

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3218
ATLANTIC COAST LINE RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR BEN HILL, GA., ON
DECEMBER 3, 1948

SUMMARY

Railroad: Atlantic Coast Line
Date: December 3, 1948
Location: Ben Hill, Ga.
Kind of accident: Collisions
Equipment involved: Maintenance-of-way : Passenger train
service train
Train numbers: Work Extra 1662 : 101
Engine numbers: 1662 : 1527
Consists: 7 cars, caboose : 5 cars
Estimated speed: Standing : 25 m. p. h.
Operation: Timetable and train orders
Track: Single; tangent; 0.5 percent
descending grade southward at
point of second collision
Weather: First collision: raining; second
collision: hazy
Times: 8:48 a. m. : 8:59 a. m.
Casualties: 1 killed; 1 injured
Cause: Undesired separation in a maintenance-
of-way service train, and cars moving
out of control on grade

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3218

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

ATLANTIC COAST LINE RAILROAD COMPANY

March 9, 1949

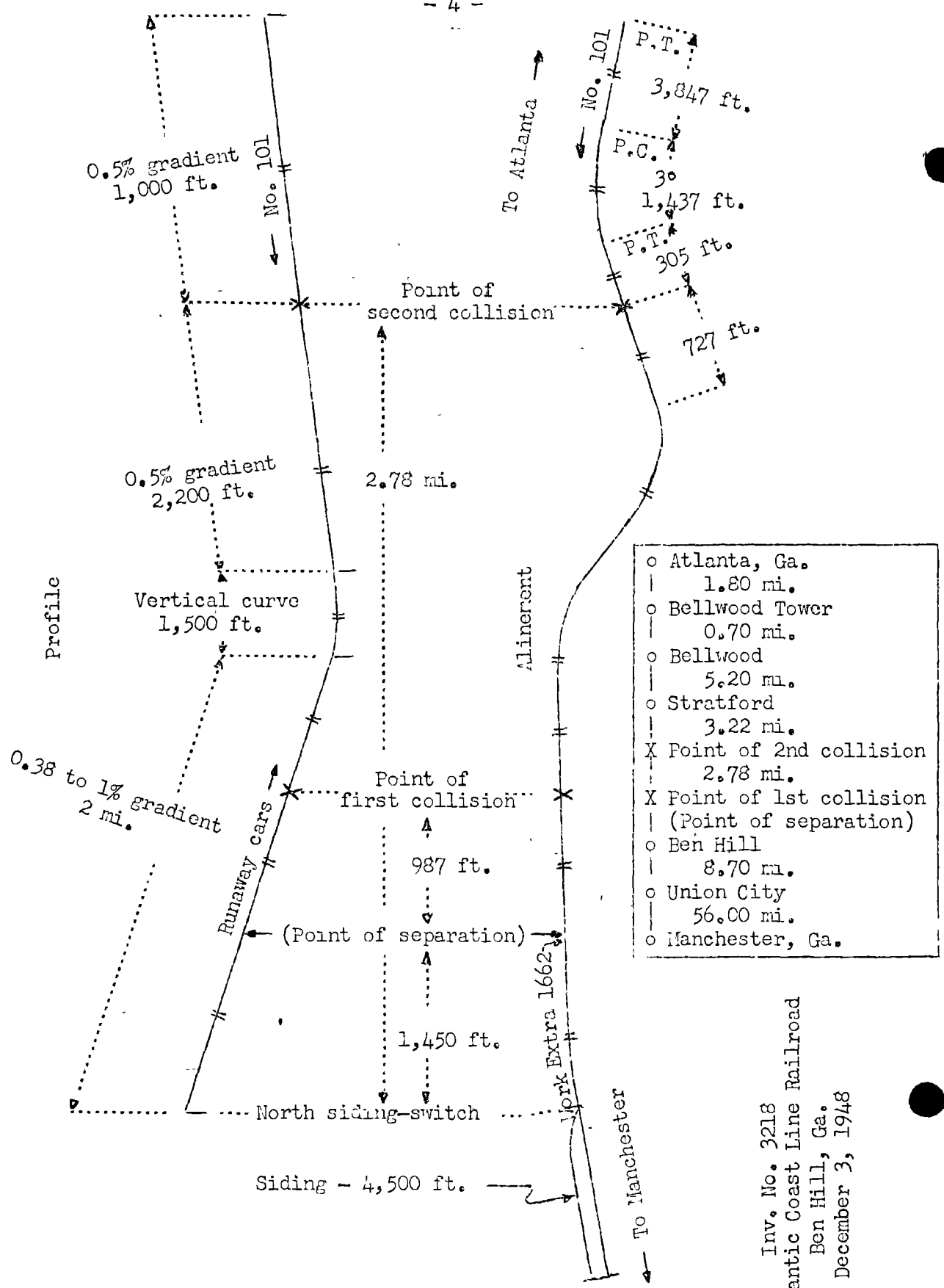
Accident near Ben Hill, Ga., on December 3, 1948, caused
by an undesired separation in a maintenance-of-way
service train, and by cars moving out of control on
a grade.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On December 3, 1948, a collision occurred between two
portions of a maintenance-of-way service train on the
Atlantic Coast Line Railroad near Ben Hill, Ga., and a
runaway car of this train was struck by a passenger train.
The first collision resulted in the death of one maintenance-
of-way laborer, and the injury of one maintenance-of-way
laborer.

