

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2733
THE ATLANTIC COAST LINE RAILROAD COMPANY
REPORT IN RE ACCIDENT
AT BELLEBLUFF, VA., ON
OCTOBER 17, 1943

SUMMARY

Railroad: Atlantic Coast Line
Date: October 17, 1943
Location: Bellbluff, Va.
Kind of accident: Derailment
Train involved: Passenger
Train number: First 76
Engine number: 1565
Consist: 13 cars
Estimated speed: 65-70 m. p. h.
Operation: Automatic block-signal and
automatic train-stop system
Track: Double; tangent; 0.454 percent
descending grade northward
Weather: Clear
Time: About 10:50 p. m.
Casualties: 1 killed; 8 injured
Cause: Broken rail

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2733

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

THE ATLANTIC COAST LINE RAILROAD COMPANY

November 26, 1943.

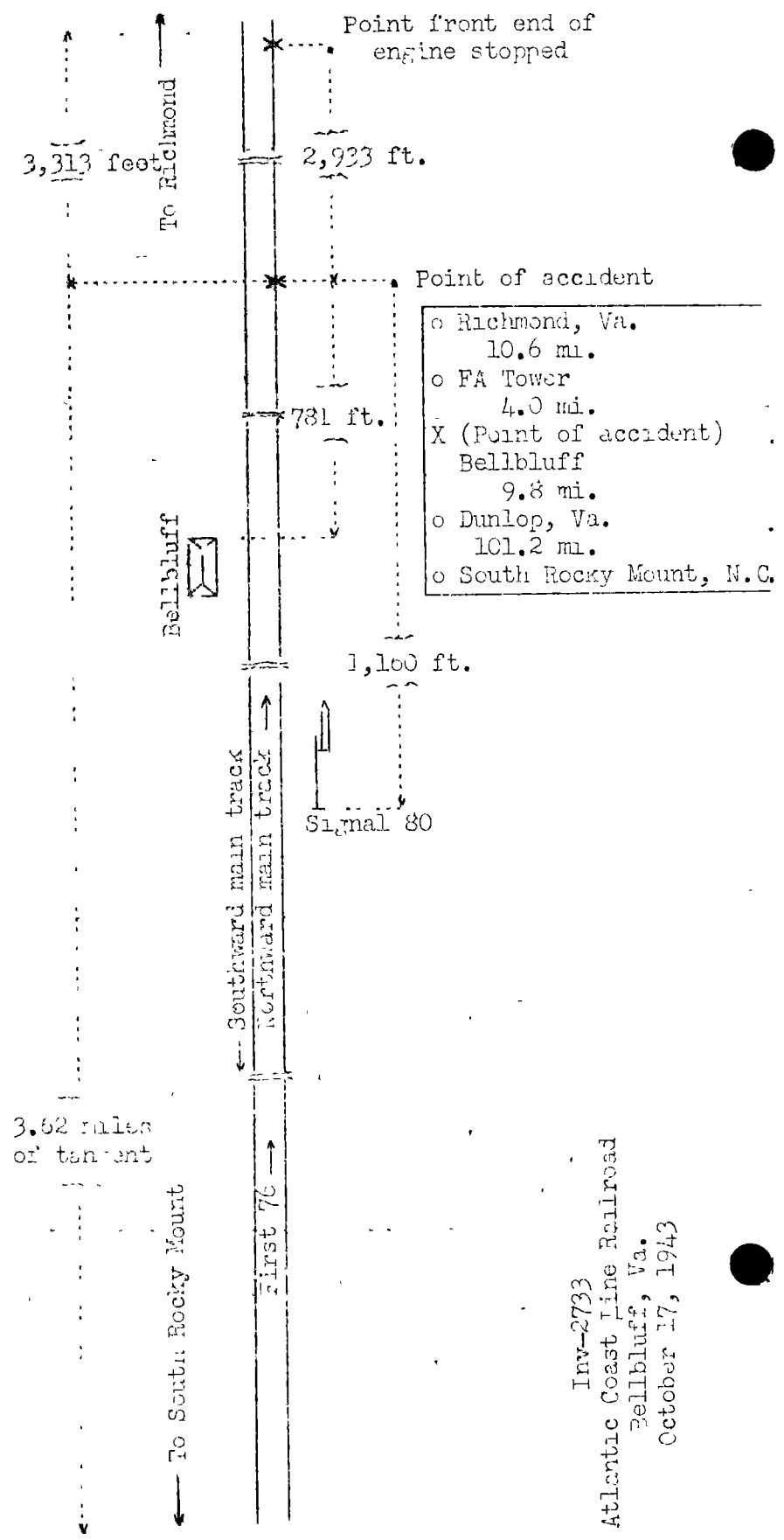
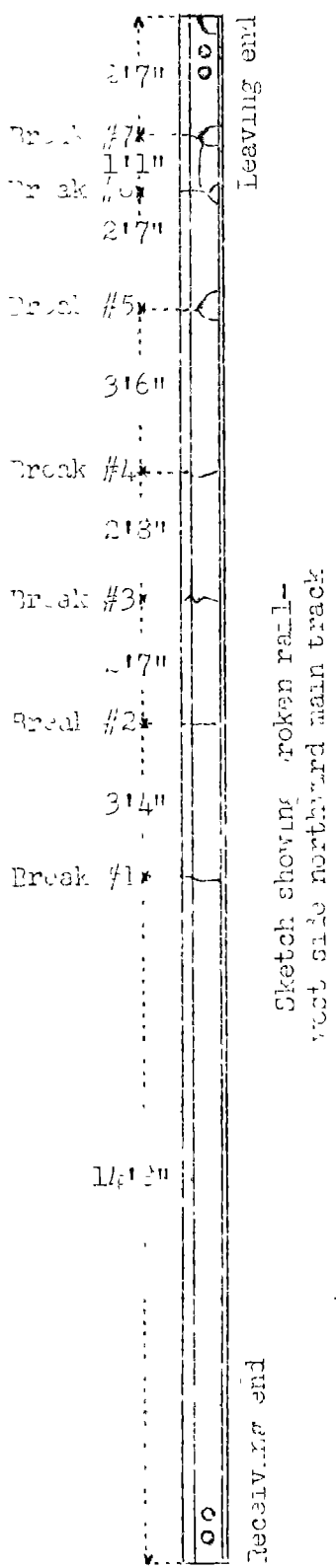
Accident at Bellbluff, Va., on October 17, 1943, caused
by a broken rail.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On October 17, 1943, there was a derailment of a passenger train on the Atlantic Coast Line Railroad at Bellbluff, Va., which resulted in the death of one passenger, and the injury of seven passengers and one dining-car employee.

