

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3655

BOSTON AND ALBANY RAILROAD COMPANY

IN RE ACCIDENT

NEAR WORONOCO, MASS., ON

AUGUST 18, 1955

SUMMARY

Date: August 18, 1955
Railroad: Boston and Albany
Location: Wronoco, Mass.
Kind of accident: Derailment
Train involved: Passenger
Train number: 22
Locomotive number: Diesel-electric units 8317 and 8316
Consist: 8 cars
Speed: 35 m. p. h.
Operation: Signal indications
Tracks: Double; 5°26' curve, 0.03 percent ascending grade eastward
Weather: Raining
Time: 1:50 p. m.
Casualties: 25 injured
Cause: Washout

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3655

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

BOSTON AND ALBANY RAILROAD COMPANY

November 2, 1955

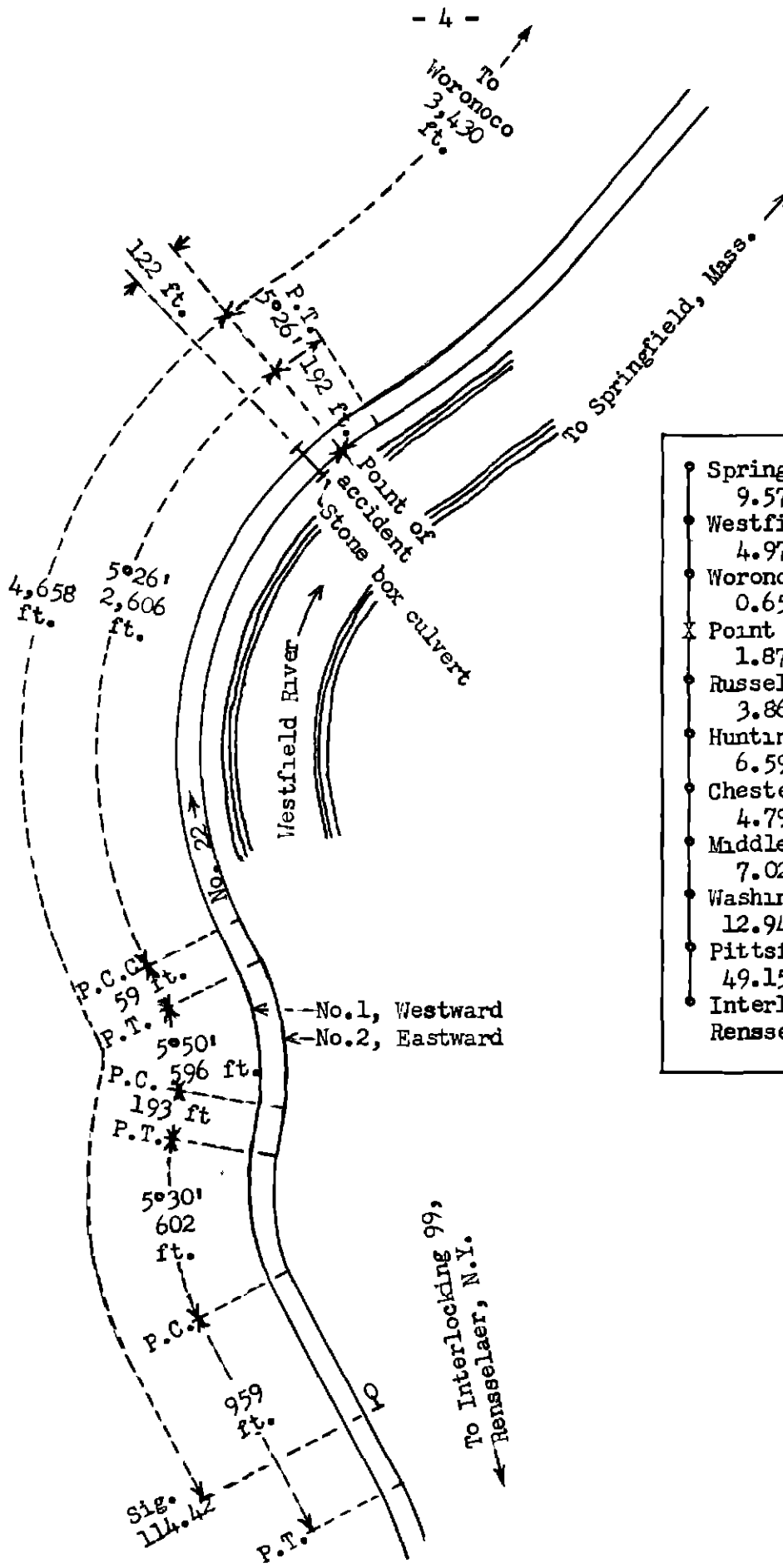
Accident near Woronoco, Mass., on August 18, 1955, caused
by a washout.

REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On August 18, 1955, there was a derailment of a passenger train on the Boston and Albany Railroad near Woronoco, Mass., which resulted in the injury of 14 passengers, 1 Pullman Company employee, 1 railway express clerk, 3 dining-car employees, and 6 train-service employees. This accident was investigated in conjunction with a representative of the Massachusetts Department of Public Utilities.

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



•	Springfield, Mass.
•	9.57 mi.
•	Westfield
•	4.97 mi.
•	Woronoco
•	0.65 mi.
X	Point of accident
•	1.87 mi.
•	Russell
•	3.86 mi.
•	Huntington
•	6.59 mi.
•	Chester
•	4.79 mi.
•	Middlefield
•	7.02 mi.
•	Washington
•	12.94 mi.
•	Pittsfield, Mass.
•	49.15 mi.
•	Interlocking 99, Rensselaer, N.Y.

Report No. 3655
 Boston and Albany Railroad
 Near Woronoco, Mass.
 August 18, 1955

Location of Accident and Method of Operation

This accident occurred on that part of the railroad extending between Interlocking 99, Rensselaer, N. Y., and Springfield, Mass., 101.41 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 supplemented by an intermittent inductive train-stop system. The main tracks from north to south are designated as No. 1, westward, and No. 2, eastward. The accident occurred on track No. 2 at a point 86.22 miles east of Interlocking 99 and approximately 3,430 feet west of the station at Woronoco, Mass. From the west on track No. 2 there are, in succession, a tangent 959 feet in length, a $5^{\circ}30'$ curve to the right 602 feet, a tangent 193 feet, a $5^{\circ}50'$ curve to the left 536 feet, a tangent 59 feet, and a compound curve to the right, having a maximum curvature of $5^{\circ}23'$, 2,606 feet to the point of accident and 192 feet eastward. The grade is 0.03 percent ascending eastward at the point of accident.

The track structure consists of 127-pound rail, 39 feet in length, laid in 1941 on an average of 24 treated ties to the rail length. It is fully tieplated with double-shoulder tieplates and is spiked with four spikes per 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 crushed trap rock to a depth of 14 inches below the bottoms of the ties.

Automatic signal 114.42, governing east-bound movements on track No. 2, is located 4,658 feet west of the point of accident.

In the vicinity of the point of accident the railroad parallels the Westfield River on the north and the tracks are laid on the adjacent hillside. The river flows in a general easterly direction. At the point of accident the tracks are laid on a fill composed of gravel and stone. The fill is 45 feet in width at the top and the toe of the fill is approximately 45 feet south of the center-line of track No. 2 and 25 to 30 feet north of the shore-line of the river. Stone riprap was provided. The tops of the rails of track No. 2 were approximately 25 feet above the normal level of the river. Immediately north of the railroad a wooded hillside rises to a height of about 700 feet above the level of the tracks. Adjacent to the tracks the slope is approximately $1\frac{1}{2}$ to 1. The base of this slope is 10 feet north of the north rail of track No. 1. A drainage ditch is located between the base of the slope and track No. 1. This ditch is 3 feet wide and extends to a depth of approximately 8 to 10 inches below the bottom of the ballast line. It drains into a stone

box culvert 85 feet long with an opening 3 feet by 3 feet 6 inches, which extends under the tracks 122 feet west of the point of accident. The flow line of the culvert slopes southward and it discharges into the river. The drainage area served by this culvert is approximately 30 acres.

The maximum authorized speed for passenger trains is 65 miles per hour, but it is restricted to 40 miles per hour on curves in the vicinity of the point of accident.

Description of Accident

No. 22, an east-bound first-class passenger train, consisted of Diesel-electric units 8317 and 8316, coupled in multiple-unit control, three baggage cars, two coaches, one dining car, and two sleeping cars, in the order named. The first six cars were of conventional all-steel construction. The rear two cars were of lightweight steel construction and were equipped with tightlock couplers. At Pittsfield, Mass., 37.07 miles west of the point of accident, members of the crew received copies of a message reading as follows:

APPROACH GRADE CROSSING AT WORONOCO WITH
CAUTION DUE TO WATER COVERING RAILS

This train departed from Pittsfield at 12:45 p. m., 1 hour 27 minutes late, and was stopped at a remotely controlled interlocking signal at Washington, 24.13 miles west of the point of accident, where members of the crew received copies of a message reading as follows:

APPROACH VICINITY OF RUSSELL WITH CAUTION
DUE TO HIGH WATER OVER RAILS

Russell is 22.26 miles east of Washington and 2.52 miles west of Woronoco. This train departed from Washington at 1:19 p. m., 1 hour 30 minutes late, passed Huntington, 5.73 miles west of the point of accident and the last open office, at 1:43 p. m., passed signal 114.42 which indicated Proceed, and while moving at a speed of 35 miles per hour, as indicated by the tape of the speed-recording device, the locomotive and the first four cars were derailed at a point approximately 3,430 feet west of the station at Woronoco.

