INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3448

LOUISVILLE AND NASHVILLE RAILROAD COMPANY

IN RE ACCIDENT

NEAR CALERA, ALA., ON

FEBRUARY 2, 1952

SUMMARY

Date:	February 2, 1952	
Railroad:	Louisville and Nashville	
Location:	Calera, Ala.	
Kind of accident:	Derailment and collision	
Trains involved:	Freight	: Passenger
Train numbers:	76	: 99
Engine numbers:	Diesel-electric units 804 and 824	: Diesel-electric units 752 and 775
Consists:	54 cars, caboose	: 12 cars
Estimated speeds:	32 m. p. h.	: 40 m. p. h.
Operation:	Timetable, train orders and automatic block-signal system	
Tracks:	Double; tangent; level	
Weather:	Raining	
Time:	9:02 p. m.	
Casualties:	5 injured	
Cause:	Broken wheel flange, and derailed cars obstructing adjacent main track in front of approaching train	

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3448

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

LOUISVILLE AND NASHVILLE RAILROAD COMPANY

March 13, 1952

Accident near Calera, Ala., on February 2, 1952, caused by a broken wheel flange and by derailed cars obstructing an adjacent main track in front of an approaching train.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On February 2, 1952, there was a derailment of a freight train, and a collision between derailed cars of that train and a passenger train moving in the opposite direction on an adjacent main track, on the Louisville and Nashville Railroad near Calera, Ala. The collision resulted in the injury of one passenger, one train porter, and three train-service employees. This accident was investigated in conjunction with representatives of the Alabama Public Service Commission.

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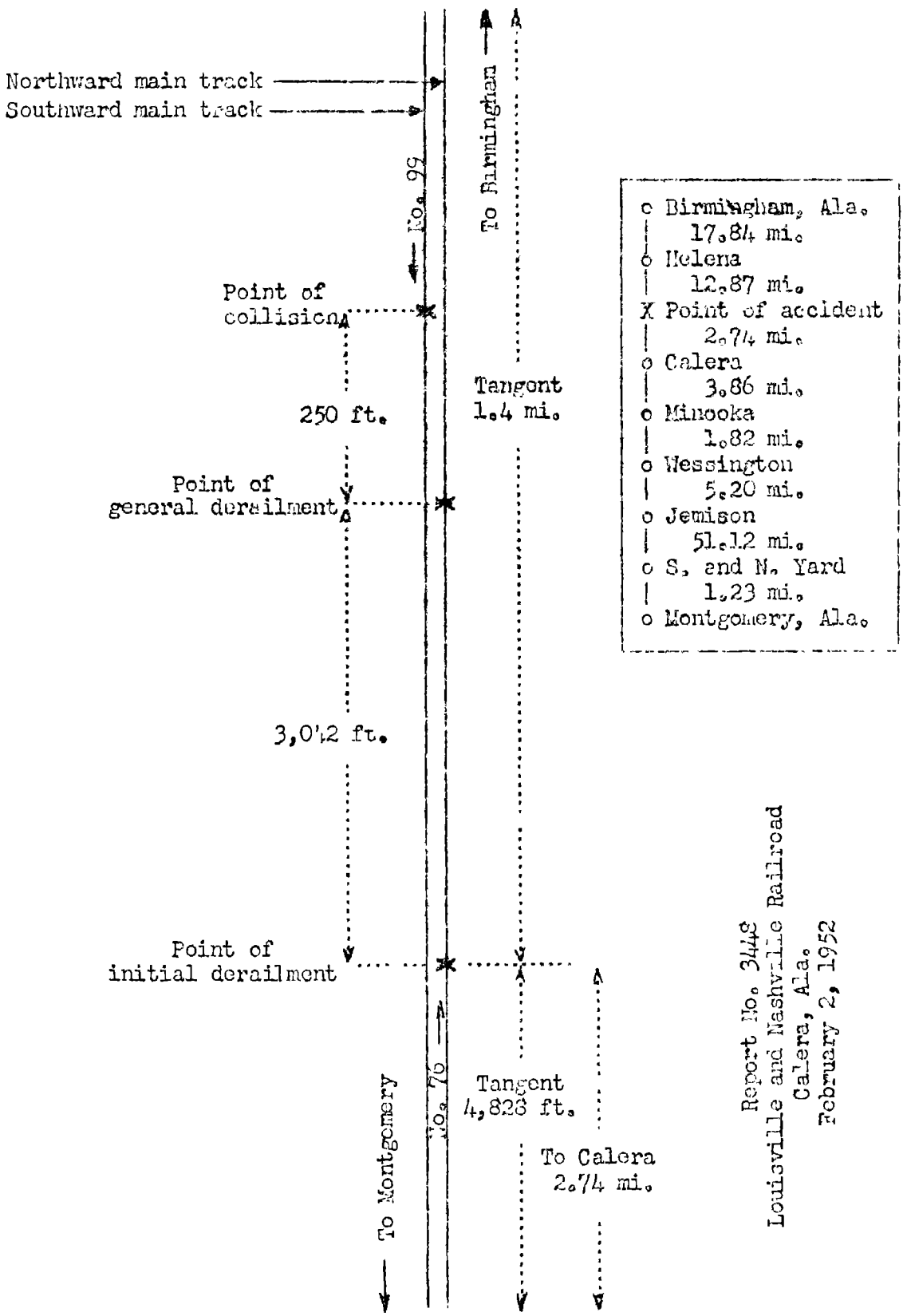
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3448
Louisville and Nashville Railroad
Calera, Ala.
February 2, 1952

