

Inv-2407

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
ATLANTIC COAST LINE RAILROAD

MANUNTA, GA.

JANUARY 16, 1940

INVESTIGATION NO. 2407

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SUMMARY

Inv-2407

Railroad: Atlantic Coast Line
Date: January 16, 1940
Location: Mahunta, Ga.
Kind of accident: Derailment
Train involved: Passenger
Train number: 70
Engine number: 1800
Consist: 15 cars
Speed: 75-80 m. p. h.
Operation: Timetable, train orders and
automatic block system
Track: Single; tangent; 0.3 percent
descending grade westward
Weather: Clear
Time: 8:20 p. m.
Casualties: 19 injured
Cause: Broken rail, resulting from
transverse fissures

February 14, 1940

To the Commission:

On January 16, 1940, there was a derailment of a passenger train on the Atlantic Coast Line Railroad near Nahunta, Ga., which resulted in the injury of 13 passengers, 2 dining-car employees, and 4 train attendants.

Location and Method of Operation

This accident occurred on that part of the Waycross District which extends between Jacksonville, Fla., and Jesup, Ga., via the Short Line, a distance of 95.2 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and an automatic block system. The accident occurred at a point 868.6 feet north of the north siding-switch at Nahunta. Approaching from the south the track is tangent several miles to the point of accident and a considerable distance beyond. The grade is 0.3 percent descending northward at the point of accident.

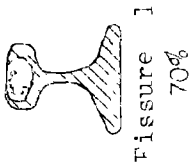
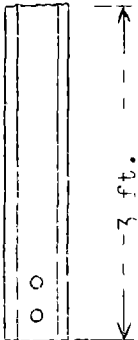
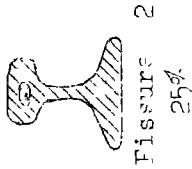
The track structure consists of 100-pound rail, 39 feet in length, laid on an average of 24 ties to the rail length; it is fully tieplated, single-spiked, secured with four rail anchors to the rail length, provided with 100-pound continuous rail joints, and ballasted with slag to a depth of about 8 inches below the ties; the ballast is filled in between the ties and at their ends and dressed to 52 inches outside the rails. The track is well maintained.

The siding at Nahunta is 4,822 feet in length and parallels the main track on the west. The station is located east of the main track and about 100 feet north of the south switch of the siding. A branch of this railroad intersects the Short Line at a point 28.5 feet south of the south siding-switch. Movements over the crossing are controlled by an interlocking which is in the charge of an operator in the station. Semiautomatic interlocking signals 0.10 and 0.7, located, respectively, about 765 feet south and 4,400 feet north of the station, govern northward movements and operate in conjunction with adjacent automatic signals.

