

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 2040

NEW YORK, N.Y. AVON AND HARTFORD
RAILROAD COMPANY

IN RE ACCIDENT

AT HARTFORD CONN., CT

JULY 14, 1955

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3642

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

THE NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY

August 29, 1965

Accident at Bridgeport, Conn., on July 14, 1955, caused
by excessive speed on a curve.

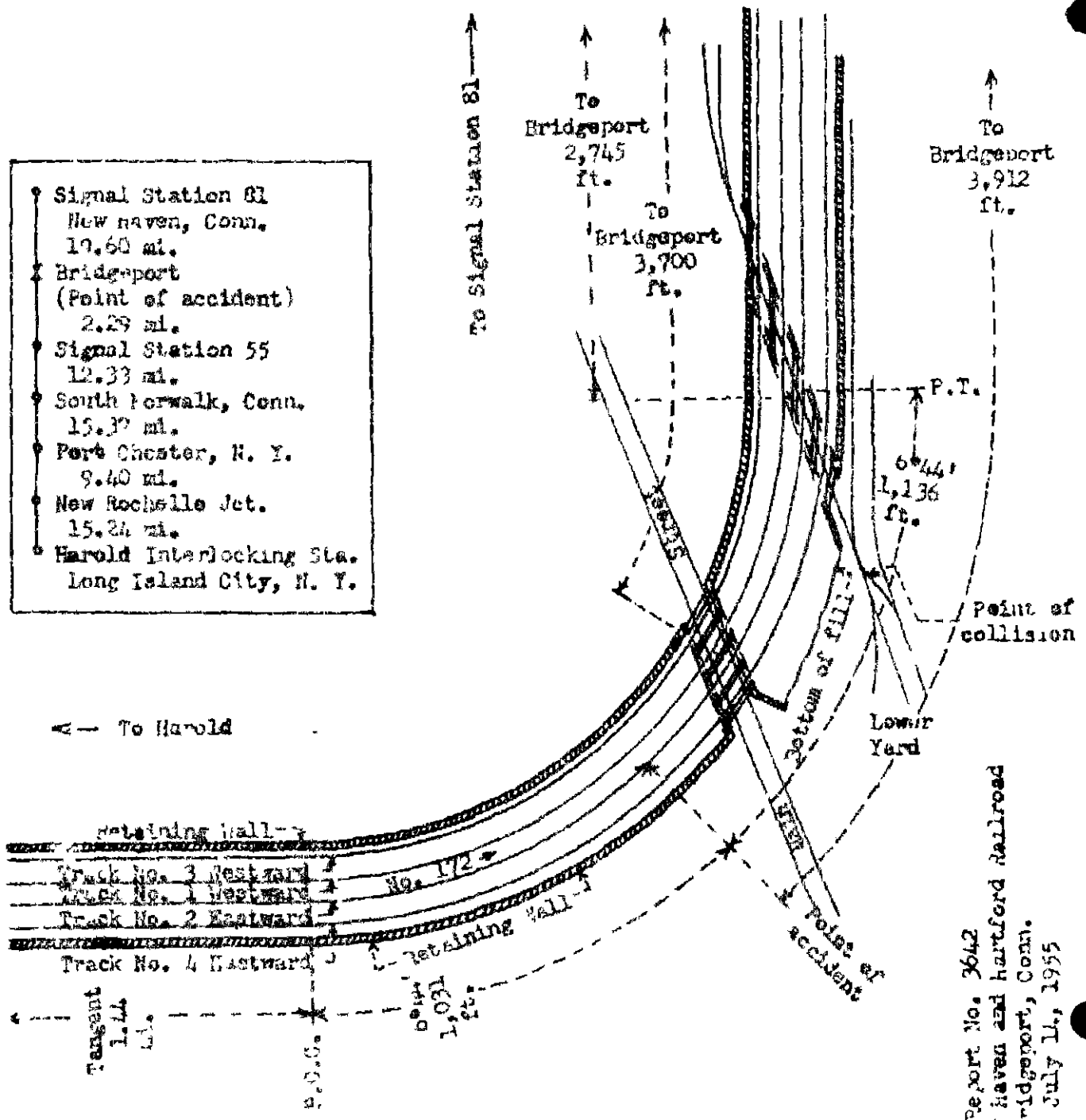
REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On July 14, 1955, there was a derailment of a passenger train on the New York, New Haven and Hartford Railroad at Bridgeport, Conn., and a collision between the derailed equipment and a yard locomotive moving on an adjacent yard track, which resulted in the death of 1 train-service employee, and the injury of 42 passengers, 2 Pullman Company employees, 7 train-service employees, and 1 dining-car employee. This accident was investigated in conjunction with representatives of the Connecticut Public Utilities Commission.