¹Under 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-2733
 Atlantic Coast Line Railroad
 Bellbluff, Va.
 October 17, 1943

Location of Accident and Method of Operation

This accident occurred on that part of the Richmond District which extended between South Rocky Mount, N. C., and Richmond, Va., 125.6 miles. In the vicinity of the point of accident this was a double-track line over which trains moving with the current of traffic were operated by an automatic block-signal system, the indications of which superseded time-table superiority, and an automatic train-stop system. The accident occurred on the northward main track 781 feet north of the station at Bellbluff. From the south the track was tangent 3.62 miles to this point and 3,313 feet beyond. The grade for north-bound trains was 0.454 percent descending.

The track structure consisted of 100-pound rail, 33 feet in length, laid new in 1924 on 20 treated ties to the rail length. It was fully tieplated, single-spiked, provided with 4-hole continuous angle bars and 4 rail anchors per rail length, and was ballasted with crushed stone to a depth of 6 inches.

Automatic signal 80, which governed north-bound movements on the northward main track, was 1,160 feet south of the point of derailment.

The maximum authorized speed for the train involved was 75 miles per hour.

Description of Accident

First 76, a north-bound first-class passenger train, consisted of engine 1565, one baggage car, seven coaches, one dining car, one tourist sleeping car, two Pullman sleeping cars, and a U. S. Army hospital car, in the order named. All cars were of steel construction. This train passed Dunlop, Va., 9.8 miles south of Bellbluff and the last open office, at 10:35 p. m., 20 minutes late, passed signal 80, which displayed proceed, and while it was moving at an estimated speed of 65 to 70 miles per hour the eighth to thirteenth cars, inclusive, were derailed.

The engine and the first eight cars, remaining coupled, stopped with the front end of the engine 2,933 feet beyond the point of derailment. The rear truck of the eighth car was derailed. The ninth to the thirteenth cars, inclusive, were derailed to the west and stopped on the roadbed between the two main tracks, with the front end of the ninth car 1,527 feet south of the eighth car and 624 feet north of the point of derailment. The ninth and tenth cars remained coupled. The eleventh and twelfth cars, remaining coupled, stopped with the front end of the eleventh car 2 feet 4 inches south of the tenth car. The thirteenth car stopped 51 feet 6 inches south of the twelfth car, and its rear end was 166 feet north of the point of derailment. The rear truck of the eighth car was slightly damaged. The ninth to the thirteenth cars, inclusive, were

badly damaged. One of the west rails of the northward track passed through the front bolster, upward through the floor, and entered the right side of the front end of the thirteenth car at an angle of forty-five degrees. The fatality occurred in this car. The northward track was damaged throughout a distance of 2,067 feet and the southward track a distance of 386 feet.

It was clear at the time of the accident, which occurred about 10:50 p. m.

The rail involved was a 33-foot, 100-pound R. E. open-hearth rail, manufactured by the Tennessee Coal, Iron and Railroad Co., in June, 1924, and was laid in the track during the same year. The brand was OH-Tenn 10025-6-1924, Number 31733, Letter C.

During the 30-day period preceding the day of the accident there was a daily average of 30.86 trains on the northward main track.

