INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO 3516

CHICAGO, BURLINGTON & QUINCY
RAILROAD COMPANY

IN RE ACCIDENT

NEAR WOODBURN, IOWA, ON

APRIL 18, 1953

SUMMARY

Date:	April 18, 1953
Railroad:	Chicago, Burlington & Quincy
Location:	Woodburn, Iowa
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	14
Engine number:	Diesel-electric unit 9920A
Consist:	4 cars
Speed:	Approximately 100 m. p. h.
Operation:	Signal indications
Track:	Double, 3°33'45" curve; 0.55 percent descending grade eastward
Weather:	Clear
Time:	10:30 p. m.
Casualties:	3 killed, 20 injured
Cause:	Excessive speed on curve

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3515

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

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY

June 8, 1953

Accident near Woodburn, Iowa, on April 18, 1953, caused by excessive speed on a curve.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On April 18, 1953, there was a derailment of a passenger train on the Chicago, Burlington & Quincy Railroad near Woodburn, Iowa, which resulted in the death of 1 passenger and 2 train-service employees, and the injury of 12 passengers, 1 railway-express messenger, 4 train-service employees and 3 employees not on duty. This accident was investigated in conjunction with representatives of the Iowa State Commerce Commission.

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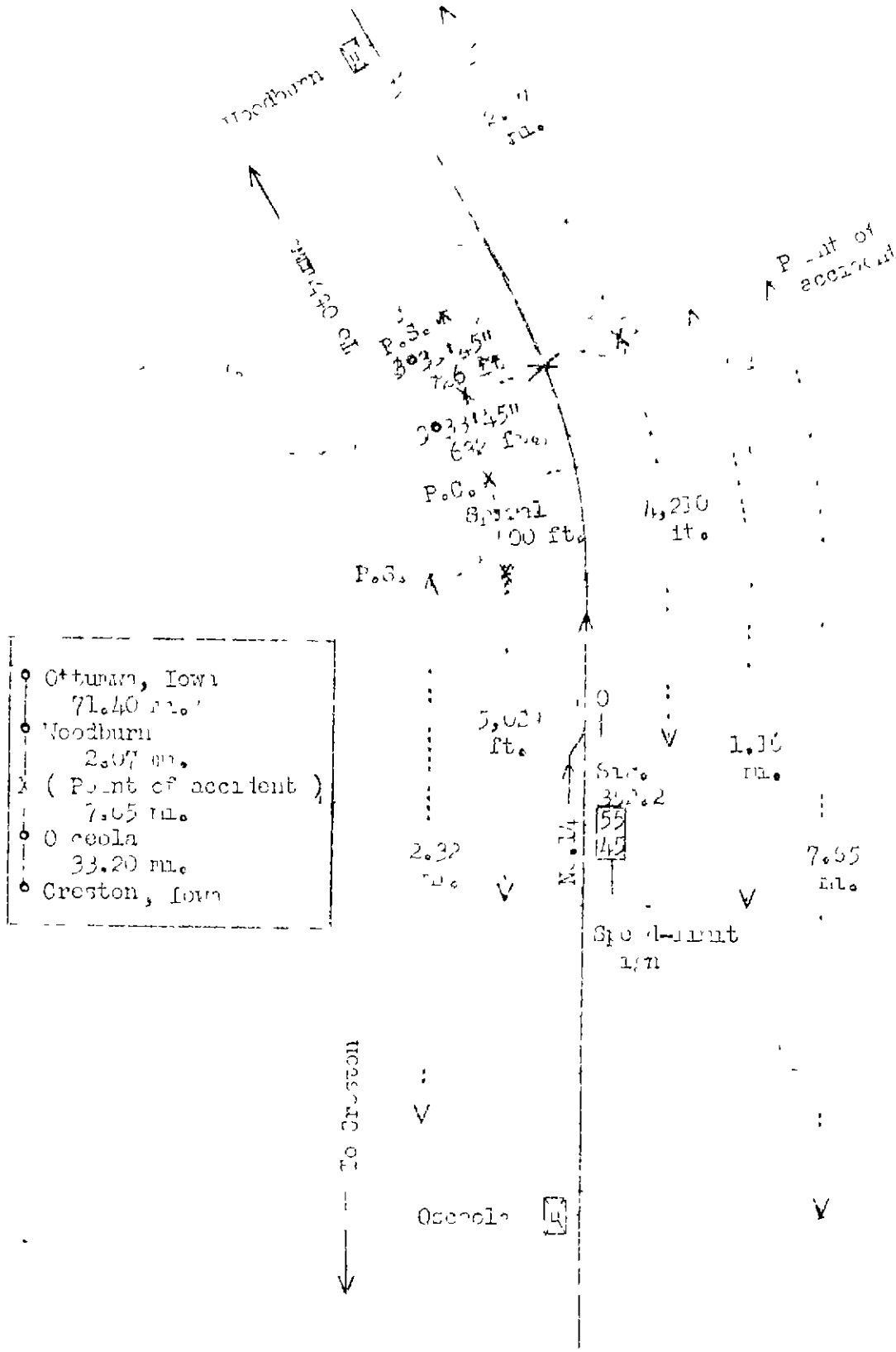
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3775
Railroad Accident Report
Chicago, Burlington & Quincy R.R. Co.
Woodburn, Iowa
April 16, 1953