Under authority of section 17 (5) of the Interstate Commerce Act the above-entitled proceedings was referred by the Commission to Commissioner Clarke for consideration and disposition.

- Signal Station 81
New Haven, Conn.
19.60 mi.
- Bridgeport
(Point of accident)
2.29 mi.
- Signal Station 55
12.33 mi.
- South Norwalk, Conn.
15.37 mi.
- Port Chester, N. Y.
9.40 mi.
- New Rochelle Jct.
15.24 mi.
- Harold Interlocking Sta.
Long Island City, N. Y.



← To Harold

Report No. 3642
New Haven and Hartford Railroad
Bridgeport, Conn.
July 11, 1955

Location of Accident and Method of Operation

This accident occurred on that part of the New Haven Division extending between Harold Interlocking Station, Long Island City, N. Y., and Signal Station 81, New Haven, Conn., 74.23 miles. In the vicinity of the point of accident this is a four-track line, over which trains moving with the current of traffic are operated by signal indications. A catenary system for the electric propulsion of trains is provided. The main tracks from north to south are designated as Nos. 3 and 1, westward, and Nos. 2 and 4, eastward. The accident occurred on track No. 2 at a point 53.89 miles east of Harold and 3,912 feet west of the station at Bridgeport. From the west on track No. 2 there is a tangent 1.44 miles in length and a compound curve to the left, having a maximum curvature of $6^{\circ}44'$, 1,031 feet to the point of accident and 1,135 feet eastward. Throughout a distance of more than 1 mile immediately west of the point of accident the grade for east-bound trains on track No. 2 varies between level and 0.08 percent descending, and it is 0.08 percent descending at that point.

In the vicinity of the point of accident the main tracks are elevated above the level of the city streets and are laid on a fill. The railroad crosses Main Street on a girder bridge 65 feet long at a point approximately 3,700 feet west of the station. Yard tracks at street level south of the main tracks are connected with auxiliary tracks on the north side of the fill by a yard track laid in an underpass designated as the lower yard tunnel and extending diagonally under the main tracks. The south end of this underpass is 2,745 feet west of the station. Masonry retaining walls support the fill on both sides except for a distance of approximately 580 feet on the south side of the fill between the underpass at Main Street and the south end of the lower yard tunnel. At this point the slope on the south side of the fill is $1\frac{1}{2}$ to 1, and the difference in elevation between the level of the main tracks and the tracks of the lower yard adjacent to the fill is 19 feet.

The track structure of track No. 2 in the vicinity of the point of accident consists of 132-pound rail, 39 feet in length, laid new in 1950 on an average of 24 treated hardwood ties to the rail length. It is fully tieplated with double-shoulder canted tie plates and is spiked with two rail-holding spikes at each tie plate, one plate-holding spike inside the rail at each tie plate, and one plate-holding spike outside the rail at every fourth tieplate. It is provided with 6-hole 36-inch toeless joint bars and an average of 12 rail anchors per rail. It is ballasted with trap rock to an average depth of 14 inches. In the immediate vicinity of the point of derailment the gage varied between 4 feet 8-5/8 inches and 4 feet 8-15/32 inches. The superelevation at the point of derailment was 5-1/2 inches, and at the most westerly point where marks of derailment were found the curvature was 5°44'.

A diamond-shape speed restriction sign which bears the numerals "30" in black figures on a yellow background is mounted on a post on the south side of track No. 4 about 1,340 feet west of the point of accident and 307 feet west of the point of the curve on which the accident occurred.

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

DEFINITIONS

FIXED SIGNAL.--A signal of fixed location indicating a condition affecting the movement of a train * * *

Note to definition of fixed signal.--The definition of a "Fixed Signal" covers such signals as * * * slow boards, or other means for displaying indications that govern the movement of a train or engine.

34. Immediately upon seeing a signal affecting the movement of their train or engine, the engineer and fireman must, and when practicable the trainmen will, call its indication to each other.

710. A permanent diamond shape slow board, with figures in black upon yellow background, designating the maximum speed of trains and engines at points specified by time-table will be placed to the right of the track as seen from an approaching train or engine, approximately 300 feet before reaching the point where the restriction is required, and will govern the speed of trains and engines until location of restricted track or structure has been passed by entire train or engine.

FIREMEN.

851. While engine is moving they must keep a constant lookout when not necessarily engaged in other duties, and give immediate notice to engineman of any signals or other conditions affecting the safety of the train.

The maximum authorized speed for the train involved was 70 miles per hour, but it was restricted to 30 miles per hour on the curve on which the accident occurred.

