about 80 feet farther east, as evidenced by the line it followed to the point where it stopped. The tender was thrown to the left after it struck the girder and stopped on its left side at the rear of the engine. As a result, the draw-bar and the safety-bar were twisted 180 degrees to the left.

The speed recorder with which engine 5413 was equipped was inoperative throughout the trip. The engineer of No. 8 was regularly assigned to passenger service. Most of the engines used in that service on the line of this carrier are equipped with speed recorders. Probably the engineer of No. 8 customarily depended upon the speed recorder in determining speed and, as a result of the speed recorder of engine 5413 being inoperative, he underestimated the speed in the darkness as his train was approaching the curve on which the accident occurred.

Cause

It is found that this accident was caused by excessive speed on a sharp curve.

Dated at Washington, D. C., this fifth day of June, 1945.

By the Commission, Commissioner Patterson.

W. P. BARTEL,
Secretary.

(SEAL)