Location of Accident and Method of Operation

This accident occurred on that part of the Ottumwa Division extending between Creston and Ottumwa, Iowa, 114.32 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by signal indications. The main tracks are separated a considerable distance at this point. The accident occurred on the eastward main track at a point 40.85 miles east of Creston and 2.07 miles west of the station at Woodburn. From the west there are, in succession, a tangent 2.32 miles in length, a spiral 400 feet and a 3°33'45" curve to the left 632 feet to the point of accident and 726 feet eastward. The grade varies between 1.32 percent and 0.11 percent descending eastward throughout a distance of 2.1 miles immediately west of the point of accident, and is 0.55 percent descending eastward at that point.

The accident occurred in a cut, the south wall of which rises to a height of about 10 feet above the level of the top of the south rail. The west and the east ends of this cut are, respectively, 127 feet and 571 feet east of the point of accident. The track structure consists of 112-pound rail, 39 feet in length, relaid in its present location in 1951 on an average of 24 treated hardwood ties to the rail length. It is fully tieplated with double-shoulder tieplates, single-spiked and is provided with 4-hole 24-inch joint bars. There is an average of 10 rail anchors per rail length. It is ballasted with slag to a depth of about 1 foot below the bottoms of the ties. At the point of derailment the superelevation was 5-1/2 inches and the gage was 4 feet 8-3/4 inches.

Automatic signal 352.2, governing east-bound movements, is located 4,210 feet west of the point of accident. This signal is of the color-light type.

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.--The defintion of a "Fixed Signal" covers such signals as * * * slow signs, or other means for displaying indications that govern the movement of a train or engine.

914. A yellow sign on the right of the track indicates that the track one mile distant is safe for a speed of but 10 miles per hour unless otherwise directed by * * * timetable or bulletin.

* * *

ENGINEMEN.

981. Keep a constant lookout, carefully observe all signals * * *

FIREMEN.

1001. While engine is moving, keep a constant lookout when not engaged in other duties. * * * Give instant notice to engineman of any signals or indication of danger * * * affecting the movement of the train * * *

1002. If practicable observe the indication of all signals. * * * keep in mind all * * * notices affecting the movement of trains and be prepared to call attention to, or take necessary action in event of any oversight or mistake.

The maximum authorized speed for the train involved was 79 miles per hour but it was restricted to 55 miles per hour on the curve on which the accident occurred.

A sign which bears the numerals "55" above the numerals "45" in black on a yellow background is located 1.16 miles west of the point of accident and 6,089 feet west of the point of spiral of the curve on which the accident occurred. The sign is a metal plate 18 inches square and is provided with yellow reflector buttons, arranged in two vertical rows of 5 buttons each, parallel to the numerals and on the side near the track. The top of the sign is about 7 feet above the level of the ground and the post on which it is mounted is 14 feet south of the center-line of the track.

Description of Accident

No. 14, an east-bound first-class passenger train, consisted of Diesel-electric unit 9920A, three baggage cars and one coach, in the order named. All cars were of all-steel construction. The locomotive and the third car were equipped with tightlock couplers. This train departed from Osceola,

7.05 miles west of the point of accident and the last open office) at 10:22 p. m., on time, and while it was moving on a 3°33'45" curve the locomotive and all cars of the train were derailed at a point 2.07 miles west of the station at Woodburn.

The entire train was derailed to the south and the derailed equipment struck the south wall of the cut. Separations occurred between the locomotive and the first car and between the first and second cars. The locomotive stopped upright, with the front end 447 feet east of the point at which it was derailed and 62 feet 6 inches south of the track. The rear end of the unit was 53 feet south of the track. The first car stopped, off its trucks, with the front end 59 feet west of the rear end of the locomotive. The front and the rear ends of this car were, respectively, 44 feet and 17 feet south of the track. It leaned toward the north at an angle of about 30 degrees. The other cars remained coupled and stopped in the cut with the front end of the second car about 19 feet west of the rear end of the first car. The second and third cars leaned toward the south at an angle of about 20 degrees and the rear car leaned in the same direction at an angle of about 45 degrees. The locomotive and all cars of the train were badly damaged as a result of the derailment and contact with the south wall of the cut.

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

The weather was clear at the time of the accident, which occurred about 10:30 p. m.

Diesel-electric unit 9920A is of the 0-6-6-0 type. It is provided with a control compartment at the front end. The unit is 71 feet 1-1/4 inches in length over the pulling faces of the couplers. The trucks are of the swing-motion type. The wheelbase of each truck is 14 feet 1 inch long and the centers of the trucks are spaced 43 feet apart. The specified diameter of the wheels is 38 inches. The total weight of the unit is 321,690 pounds. The brake equipment is of the HSC type with MS-40 automatic brake valve and S-40 independent brake valve. A safety-control feature actuated by a foot-pedal is provided. The center of gravity of this unit is 60-1/2 inches above the level of the tops of the rails. The theoretical equilibrium, safe and overturning speeds for this unit moving on a 3°33'45" curve having a 5-1/2 inch superelevation are, respectively, 63.7, 74.6 and 116.3 miles per hour.