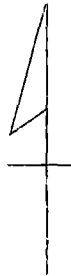
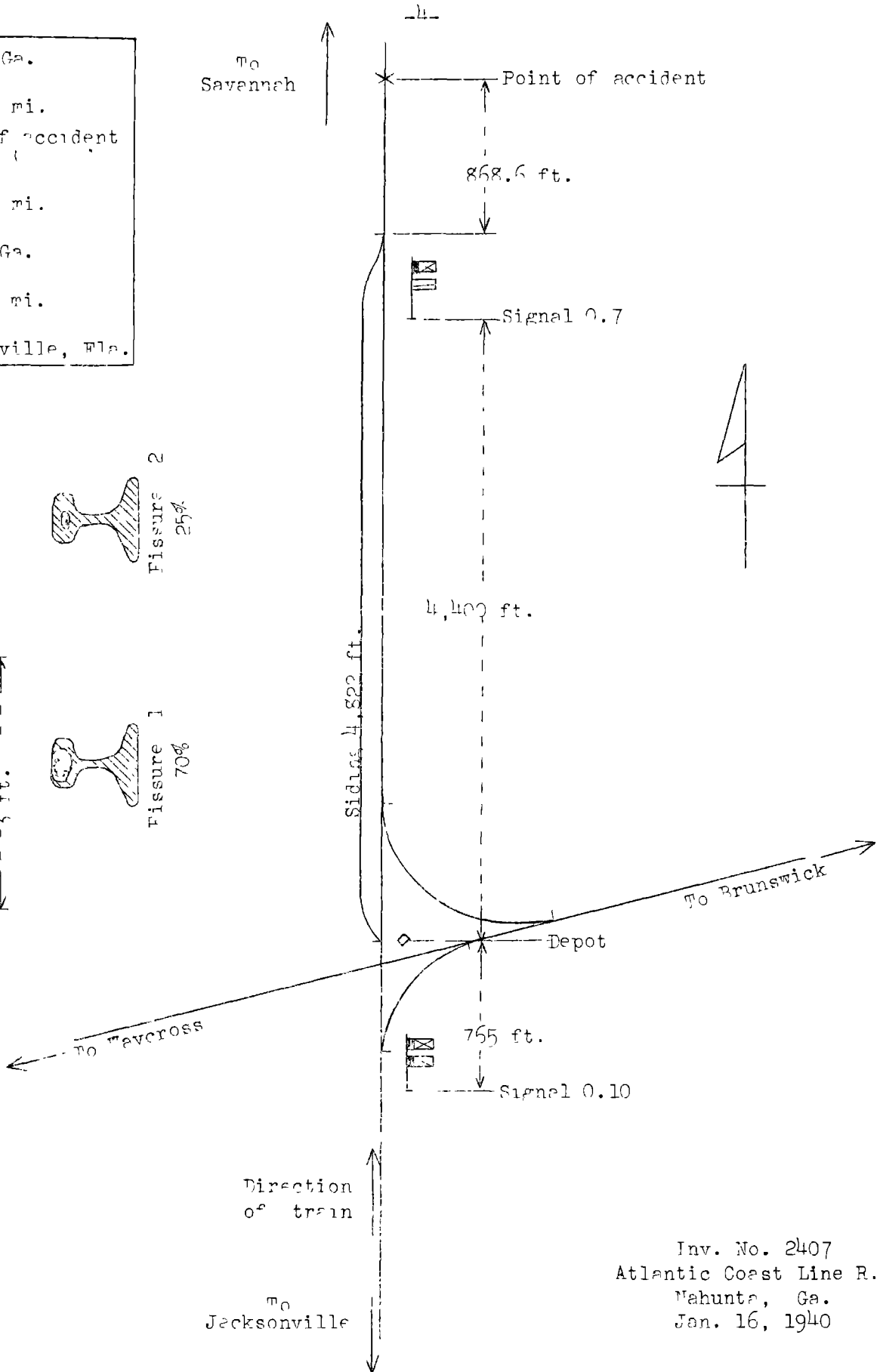
The maximum authorized speed for the train involved was 80 miles per hour.

The weather was clear at the time of the accident, which occurred about 8:20 p. m.

o Jesup, Ga.
 28.4 mi.
 * Point of accident
 o Mahunt's
 22.4 mi.
 o Burch, Ga.
 14.1 mi.
 o Jacksonville, Fla.



Receiving end
of west rail



Inv. No. 2407
 Atlantic Coast Line R.
 Mahunt's, Ga.
 Jan. 16, 1940

Description

No. 70, a north-bound passenger train, with Conductor Branch and Engineman Musgrove in charge, consisted of engine 1800, of the 4-8-4 type, one deadhead Pullman sleeping-car, one express car, one dormitory car, one baggage car, three coaches, one dining car, two coaches, one club car, and four coaches, in the order named; each car was of steel construction. This train departed from Jacksonville, 66.8 miles south of Nahunta, at 7 p. m., according to the train sheet, on time, passed Nahunta, the last open office, at 8:19 p. m., 10 minutes late, and the derailment occurred while the train was moving at a speed estimated to have been between 75 and 80 miles per hour.

The engine and first seven cars were separated from the rear portion of the train and stopped, coupled, at a point about 1/2 mile north of the point of derailment. The engine and first five cars were not derailed. The sixth and seventh cars were derailed but remained upright on the ties. The eighth car stopped 1,670 feet behind the seventh car, west of the track and parallel to it and leaned at an angle of 30 degrees. The next six cars and the front truck of the fifteenth car were derailed to the west and stopped in general line with the track. The ninth car stopped on its side and 410 feet behind the eighth car. The tenth car was upright. The eleventh to fourteenth cars, inclusive, leaned at angles of 10 to 20 degrees. The rear end of the fifteenth car stopped at the point of derailment.