Separations occurred between the locomotive units, at each end of the first three cars, and between the fifth and sixth cars. The locomotive units overturned to the south and stopped on their right sides on the embankment with the front end of the first unit approximately 225 feet east of the point of accident. The front and rear ends of this unit were, respectively, 13 feet and 15 feet south of the centerline of track No. 2. The second Diesel-electric unit stopped immediately south of the first unit with the front end approximately 200 feet east of the point of accident and the rear end 30 feet south of the track. The first two cars stopped approximately at right angles to the tracks immediately west of the Diesel-electric units with the front end of the first car projecting over the embankment and against the rear end of the second unit of the locomotive. The rear end of this car fouled track No. 1. The second car was overturned and the rear end was on the embankment approximately 40 feet south of track No. 2. The third car overturned and stopped on its side in the water on the embankment with the front end approximately 70 feet and the rear end 15 feet south of the track. The fourth car stopped with the front end 7 feet south of track No. 2 and the rear end on the track structure. The Diesel-electric units and the first four cars were badly damaged and the fifth car was somewhat damaged.

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

It was raining at the time of the accident, which occurred about 1:50 p. m.

Diesel-electric units 8317 and 8316 are of the road-switcher type.

Discussion

As No. 22 was approaching the point where the accident occurred the enginemen were maintaining a lookout ahead from the control compartment of the first Diesel-electric unit. The members of the train crew were in various locations in the cars of the train. The brakes of this train had been tested and had functioned properly when used en route. The headlight was lighted. The engineer said that the speed of the train was reduced in the vicinity of Russell and again at a point approximately 1 mile west of Noronoco where water was over the rails of track No. 1. Signal 114.42 indicated Proceed. The engineer said that as the train was closely approaching the point where the derailment occurred the track

appeared to be in normal alignment. When he observed at a distance of approximately 40 feet that the embankment had been washed away from the south ends of the ties he immediately made an emergency application of the brakes. The derailment occurred before the speed of the train was reduced. The engineer thought the track slid southward as the locomotive entered the area where a portion of the fill had been washed out.

Examination of the track after the accident occurred disclosed that immediately east of the stone box culvert a section of the fill approximately 200 feet in length had been washed out under track No. 2 to a depth of approximately 15 to 20 feet. Apparently the outer edge of the fill had disintegrated back to the outer ends of the ties in track No. 2 prior to the arrival of No. 22. At the same time the water of the river had risen to a point approximately 12 to 15 feet below the level of the tracks and the base of the fill was submerged. Deposits of mud and debris indicated that water had flowed over the tracks immediately west of the point at which the derailment occurred. Apparently when run-off from the hillside exceeded the capacity of the adjacent culvert, water impounded on the north side of the tracks had overflowed the drainage ditch and seepage also occurred to the extent that the material of the fill became saturated and failed under track No. 2. The supervisor of track said that when he arrived at the scene approximately 1 hour 20 minutes after the accident occurred there was some water flowing westward in the drainage ditch on the north side of the tracks and some seepage through the fill at the point of accident.

Examination of the tape of the speed-recording device disclosed that the speed of the train was reduced to 29 miles per hour at Russell, and to 25 miles per hour immediately east of that point. It was then slowly increased to 30 miles per hour, which speed was maintained for a distance of one-eighth mile. The speed was then increased throughout a distance of 1,500 feet and was 35 miles per hour at the point of accident.

A hurricane and accompanying weather disturbances caused widespread damage in this section of the state of Massachusetts at the time this accident occurred. In the region adjacent to the point of accident heavy rains fell at many points. A U. S. Weather Bureau station located at Westfield, 4.97 miles east of Woronoco, reported 18.15

inches of rainfall during the 24-hour period ending at 8 a. m. on the day of the accident, the heaviest rainfall ever recorded by that agency in the state of Massachusetts for any similar period of time. The same station had reported 1.25 inches of rainfall for the preceding 24-hour period.

The supervisor of track said that on the morning before the accident occurred the rainfall did not appear to be of such intensity as would require the track to be patrolled. He said that about 1 p. m. when he was informed of high water in the vicinity of Woburn and Russell he learned that section foremen assigned to temporary service with a maintenance-of-way force at Washington had already been instructed to proceed to Middlefield and Chester, respectively, 17.11 miles and 12.32 miles west of the point of accident, to patrol the track on track motor-cars. A maintenance-of-way employee at Westfield was instructed to patrol the track westward from that point. The derailment occurred before the track in the vicinity of the point of accident had been patrolled. The track in this vicinity was last patrolled by a section foreman on a track motor-car six days before the accident occurred and was inspected by the supervisor of track from a passenger train three days before the accident occurred and no defective condition was observed by either. The section foreman said that the culvert in the vicinity of the point of accident was clean. An east-bound freight train passed the point of accident about 2 hours 10 minutes before the accident occurred. The engineer of this train said that except for an intermittently heavy rainfall and the fact that the river was several feet above its normal level he observed no unusual condition and his locomotive rode smoothly in the vicinity of the point of accident.

Cause

This accident was caused by a washout.

Dated at Washington, D. C., this second day of November, 1955.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. MCCOY,

Secretary