The center of gravity of the baggage cars and the coach of this train are, respectively, 70 inches and 66 inches above the level of the tops of the rails. The theoretical safe and overturning speeds for this equipment moving on the curve on which the accident occurred are, respectively, 71.8 and 109.3 miles per hour for the baggage cars, and 72.8 and 111.8 miles per hour for the coach.

Discussion

The investigation disclosed that on the day of the accident No. 14 arrived at Osceola, the last open office west of the point of accident, at 10 14 p. m., and station work was performed. The engineer and the fireman were in the control compartment at the front of the locomotive. The flagman was providing rear-end protection and the other members of the train crew were at various locations in the cars of the train or on the station platform. The fireman said that while the train was standing at the station platform he operated the handle of the mechanism to lower the window in the door on the south side of the control compartment of the locomotive. After the window had been lowered partially the mechanism became disengaged and he was unable either to open it farther or to close it When the engineer observed that the window mechanism was inoperative he left his seat and assisted the fireman in efforts to close the window but they were unable to close it. The engineer then obtained a plywood board and returned to his seat and attempted to shape it to fit the window opening by cutting it with a pocket-knife. While the engineer was shaping the board the communicating signal to recall the flagman was sounded and the engineer immediately sounded the signal on the pneumatic horn of the locomotive for the flagman to return from the rear. A proceed signal was given and the train departed at 10 22 p. m., on time.

The brakes of this train had been tested and had functioned properly when used en route. The headlight was lighted. As this train was approaching the point where the accident occurred the enginemen were in the control compartment of the locomotive, the baggageman was in the third car and the other members of the train crew were seated at the rear of the rear car. The fireman said that he entered the engine compartment, patrolled both sides of the motors and adjusted a device. He said that he was aware his train was approaching a curve on which there was a speed restriction, and when the speed of the motors was not reduced he became concerned. When he returned to the control compartment the locomotive was closely approaching signal 352.2, which

indicated Proceed. He observed that the engineer was seated at the controls shaping the plywood board with a knife, that the throttle was open and that the speed indicator indicated a speed of 100 miles per hour. He said that he immediately called a warning and then he lay down on the floor. The brakes were applied in emergency but the derailment occurred before the speed of the train was materially reduced. The engineer was killed in the accident and it could not be determined why the speed of the train had not been controlled properly approaching the curve on which the accident occurred. The baggageman was injured in the accident and could not be questioned during the investigation. The other surviving members of the train crew said that the cars had been riding smoothly before the derailment occurred and they were unaware that the speed was excessive.

Examination of the track throughout a considerable distance west of the point of derailment disclosed no indication of dragging equipment nor of any obstruction having been on the track. The gage varied between 1/4-inch and 7/16-inch wide on the curve on which the accident occurred. The maximum variation between consecutive measurements at 10-foot stations in the established 5-1/2-inch superelevation on the curve was 1/8-inch.

Examination of the equipment of No. 14 disclosed no condition which would have caused or contributed to the cause of the accident. Because earth and mud had entered the control compartment and covered the control and brake stands when the locomotive was in contact with the south wall of the cut, the positions of the throttle and the brake valves immediately before the accident occurred could not be determined. However, there were numerous small, new, slid-flat spots on the wheels of the locomotive and the cars, which condition indicates that the brakes were applied in emergency immedia ely before the accident occurred. Except for several wheels which were unmarked, the treads of the wheels on the south side of the train bore light groove marks.

The first mark of derailment was a peening of the metal on the outside edge of the top of the south, or high, rail. This mark continued a distance of 250 feet and progressed toward the outside of the rail. It was 1/4 inch to 3/8 inch wide and apparently was caused by the treads of wheels rolling on the outside edge of the rail as the equipment was overturning. There was a flange mark diagonally across the top of the high rail immediately east of the peening mark and also on a spike, a tieplate and the top of a tie at a point 46 feet

eastward. The derailed equipment was held in line with and adjacent to the track by the wall of the cut. As a result, the track was displaced and considerably damaged east of the point of derailment by the derailed equipment. Flange marks appeared on top of two of the five rails which were displaced from the south side of the track. The most westerly displaced rail was bent outward at an angle of about 20 degrees at a point 23 feet from the receiving end and it was broken at the leaving end immediately west of the joint bar. A section of the base of the rail about 9 inches in length was broken on the gage side. The breaks were all new. East of the peening mark the tops of ties were shattered outside the high rail where they had been struck by the wheels of the equipment as it overturned. There were no flange marks on the ties or other marks of derailment at any point between the rails west of the first flange mark on top of the high rail. The manner in which the equipment became derailed indicates that the train was moving at overturning speed when the derailment occurred.

Cause

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

Dated at Washington, D. C., this eighth day of June, 1953.

By the Commission, Commissioner Patterson.

(SEAL)

GEORGE W. LAIRD,

Acting Secretary.