Summary of Evidence

Engineman Musgrove stated that the air brakes were tested at Jacksonville and functional properly en route. At Burch, 14.4 miles north of Jacksonville, his train entered the siding and met No. 75, a south-bound first-class train. When passing Nahunta, 22.4 miles north of Burch, he was in his usual position and maintaining a proper lookout ahead. The operator was outside the station and gave a lantern signal to indicate that everything was all right. The headlight was burning brightly. The speed recorder indicated that the speed was 76 or 77 miles per hour. Signals 0.10 and 0.7 displayed proceed indications. Track conditions were good and, when the engine passed over the point where the derailment later occurred, he did not feel any jolt or other condition that would indicate a broken rail. The first intimation he had of anything being wrong was when the air brakes became applied in emergency as a result of the accident. He immediately lapped the brake valve, and, looking back, saw fire flying beneath the fifth car.

Fireman Moore corroborated in substance the testimony of the engineman. Approaching the point of accident he was on his seat-box maintaining a lookout ahead.

Conductor Branch stated that approaching the point of accident he was in the fifth car and the first knowledge he had of anything being wrong was when his attention was attracted to an unusual noise under this car. He attempted to stop the train but the brakes already had become applied in emergency. After he heard the noise he did not observe any unusual motion of this car. Immediately after the accident he went back and rendered assistance. He inspected the track from the point of derailment southward to the telephone booth at the north end of the siding at Nahunta and did not find any indication of equipment having been dragged. He thought the noise was caused by the sixth and seventh cars being derailed. He inspected the fifth car and observed that a brake beam on the rear truck was bent at the middle. An abrasion indicated that it had been struck by some object. There was nothing wrong with the riding condition of the track. He was unable to say what caused the accident.

Baggagemaster Lee stated that at the time of the accident he was in the rear end of the fifth car. He estimated that the speed was approximately 75 miles per hour. He said that when this car passed over the point where the derailment occurred the air brakes became applied in emergency; some heavy object struck the trucks and the car seemed to rise twice and then settle down and soon afterward the train stopped. He examined the trucks of this car and found that the front brake beam on the rear truck was bent in a V-shape and a piece of the steam-heat pipe was broken off; apparently these were struck by a piece of rail. He said that the riding condition of the track was satisfactory.

Train Porter Ross stated that at the time of the accident he was in the front end of the fifth car. His first knowledge of anything being wrong was when he felt an unusual motion of this car. He estimated that the speed was 75 to 80 miles per hour at the time of the accident.

Flagman Woods stated that he was in the rear end of the last car and that the speed of the train was between 75 and 80 miles per hour when the accident occurred. When he went back to protect the rear of his train he did not see any indication of equipment having been dragged.

Conductor Heery, who was deadheading and was in the sixth car, stated that the first intimation he had of anything being wrong was when the derailment occurred. The sixth car was the first to become derailed. He inspected the track but did not find any indication of equipment having been dragged.

Section Foreman Keen stated that since September 6, 1939, he has been in charge of the section involved, which extends from a point 11 miles south to a point 3-1/2 miles north of Nahunta. There are four men in his gang and the track is inspected at least once each week. He last inspected the track involved from a track motor-car on January 13 and found that it was in good condition. On December 24 he found a broken rail at a road crossing located about 1 mile south of the point where the accident occurred. That rail showed a well-defined transverse fissure which came to the surface of the head of the rail. He said that keeping the track in alignment has been more difficult since the 1800-class, 4-8-4 type, engines have been operated over it.

Operator Goodner, at Nahunta, stated that he was outside his office and made an inspection of No. 70 as it passed but observed nothing wrong and he gave the crew a lantern signal to proceed. No. 70 was given clear signal indications through the interlocking.

Signal Maintainer Chancey stated that he inspected the signal apparatus at Nahunta during the morning of January 16 and again after the accident, and it functioned properly.

Roadmaster Hodges, who arrived at the scene of accident about 11:10 p. m., stated that the track either was torn up or demolished a distance of 1,076 feet and was damaged an additional distance of 1,716 feet. There was a broken rail on the west side of the track at the rear of the train. The break, which was smooth, occurred at a point 3 feet from the receiving end of the rail and between two ties. This piece of rail remained attached to the adjacent rail and the angle bars were intact, but a section of rail which had been adjacent to the 3-foot piece could not be located. A transverse fissure at the first break covered about 70 percent of the area of the head and extended upward to the running surface of the rail. There was no batter mark at this location. Short pieces of rail immediately north of the first break showed batter marks, which probably occurred during the process of derailment. A transverse fissure was found in one of the short pieces. The remainder of the rail was broken into numerous pieces which varied in length from 6 inches to about 2 feet; about 10 feet of the broken rail could not be found. The track south of the point of accident was in good condition and there was no indication of equipment having been dragged. Apparently the rail broke under the train. He last inspected the track in this vicinity from a track motor-car on January 11, at which time it was in good condition. This track was laid July 25, 1929. The drainage at this point is good and no trouble with track conditions has been experienced recently. He could not say that it was more difficult to maintain the track since the 1800-class engines were used than when only the 1500

or 1600-class, 4-6-2 type, engines were used. He had not found an excessive number of transverse fissures on his district.

