

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3275
SOUTHERN RAILWAY SYSTEM
IN RE ACCIDENT
AT GRAYSVILLE, TENN., ON
SEPTEMBER 9, 1949

SUMMARY

Date: September 9, 1949

Railroad: Southern

Location: Graysville, Tenn.

Kind of accident: Derailment

Train involved: Freight

Train number: Second 53

Engine number: Diesel-electric units 6112,
6155 and 6103

Consist: 56 cars, caboose

Estimated speed: 50 m. p. h.

Operation: Timetable, train orders and
automatic block-signal
and train-stop systems

Track: Single; tangent; 0.55 percent
descending grade southward

Weather: Clear

Time: 3:04 a. m.

Casualties: 1 killed; 2 injured

Cause: Broken wheel

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3275

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

SOUTHERN RAILWAY SYSTEM

November 1, 1949

Accident at Graysville, Tenn., on September 9, 1949, caused
by a broken wheel.

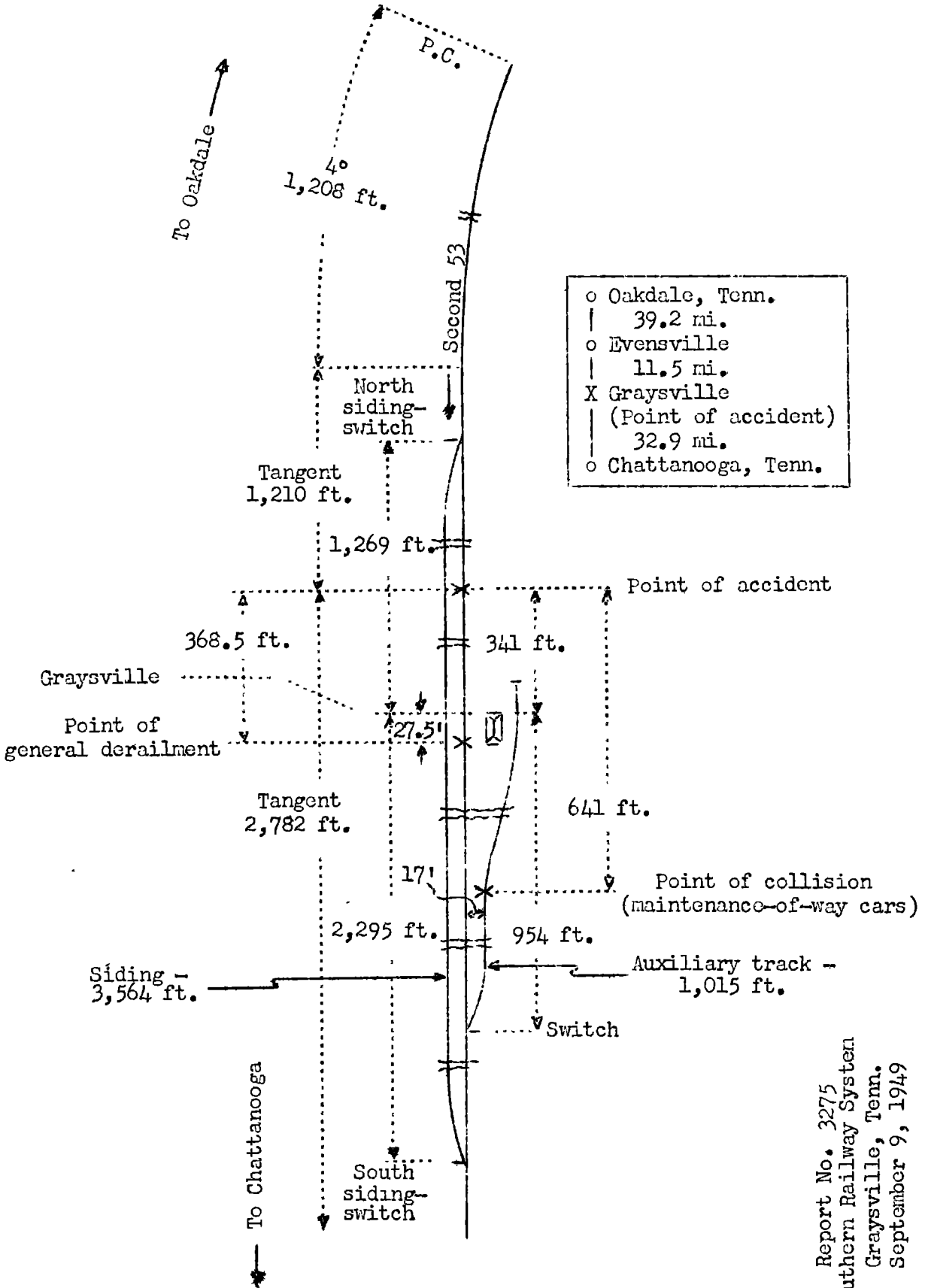
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On September 9, 1949, there was a derailment of a freight train on the Southern Railway at Graysville, Tenn., which resulted in the death of one maintenance-of-way employee, and the injury of two maintenance-of-way employees.