Location of Accident and Method of Operation

This accident occurred on that part of the Birmingham Division extending between Montgomery and Birmingham, Ala., 96.68 miles. In the vicinity of the point of accident this is a double-track line, over which trains are operated by timetable, train orders and an automatic block-signal system. The initial derailment occurred on the northward main track at a point 65.97 miles north of Montgomery and 2.74 miles north of Calera. The general derailment occurred at a point 3,042 feet north of the initial point of derailment. The collision occurred on the southward main track at a point 250 feet north of the point of general derailment. The main tracks are tangent throughout a distance of 4,828 feet immediately south of the initial point of derailment and 1.4 miles northward. In the immediate vicinity of the point of accident the grade is practically level.

The track structure consists of 100-pound rail, 39 feet in length, laid on an average of 22 treated hardwood ties per rail length. It is fully tieplated with single-shoulder tieplates, single-spiked, and is provided with 4-hole 24-inch joint bars and an average of 10 rail anchors per rail length. It is ballasted with slag to a depth of 11 inches. The tracks are spaced 13.1 feet between track centers.

This carrier's operating rules read in part as follows:

> 102. * * *
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> * * *
>
> When a train is * * * stopped suddenly by an emergency application of the air brakes * * * adjacent tracks * * * that are liable to be obstructed must at once be protected until it is ascertained they are safe and clear for the movement of trains.

The maximum authorized speeds were 70 miles per hour for passenger trains hauled by Diesel-electric locomotives and 45 miles per hour for freight trains.

Description of Accident

No. 76, a north-bound second-class freight train, consisted of Diesel-electric units 804 and 824, coupled in multiple-unit control, 54 cars and a caboose. This train departed from S. and N. Yard, 1.23 miles north of Montgomery, at 3:50 p. m., 2 hours 50 minutes late, passed Calera at 8:51 p. m., 5 hours 48 minutes late, and while moving at a speed

of about 32 miles per hour the front wheels of the rear truck of the thirty-first car were derailed at a point 2.74 miles north of Calera. The rear truck of the thirty-first car, the rear truck of the thirty-second car, and the thirty-third to the forty-eighth cars, inclusive, were derailed about 3,000 feet farther northward. Several seconds after the general derailment occurred a portion of the derailed equipment which obstructed the southward main track was struck by No. 99.