Roadmaster Smart, in charge of the adjacent district, arrived at the scene of accident about 11 p. m., and examined the broken rail. He corroborated the statement of Roadmaster Hodges.

Superintendent of Motive Power Grant, who arrived at Nahunta about 10:15 p. m., stated that he, Master Mechanic White, and Special Apprentice Haley inspected the first four cars but found no mark thereon. However, on the fifth car there was a deep dent on the dynamo almost directly over the west rail and the case was battered; these marks indicated that the dynamo had received a severe blow delivered by the head of a rail. The cap was knocked off the steam-heat diaphragm-pipe and the front brake-beam of the rear truck was badly bent at the middle. The trucks of the sixth and seventh cars had ridden the ties close to the rails more than 1/4 mile. The train parted between the seventh and eighth cars where a coupler knuckle was broken. He inspected the engine and found everything intact. The rear truck of the fifteenth car straddled a section of rail on the west side of the track; this rail had been broken at a point 3 feet from the receiving end. A flaw was apparent on the broken end of this rail and it was concluded by Superintendent Black, Trainmaster Covin, Master Mechanic White, Roadmaster Hodges, and himself that the accident was caused by a rail which had broken under the train. There was no brake rigging down on any of the first seven cars and no indication that any equipment had dropped and caused the derailment.

According to data furnished by the railroad, the rail involved was a 39-foot, 100-pound, R. E. rail, manufactured by the T. C. I. & R. R. Co., and bore the following: "A, heat number 875877, ingot No. 19, rolled 5-1929;" it was laid in the track on July 25, 1929. The rail was broken into numerous pieces; 34 pieces totaling 29.4 feet were found, but the remaining portion was not recovered. Transverse fissure 1 was located at the north end of the 3-foot piece that remained attached to the adjacent south rail with the angle bars intact. This fissure was on the gage side, measured 2-1/4 inches horizontally by 1-5/8 inches vertically, extended to within 1/8 inch of the running surface, and covered 70 percent of the cross-sectional area of the head. Fissure 2 was practically in the center of the head; it measured 1-1/16 inches horizontally by 7/8 inch vertically and its outside edge extended to within 5/8 inch of the gage side of the rail and 5/16 inch of the running surface, and covered 95 percent of the cross-sectional area of the head. The point where fissure 2 was located could not be definitely determined. The track involved was last tested by a detector car on January 27, 1938.

During the 30-day period prior to the day of the accident there were 763 train movements over the track involved, or a daily average of 25.43 trains.

Observations of the Commission's Inspectors

Inspection of the track and the broken rail was made by the Commission's inspectors; they did not find any indication of equipment having been dragged and the broken rail was found to be practically as previously described.

Discussion

According to the evidence, the maximum authorized speed for No. 70 was 80 miles per hour. The train was moving at an estimated speed of 75 to 80 miles per hour when the derailment occurred. The sixth and seventh cars were derailed but remained coupled to the forward portion of the train. All wheels of the last eight cars, except the rear truck of the rear car, were derailed.

After the accident a broken rail with two transverse fissures in the head was found on the west side of the track. The rail was broken into numerous pieces; 34 pieces totaling 29.4 feet were recovered, but the remaining portion could not be found. Fissure 1 was located at a point 3 feet from the receiving end of the rail and covered 70 percent of the cross-sectional area of the head. Fissure 2 covered about 25 percent of the cross-sectional area of the head but it could not be definitely determined where this piece fitted into the broken rail.

The last two semiautomatic signals which were passed by this train displayed proceed indications; this indicates that the rail was not broken before the train reached the point where later it became derailed. The engineman and the fireman did not observe any abnormal track condition. The conductor, who was in the fifth car, heard an unusual noise under that car; the baggage master and the porter, who also were in the fifth car, felt an unusual motion of that car; however, it was not derailed but all cars following it except the rear truck of the rear car were derailed. Apparently the rail failed under the fifth car of the train.

A detector car had been operated over the rail involved about 2 years prior to the accident.

Conclusion

This accident was caused by a broken rail, resulting from the presence of transverse fissures.

Respectfully submitted,
S. N. MILLS
Director.