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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. 3275
Southern Railway System
Graysville, Tenn.
September 9, 1949

Location of Accident and Method of Operation

This accident occurred on that part of the railroad extending between Oakdale and Chattanooga, Tenn., 83.6 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-signal system supplemented by an automatic train-stop system. At Graysville, 50.7 miles south of Oakdale, a siding 3,564 feet in length parallels the main track on the west. The north and the south switches of this siding are, respectively, 1,269 feet north and 2,295 feet south of the station. An auxiliary track 1,015 feet in length connects with the main track 954 feet south of the station. The switch is trailing-point for south-bound trains. This track is east of the main track, and it parallels the main track at a distance of 17 feet to a point 654 feet north of the switch, then it curves to the east and is 50.6 feet distant at a point 854 feet north of the switch, and 52.2 feet distant at its north end. The accident occurred on the main track at a point 341 feet north of the station. From the north there is a 4° curve to the left 1,208 feet in length, and then a tangent 1,210 feet to the point of accident and 2,782 feet southward. The grade for south-bound trains varies between 0.45 percent and 0.91 percent descending throughout a distance of 1 mile immediately north of the point of accident, and is 0.55 percent descending at that point.

The structure of the main track consists of 130-pound rail, 39 feet in length, laid on an average of 22 ties to the rail length. It is fully tieplated with 12-inch double-shoulder tie plates, single-spiked, and is provided with 4-hole 24-inch 100-percent joint bars and 10 rail anchors per rail length. It is ballasted with crushed limestone to a depth of 14 inches.

The maximum authorized speed for the train involved was 60 miles per hour.

Description of Accident

Second 53, a south-bound second-class freight train, consisted of Diesel-electric units 6112, 6155 and 6103, coupled in multiple-unit control, 56 cars and a caboose. It departed from Oakdale at 1:50 a. m., 50 minutes late, and passed Evensville, the last open office, 11.5 miles north of Graysville, at 2:46 a. m., 35 minutes late. While this train

was moving at a speed of about 50 miles per hour the rear truck of the forty-fourth car was derailed at a point 341 feet north of the station at Greysville, and the forty-fifth to the fifty-sixth cars, inclusive, and the caboose were derailed at a point 368.5 feet south of the initial point of derailment.

The wheels of the rear truck of the forty-fourth car continued in line with the track a distance of 2,636 feet, but were rerailed at the frog of the turnout at the south end of the siding. This car remained coupled to the front portion of the train and stopped at a point 3,037 feet south of the point of derailment. The forty-sixth and the forty-eighth cars were overturned to the left. The other derailed cars remained upright. The forty-seventh car stopped at an angle of about 30 degrees to the main track, the forty-ninth car stopped across the main track and the auxiliary track, and the other cars were in line with the main track. The forty-sixth car was badly damaged, and the other derailed cars were slightly damaged.

The derailed cars at the rear of Second 53 struck the 7 most southerly cars of a cut of 11 maintenance-of-way cars which were standing on the auxiliary track. At the point of collision the distance between the track-centers of the main track and the auxiliary track is 17 feet. From the south, this cut of cars consisted of one tank car, one flat car, one tool car, one commissary car, one foreman's car, one sleeping-dining car, one kitchen car, one dining car, and three sleeping cars, in the order named. The two most southerly cars were derailed and were slightly damaged. The third, fourth, and fifth cars were overturned to the east and were badly damaged. The sixth car was derailed and was badly damaged, and the seventh car was slightly damaged.

One maintenance-of-way employee, who was in the sixth maintenance-of-way car, was killed. One maintenance-of-way employee in this car and one maintenance-of-way employee in the fifth car were injured.

The weather was clear at the time of the accident, which occurred at 3:04 a. m.

C.B. & Q. 30886, the forty-fourth car of Second 53, is an all-steel box car, built in 1941. It was loaded with 117,020 pounds of bulk salt cake. The nominal capacity of the car is 100,000 pounds, the maximum load limit is 122,600 pounds, and the light weight is 46,400 pounds. The trucks were equipped with A.A.R. 1938 cast-steel bolsters and A.A.R. 1938 double-trussed cast-steel side frames.