No. 99, a south-bound first-class passenger train, consisted of Diesel-electric units 752 and 775, coupled in multiple-unit control, two express cars, one baggage-mail car, four coaches, one dining car, three sleeping cars, and one dormitory car, in the order named. The second car was of steel underframe construction, and the other cars were of all-steel construction. The fourth, sixth, and seventh cars were equipped with tightlock couplers. This train passed Helena, 17.84 miles south of Birmingham and the last open office, at 8:50 p. m., 8 minutes late, and while moving at an estimated speed of 40 miles per hour it struck a portion of the derailed equipment of No. 76 which obstructed the southward main track.

The thirty-first car of No. 76 remained coupled to the front portion of the train and stopped 4,346 feet north of the initial point of derailment. The thirty-second car stopped immediately behind the thirty-first car. The other derailed cars stopped in various positions on or near the track. The thirty-first to the thirty-sixth cars, inclusive, were somewhat damaged, and the other derailed cars were badly damaged. The locomotive, the first five cars, and the front truck of the sixth car of No. 99 were derailed. The first Diesel-electric unit overturned to the right and stopped on its top, with the front end 305 feet south of the point of collision and 22 feet west of the southward main track, and the rear end 39 feet west of the track. The second Diesel-electric unit stopped upright, at the rear of the first unit, 16 feet west of the track and parallel to it. The first car stopped at the rear of the second Diesel-electric unit, on top of the rear end of the third car and the front end of the fourth car, with the front end 25 feet west of the track and the rear end 35 feet west of the track. The second car was demolished, and it stopped between the first car and the track. The third car stopped with the front end 27 feet east of the southward main track and opposite the front end of the first car, and the rear end 35 feet west of the track. The fourth car stopped with the front end against the rear end of the third car and the rear end on the track structure of

the southward main track. The fifth and the sixth cars stopped practically in line with the track. Both Diesel-electric units and the first, third, and fourth cars were badly damaged. The fifth and sixth cars were somewhat damaged.

The engineer, the fireman, and the baggageman of No. 99 were injured.

It was raining at the time of the accident, which occurred at 9:02 p. m.

Discussion

As No. 76 was approaching the point where the accident occurred the speed was about 32 miles per hour. The enginemen and the front brakeman were in the control compartment at the front of the locomotive, and the conductor and the flagman were in the cupola of the caboose. The train had been inspected at S. and N. Yard, and the members of the crew had observed the train as it passed around curves after it left S. and N. Yard. No indication of defective equipment had been observed. When the brakes became applied in emergency as a result of the derailment the front brakeman obtained a fusee with the intention of displaying stop signals to No. 99, but the locomotive of No. 99 passed the locomotive of No. 76 before the fusee could be lighted and before No. 76 had stopped.

As No. 99 was approaching the point where the accident occurred the speed was 68 miles per hour. The enginemen were maintaining a lookout ahead from the control compartment at the front of the locomotive, and the members of the train crew were in various locations throughout the cars of the train. The headlight and the oscillating signal light were lighted brightly. The enginemen said that No. 76 was moving when their locomotive passed the front end of that train. Soon after their locomotive passed the locomotive of No. 76 they observed that the southward main track was obstructed by derailed cars. The engineer immediately made an emergency application of the brakes. He estimated that the speed of the train had been reduced to about 40 miles per hour when the collision occurred.

Examination of the track structure after the accident occurred disclosed that at Jemison, 13.62 miles south of the initial point of derailment, the point of a frog in a facing-point turnout to the left showed indications that it