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



o	Atlanta, Ga.	1.80 mi.
o	Bellwood Tower	0.70 mi.
o	Bellwood	5.20 mi.
o	Stratford	3.22 mi.
X	Point of 2nd collision	2.78 mi.
X	Point of 1st collision (Point of separation)	
o	Ben Hill	8.70 mi.
o	Union City	56.00 mi.
o	Manchester, Ga.	

Inv. No. 3218
 Atlantic Coast Line Railroad
 Ben Hill, Ga.
 December 3, 1948

Location of Accident and Method of Operation

This accident occurred on that part of the Western Division extending between Bellwood Tower, Atlanta, and Manchester, Ga., 76.6 miles, a single-track line, over which trains are operated by timetable and train orders. There is no block system in use. At Ben Hill, 11.9 miles south of Bellwood Tower, a siding 4,500 feet in length parallels the main track on the west. An undesired separation between the second and the third cars of the work train occurred 1,450 feet north of the north siding-switch, the collision between the two portions of this train occurred 2,437 feet north of the north siding-switch, and the collision between the passenger train and a runaway car occurred 2.78 miles north of the north siding-switch. Northward from the north siding-switch, there are several curves, cuts, fills, and short tangents to the point where the runaway car stopped. The grade for north-bound movements varies between 0.38 and 1 percent descending throughout a distance of 2 miles immediately north of the north siding-switch, then there are, in succession, a vertical curve 1,500 feet long, and a 0.5 percent ascending grade 2,200 feet to the point of the second collision and about 1,000 feet northward. The separation occurred at a point where the gradient was 1 percent descending. From the north there are, in succession, a tangent 3,847 feet in length, a 3° curve to the left 1,437 feet, and a tangent 305 feet to the point of the second collision and 727 feet southward. The grade for south-bound movements varies between 0.5 and 1 percent descending throughout a considerable distance immediately north of the point of the second collision.

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

FREIGHT CONDUCTORS

887. They will see that the couplings and brakes of the cars in their trains are in good order before starting, and inspect them as often as possible.

ENGINEER

979. They must obey signals promptly and if in doubt, stop the train. If, in switching, the train or yard man giving signals is lost to view, stop the train until he returns.

The maximum authorized speed for passenger trains was 50 miles per hour.

Description of Accident

At Bellwood Tower the crew of engine 1662 received copies of train order No. 46, reading in part as follows:

ENG 1662 WORKS EXTRA 630 A M UNTIL 630 P M
BETWEEN BELLWOOD AND UNION CITY
PROTECTING AGAINST ALL REGULAR TRAINS

* * *

Bellwood is 11.2 miles north of Ben Hill, and Union City is 8.7 miles south of Ben Hill. Work Extra 1662, consisting of engine 1662 and a caboose, departed from Bellwood at 7:20 a. m. This train arrived at Ben Hill about 8:05 a. m. Later, engine 1662, headed north, was coupled to the south end of a cut of maintenance-of-way service equipment, and the consist from north to south was as follows: One spreader-ditcher car, one engine-tender used as fuel and water supply car and with the coal bunker to the north, one flat car upon which was mounted a steam-powered ditcher, two air-operated dump cars, one flat car upon which was mounted a gasoline-powered ditcher, one air-operated dump car, engine 1662 and its tender, and a caboose. After an air-brake test of this train was completed, Work Extra 1662 entered the main track at the south siding-switch, proceeded northward on the main track and stopped at a point 1,450 feet north of the north siding-switch to perform ditching operations. A separation occurred between the second and the third most northerly cars, and the two most northerly cars moved out of control on the descending grade. During an attempt to recouple the remaining portion of the train to the runaway cars, a collision between these portions occurred 927 feet north of the point of separation. At this latter point the two most northerly cars become separated from each other and continued to move northward out of control. The second car stopped 2.13 miles north of the north siding-switch, and the first car stopped 3,211 feet farther north. Soon after the first car stopped, it was struck by No. 101.