Description of Accident

No. 172, an east-bound first-class passenger train, consisted of electric locomotive 363, four coaches, one express refrigerator car, one sleeping car, two coaches, one baggage car, five sleeping cars, one buffet-lounge-sleeping car, and two sleeping cars, in the order named. The fifth car was of steel uniframe construction, the third, sixth, ninth, and eleventh cars were of conventional all-steel construction, and the other cars were of light-weight construction. The seventh, the tenth, and the twelfth to the seventeenth cars, inclusive, were equipped with tightlock couplers. This train passed Harold at 2:40 a. m., 23 minutes late, and passed New Rochelle Jct., N. Y., 38.65 miles west of the point of accident, at 3:04 a. m., 26 minutes late. It was routed to track No. 2 at the latter point. It passed Signal Station 55, 1.55 miles west of the point of accident and the last open office, at

3:41 a. m., and while moving at an estimated speed of from 60 to 75 miles per hour the locomotive and the first 15 cars were derailed at a point 3,912 feet west of the station at Bridgeport. Derailed equipment of this train struck a yard locomotive moving on an adjacent lower level yard track.

Diesel-electric unit 0949, assigned to yard service at Bridgeport, was performing switching service in the lower yard. This locomotive was headed eastward. While it was moving westward at slow speed on an auxiliary track adjacent to the south side of the fill on which the main tracks are laid it was struck by derailed equipment of No. 172 and was derailed.

The locomotive and the first 15 cars of No. 172 were derailed to the south. Between points approximately 425 feet and 850 feet east of the point of accident derailed equipment left the roadbed on the south side of the fill on which the main tracks are laid. Separations occurred between the locomotive and the first car and between other forward units of the train. The locomotive stopped in the lower yard south of the fill with the front end about 890 feet east of the point of accident, approximately parallel to track No. 2 and 117 feet south of it. The superstructure became separated from the running gear of the locomotive and overturned against the left side of yard locomotive 0949. The first and sixth cars stopped at right angles to the main tracks with the front ends, respectively, 101 feet and 71 feet south of track No. 2 and the rear ends elevated on the slope of the fill. The second car overturned and stopped on its right side on track No. 4 approximately opposite the locomotive. The third and fourth cars and the sixth to tenth cars, inclusive, stopped in various positions on or near the slope of the fill south of the main tracks within a distance of approximately 300 feet to the rear of the locomotive. The eleventh car stopped approximately in line with track No. 4. The twelfth car stopped with the front end on track No. 4 and the rear end on track No. 2. The other derailed cars stopped approximately in line with

track No. 2. Locomotive 363, the first four cars, and the ninth car were destroyed. The sixth, seventh, eighth, and tenth cars were badly damaged, the fourteenth and fifteenth cars were slightly damaged, and the other derailed cars were somewhat damaged. Yard locomotive 0949 was somewhat damaged. Two catenary bridges were destroyed, and a third catenary bridge was badly damaged.

The engineer of No. 172 was killed. The fireman, the conductor, and the baggageman of No. 172, two train-service employees deadheading on this train, and the engineer and the fireman of yard locomotive 0949 were injured.

The weather was clear at the time of the accident which occurred about 3:42 a. m.

Electric locomotive 363 was of the 2C-C2 type and was provided with a control compartment at each end. A boiler for train heating was located in the control compartment at the No. 2 end. The locomotive was 77 feet in length over the pulling faces of the couplers. The specified diameters of the guide truck wheels and the driving wheels were, respectively, 36 inches and 56 inches. The total wheelbase was 66 feet, and the driving wheelbase was 37 feet 4 inches. The rigid wheelbase was 13 feet 8 inches. The total weight of the locomotive was 432,000 pounds, and the weight on the driving wheels was 273,000 pounds. The brake equipment was of the 8-EL type. A safety-control feature actuated by a lever shaped to fit over the handle of the throttle was provided on the controller. The center of gravity of this locomotive was 65-1/2 inches above the level of the tops of the rails. The theoretical equilibrium, safe, and overturning speeds for this locomotive moving on a 6°44' curve having a 5-1/2-inch superelevation were, respectively, 35.2, 53.2, and 81.8 miles per hour.

The center of gravity of the first car was 72 inches above the level of the tops of the rails, and the theoretical safe and overturning speeds for this car were, respectively, 51.8 and 78.5 miles per hour.