had been struck by the flange of a wheel. At Wessington, 8.42 miles south of the initial point of derailment, the point of a frog in a facing-point turnout to the left showed indications that it had been struck in the same manner as the frog at Jemison. At each of these frogs the gage was 56-1/2 inches, and each guard rail was spaced 1-7/8 inches from the east rail. At Minooka, 6.6 miles south of the initial point of derailment, a section about 4 inches in length was broken from the point of a frog in a facing-point turnout to the left, and pieces of flange were found near the frog. The gage at this point was 56-1/4 inches, and the guard rail was spaced 1-3/4 inches from the east rail. At Calera a frog in the east rail of the main track was slightly damaged, and several pieces of flange were found in the west flangeway of a railroad crossing at grade. Between the crossing and the initial point of derailment, the gage side of the west rail bore marks which appeared to have been made by a broken flange. The marks were uniformly spaced at distances of about 104 inches, the approximate circumference of a 33-inch wheel. Pieces of flange were found along the track throughout this distance. The first mark of derailment was an abrasion on the outside edge of the head of the west rail at a point 2.74 miles north of Calera. Immediately north of this abrasion, the ties bore marks indicating that one pair of wheels had become derailed to the west. These marks indicated that the wheels had moved diagonally to the west throughout a distance of 19 feet 10 inches and had then continued in line with the track, with the east wheel 23 inches west of the gage side of the east rail, a distance of 3,042 feet. From this point northward, the northward main track was torn up throughout a distance of 1,313 feet.

After the accident occurred, inspection of S.A.L. 24412, the thirty-first car of No. 76, disclosed that approximately 50 percent of the flange of the west front wheel of the rear truck was broken from the wheel. The west wheel had moved outward 7/8 inch and the east wheel had moved outward 1-3/4 inches from their normal positions on the axle. A groove 3/8 inch deep was worn in the outside hub of the east wheel as a result of the hub coming in contact with the inside face of the journal box. The brake rigging and the truck appliances were in good condition. The side frames of the truck were properly matched. After the rear truck was dismantled, the two front wheels were removed from the axle. A pressure of 60 tons was required to remove each of the wheels. The wheel seat of the east wheel was slightly galled, but the wheel seat of the west wheel was not.

There was no indication that either wheel had rotated on the axle. When the wheels were remounted, a pressure of 35 tons was required to seat the west wheel and a pressure of 25 tons was required to seat the east wheel.

The wheels involved in this accident were 750-pound, 33-inch, single-plate, bracketed, cast iron wheels. They were cast in 1948 and were placed in service when the car was built in October, 1948. The flange wear and tread wear were nominal and within the prescribed limits. Inspection of the west wheel and the pieces of flange which were recovered disclosed no old breaks or flaws. Apparently the flange was first broken when it struck the points of frogs between Jemison and Calera. After the flange was broken, additional pieces were broken away as the wheel revolved and the broken edge of the flange struck the rail. Approximately 50 percent of the flange was broken from the wheel when the car reached the point where the derailment occurred.

S.A.L. 24412 was an all-steel box car, built in October, 1948. At the time of the accident it was loaded with 111,000 pounds of paper bags. The light weight of the car was 46,200 pounds, the nominal capacity was 100,000 pounds, and the maximum load limit was 122,800 pounds.

The flange marks on the frog points between Jemison and the point of accident indicate that one of the wheels had moved outward on its wheel seat and that the gage of the wheels was wide before the derailment occurred. It could not be determined when the wheel first moved outward from normal position. The axle showed indications that it had been struck several heavy blows at some time previous to this derailment. There were diagonal indentations on the axle at points 4-1/2 inches, 7 inches, and 9 inches inside the east wheel, and the east wheel may have been started outward on its wheel seat at the time these indentations were made. No marks were found on the track structure south of Jemison which would indicate that the gage of the wheels was excessively wide, but when the train passed Jemison the wheels were sufficiently out of gage to permit the flange of the west wheel to strike the points of frogs in the west rail. The fact that after the accident both wheels

were found to be moved outward on the axle a total of 2-5/8 inches indicates that some of the movement occurred after the initial derailment. The wear on the outside hub of the east wheel indicates that this wheel had moved outward a considerable time prior to the derailment.

Cause

It is found that this accident was caused by a broken wheel flange, and by derailed cars obstructing an adjacent main track in front of an approaching train.

Dated at Washington, D. C., this thirteenth day of March, 1952.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.