Discussion

As Second 53 was approaching the point where the accident occurred the speed was about 50 miles per hour. The enginemen and the front brakeman were in the control compartment of the first Diesel-electric unit, and the conductor and the flagman were in the cupola of the caboose. The Diesel-electric unit and the caboose were riding smoothly. The train was inspected at Oakdale, and the members of the crew had observed the train as it passed over each curve after it left Oakdale. No indication of defective equipment had been observed. The first that the members of the crew became aware of anything being wrong was when the brakes became applied in emergency at the time of the derailment.

Examination of the track structure after the accident occurred disclosed that there were occasional nicks in the head of the west rail throughout a distance of 11.5 miles immediately north of the point of derailment. Marks on three frogs in this rail, located 11.5 miles, 5.9 miles, and 5 miles north of the point of accident, appeared to have been made by a broken flange of a wheel. Starting at a point about 2,500 feet north of the point of derailment, abrasions appeared on the gage side of the west rail. Progressing southward, these abrasions increased in length but were uniformly spaced 104 inches between centers, the approximate circumference of a 33-inch wheel. The point of the west switch-rail of the north siding-switch at Graysville and the point of the spring frog of the turnout were damaged. Evidently they were struck by a broken flange. Several small chips of flange were found along the west rail between the north siding-switch and the point of derailment. The first mark of derailment was an abrasion on the outside base of the west rail at a point 341 feet north of the station at Graysville. Immediately south of this abrasion the ties bore marks indicating that one pair of wheels became derailed to the west. These marks extended diagonally westward. At a point 37 feet south of the initial

mark of derailment the ties bore marks indicating that a second pair of wheels became derailed. These marks were parallel to the rails a distance of 175 feet, then veered to the right and continued southward a distance of 156 feet, with the easterly marks adjacent to the gage side of the west rail. At this point the general derailment occurred, and the track was torn up throughout a distance of 605 feet southward. The guard rail of the auxiliary-track turnout was torn out, and the east switch-rail was damaged. South of this turnout, two flange marks appeared along the gage side of the west rail. They extended southward to the frog of the turnout at the south siding-switch. The ballast between the main track and the siding was disturbed throughout this distance.

Inspection of C.B. & Q. 30886 after the accident occurred disclosed that approximately 80 percent of the flange of the west front wheel of the rear truck was broken from the wheel, and the remaining portion of the flange was considerably chipped and flaked. The inside rim of the companion wheel was heavily scored as a result of its running in contact with the gage side of the west rail. Each of these wheels was 1 inch outward from normal position on its wheel seat. Dirt and ballast on this truck and abrasions on the wheels indicated that the truck had been in contact with the ballast throughout a considerable distance. The brake rigging and the truck appliances were in good condition. After the rear truck was dismantled, the two wheels were removed from the axle. A pressure of 100 tons was required to remove the west wheel. The wheel seat was found to be badly galled. A pressure of 50 tons was required to remove the east wheel, but the wheel seat was not galled. There was no indication that either wheel had rotated on the axle. The pressure required to remove the wheels from the axle indicated that the movement on the wheel seats occurred as a result of the derailment.

The marks on the west rail indicated that the flange of the west front wheel of the rear truck of C.B. & Q. 30886 was broken prior to the time the train passed Evensville. Apparently the lateral motion of the truck caused the broken edge of the flange to strike the rail intermittently and small pieces were chipped from the remaining portion of the flange. The flange was in continuous contact with the rail when the car traversed the 4° curve immediately north of the point of accident, and the chipping of the flange was accelerated. Approximately 80 percent of the flange

was chipped from the wheel when the car reached the point where the derailment occurred. It is probable that a lateral movement of the truck at this point caused the wheel, at a point where the flange was chipped away, to cross the rail and to drop to the outside, then the diagonal movement of the front wheels to the west caused the rear wheels of the truck to become derailed. The east wheels of the truck bore against the gage side of the west rail with sufficient force to damage the track structure and cause the general derailment.

The wheel involved in this accident was a 750-pound, 33-inch, single-plate, non-bracketed, cast iron wheel. It was cast in 1929, and was No. 3 tape size. Inspection of the wheel and the chips of the flange which were recovered disclosed no old breaks or flaws, and both the flange wear and the tread wear were within the prescribed limits. The code of rules governing the condition of, and repairs to, freight and passenger cars for the interchange of traffic adopted by the Association of American Railroads now provides that cars equipped with wheels of the type which caused this derailment will not be accepted in interchange after January 1, 1950.

Cause

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

Dated at Washington, D. C., this first day of November, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.