Discussion

As No. 172 was approaching the point where the accident occurred the engineer and the fireman were maintaining a lookout ahead from the control compartment at the front of the locomotive. The conductor was in the eighth car, and the other members of the train crew were in various locations in the cars of the train. The brakes of this train had been tested prior to departure from Poughkeepsie Station, New York, N. Y., 3.90 miles west of Harold, at 2:33 a. m., and had functioned properly when used en route. The headlight was lighted. No stops were made en route. The speed was reduced in compliance with speed restrictions at New Rochelle Jct., and at Fort Chester, N. Y., and South Norwalk, Conn. The two latter points are, respectively, 29.25 miles and 15.88 miles west of the point of accident. The fireman said that the engineer appeared to be in normal condition and that when he called signal indications the engineer raised his hand in acknowledgement of proceed indications and orally repeated each restrictive indication. The window on the left side of the control compartment was open, and the train heating boiler was not in operation. The gauge lights on the panel in front of the engineer's position were lighted. Because of the arrangement of the controls the speed indicator was not visible from the fireman's position in the control compartment. The interlocking signal at Signal Station 55 and an automatic signal 1,983 feet west of the curve at Bridgeport each indicated Proceed. The fireman said that he called those indications. The fireman was unable to estimate the speed, but he noted nothing unusual about the rate of speed until the locomotive passed the point at which speed reduction for the curve usually was started. At this time there was no exhaust from the brake valve nor any reduction in speed. The fireman then observed that the engineer appeared to be leaning forward slightly in his seat looking downward at the speed indicator. Because he hesitated to distract the engineer's attention he waited a moment, and when the engineer took no action he called to him. He said that the engineer then applied the brakes.

few seconds afterward the locomotive became derailed. He did not know whether the brakes were applied in service or in emergency. The conductor said that the brakes became applied in emergency. He immediately looked out the car window and saw the wires and catenary poles coming down and the locomotive leaving the track structure on the curve. The conductor said that from his location inside the car he could not estimate the speed. The flagman said that the train had been running at normal speed, but although he felt no application of the brakes he thought the speed was about 35 or 40 miles per hour when the accident occurred.

When the accident occurred the engineer of yard locomotive 0949 were on the locomotive. The yard conductor and two yard brakemen were in the immediate vicinity of the auxiliary track. The engineer was injured in the accident and was not questioned during this investigation. The other members of the crew said that they had not observed No. 172 before the accident occurred and that the first indication they had of anything being wrong was when the power wires of the catenary system fell immediately before the collision occurred.

The operator at Signal Station 55 said that the rear end of No. 172 passed the interlocking station at 3:41 a. m. He estimated that the speed of the train at that time was about 60 miles per hour. He said that a warning bell sounded in his office at 3:42 a. m. when the power wires of the catenary system were grounded as a result of the accident.

Examination of the equipment of No. 172 after the accident occurred disclosed no condition which would have caused or contributed to the cause of the accident. The brakes of the rear seven cars were found applied when the equipment was inspected approximately 1 hour 50 minutes after the accident occurred.

Examination of track No. 2 throughout a considerable distance west of the point of derailment disclosed no indication of dragging equipment nor of an obstruction having been on the track. The first indication of displacement of the track structure was an outward canting of the high rail which started at a point 1,031 feet east of the west end of the curve. The degree of canting increased progressively. A flange mark was found in the web of the rail at a point where it was canted outward 45 degrees, and it overturned in a distance of 70 feet. Marks inside the head of the north rail indicate that wheels dropped inside that rail approximately 30 feet east of the point at which the outward canting of the high rail started, and that as the gage was widened by outward displacement of the south rail these wheels dropped sufficiently to be in contact with the tops of ties, spikes, tie plates, and the base of the rail at various points. The general derailment occurred immediately east of the point at which the high rail overturned. The derailed equipment struck the girder between tracks Nos. 2 and 4 at the Main Street bridge, struck track No. 4 at a point approximately 30 feet east of the bridge, and was deflected to the point at which the locomotive and other units in the forward portion of the train left the roadbed. The south rail of track No. 2 was torn out throughout a distance of 450 feet. The north rail remained in place, but it was thrown out of line at many points. Track No. 4 was destroyed throughout a distance of 460 feet.

From the evidence developed during this investigation it is apparent that the train entered the curve without any material reduction in the speed at which it had been moving on tangent track. The Engineer of Track estimated that the train was moving at a speed of from 60 to 75 miles per hour at the time the derailment occurred. He said that conditions found after the accident occurred indicated that excessive lateral pressure on the high rail forced it outward sufficiently to permit wheels on the low rail to drop off on the gage side, resulting in overturning of the high rail. From the position of the derailed equipment and the damage to the track and equipment it is apparent that the speed at the time of the accident was considerably higher than estimated by the flagman.

Cause

This accident was caused by excessive speed on a curve.

Dated at Washington, D. C., this twenty-ninth day of August, 1955.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD E. MCCOY,
Secretary.