Discussion

First 76 was moving on tangent track at a speed of 65 to 70 miles per hour in territory where the maximum authorized speed for this train was 75 miles per hour, when the rear truck of the eighth car and the ninth to the thirteenth cars, inclusive, were derailed. The headlight was lighted brightly, and both enginemen were maintaining a lookout ahead. There was no steam leak to obscure their vision nor any condition of the engine to distract their attention. Prior to the time of the accident, the engine and the cars had been riding smoothly, and there was no indication of defective equipment nor of any obstruction having been on the track. The last automatic signal that First 76 passed displayed proceed. When the engine passed over the point where the accident occurred, the enginemen did not feel any abnormal condition of the track. The baggageman and the conductor, who were in the first car, were not aware of anything being wrong. The first that the engineer was aware of the accident was when he heard the train air-signal whistle sound, and simultaneously the brakes became applied in emergency. He immediately moved the brake valve to service position. The flagman, who was at the rear end of the twelfth car, felt the brakes being applied in emergency. Immediately afterward the car became derailed.

After the accident a broken rail was found on the west side of the track. The rail was broken into many pieces, 13 of which were recovered. These pieces were scattered throughout a distance of 540 feet north of the point of accident. The first break occurred midway between two ties at a point 14 feet 8 inches north of the receiving end of the rail. The ends of the pieces at this break were battered downward at an angle of about thirty degrees. The adjacent ends of the pieces at the third break, 5 feet 11 inches northward, were battered considerably.

A flange mark appeared on the receiving end of the rail at this break. Breaks Nos. 2, 4, 5, 6 and 7 apparently were the result of the derailment. At the first break there was a progressive detail fracture covering about 12 percent of the cross-sectional area of the head and extending to the outside edge of the head about 1/2 inch below the top of the rail. In this portion of the fracture the metal was darkened by oxidation, which condition indicated that the rail had been defective for some time prior to the accident. The ends of the pieces at this break had been polished by friction; therefore, the exact extent of the fracture could not be determined, but most of the head of the rail, the web, and the base indicated new break. This fracture occurred beneath a rail burn caused by the slipping of driving wheels, and it extended inward from the outside edge 1-5/8 inches and was approximately 1/8 inch deep. Breaks Nos. 1, 2, 3, 5 and 6 occurred at points where rail burns existed. There were also two other rail burns on the piece which was 14 feet 8 inches long. Using a standard rail-bending device, tests were conducted to determine the strength of this piece of rail at the two rail burns. The first test was made at a point 5 feet 2 inches north of the receiving end, and the rail broke easily. A fracture existed at this point but it did not extend to the outer surface. The second test was made 12 feet 3-1/2 inches north of the receiving end, and the rail cracked under a deflection of 1/2 inch, and broke under a deflection of 5/8 inch. At this burn a crack 1-1/2 inches long started at a point 1/4 inch below the top of the rail, extended diagonally downward at an angle of 15 degrees, and stopped 1/4 inch south of the point of fracture. At the point of fracture there was a burn extending inward from the outside edge 1-1/4 inches and downward to a depth of 3/8 inch. Below this burn a horizontal crack started at the outside surface of the head and extended inward 1-1/2 inches. Immediately below the horizontal crack there was a progressive fracture, half-moon in shape, 3/4 inch wide and 3/8 inch deep. The outer edge of this fracture was about 1/4 inch inward from the outside edge of the head.

Extra 1623 North was the last train prior to First 76 to pass over the rail. This train, consisting of an engine, 69 cars and a caboose, was stopped at signal 80, because of a stop-and-proceed indication. It moved through the block at a speed of 5 to 8 miles per hour about 40 minutes before the accident occurred. The crew did not observe any abnormal condition of the track, and, since there was no apparent cause for the restrictive indication, the engineer reported the matter to the operator at the first station northward. The operator promptly notified the maintainer, but the derailment occurred before the maintainer could begin an inspection. Since First 76 received a proceed indication at signal 80, and the battering at break No. 1 was considerably greater than at break No. 3, apparently break No. 1 occurred before Extra 1623 arrived at signal 80 and break No. 3 occurred during the passage of this

train. The general roadmaster thought that the portion of the rail between breaks Nos. 1 and 3 was canted slightly outward and that the ragged ends at the breaks were in contact with each other sufficiently to maintain the signal circuit, and signal 80 displayed proceed for First 76.

The track involved was last inspected by the section foreman from his motor car on the day preceding the accident. He performed work in the immediate vicinity of the rail involved and made visual observation of it, but did not consider it to be in defective condition. The roadmaster said that when a detector car was operated over this section on October 7, 1943, he walked in the center of the track and examined the rail burns on the rail involved, but failed to find any condition which would render it unsafe for further use. It has been the practice of this railroad that when rail burns are found on the head of the rail, the section foreman or the roadmaster decides if the rail should be replaced, unless the detector-car tape had indicated that a defective condition existed. The railroad has used the services of a detector car over the more important tracks at intervals of about 1 year.

During the period from September, 1942, to August, 1943, 1,278 defective rails were removed on the system, of which 135 were the result of rail burns. On the section involved, during a 12-month period preceding the day of the accident, five defective rails were removed, of which two were the result of rail burns.

Cause

It is found that this accident was caused by a broken rail.

Dated at Washington, D. C., this twenty-sixth day of November, 1943.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.