No. 101, a south-bound first-class passenger train, consisted of engine 1527, two express cars, one mail-baggage car, and two coaches, in the order named. The first and second cars were of steel-underframe construction, and the remainder of the cars were of all-steel construction. After the crew received copies of train order No. 46 this train departed from Bellwood, the last open office, at 8:46 a. m., 6 minutes late, passed Stratford, 6 miles north of Ben Hill, at 8:56 a. m., 2 minutes late, and while moving at an estimated speed of 25 miles per hour it struck the spreader-ditcher car.

The force of the impact moved the spreader-ditcher car southward 560 feet, and it was so badly damaged that the carrier ordered it to be destroyed. No. 101 stopped with the front end of the engine 308 feet south of the point of impact. The front end of the engine was considerably damaged. None of the wheels of the spreader-ditcher car or of No. 101 were derailed. The north coupler and related draft gear of the ditcher flat-car were broken. As a result of the first collision, the north truck of the tender was off center, the cistern and frame were badly damaged, and the south coupler and end-sill were broken.

There was a heavy rainfall at the time of the first collision, which occurred about 8:48 a. m., and it was hazy at the time of the second collision, which occurred about 8:59 a. m.

Of the maintenance-of-way service train, from north to south, the first and the third cars and the caboose were equipped with K-1 triple valves, the fourth car with a K-2 triple valve, the fifth, sixth and seventh cars with AB valves, and the engine and tender with No. 6-UT equipment. A brake-pipe vent valve was provided on the tender. The ditcher-tender, the second car, was equipped with a brake-pipe and related connections, but no triple or control valve to apply and to release its brake was provided. The engine was equipped with an M-3 feed valve, and it was adjusted to supply 70-pound brake-pipe pressure. A Duplex compressor governor was provided, and it was adjusted to supply main-reservoir pressure of 100-140 pounds. There was a main-reservoir connection from the engine to the air-operated dump cars. The first and the second cars were equipped with vertical-shaft type hand brakes.

The north end of the third car was equipped with a Sharon coupler, having a 9-inch knuckle face, and the south end of the second car was equipped with an A.A.R. type D coupler, having a 9-inch knuckle face. The north end of the second car, the coal-bunker end, was equipped with a short-shank pivoted engine-pilot coupler arranged in a coupler-pocket casting.

Discussion

About 8:10 a. m., Work Extra 1362, with its engine headed north, a caboose coupled to the rear end of the tender and the front of the engine coupled to the most southerly of a cut of seven maintenance-of-way service cars, was standing on the siding at Ben Hill. The brake system of this train was fully charged, then a brake test was made. The conductor said

that each brake of the train applied and released properly during his examination of their performance. Soon afterward, this train entered the main track and proceeded northward to a point about 1,450 feet north of the north siding-switch to perform ditching operations. No. 101, a south-bound first-class train, was due to leave Stratford, the last station north of Ben Hill where schedule time was shown, at 3:54 a. m., therefore, the flagman remained in the vicinity of the north siding-switch to protect the movement of Work Extra 1362 when it returned to Ben Hill to clear for No. 101.

When Work Extra 1662 first stopped at the point of work, the steam-powered ditcher, which was the third car from the north, was about 50 feet north of the desired location, and a back-up movement was made to spot the ditcher properly. The second stop was made at 8:41 a. m. Soon afterward, the conductor, who was on the ground at the east side of the ditcher giving hand signals, observed that a separation had occurred between the second and the third cars, and that the first two cars were moving slowly northward on the 1 percent descending grade. At this time the enginemen and the front brakemen were in the cab of the engine. The conductor said that he immediately closed the brake-pipe angle cock at the north end of the third car, opened the coupler-knuckle, which had remained closed and locked, gave a hand signal to the engineer to proceed northward, then ran northward about 150 feet and boarded the second car and immediately proceeded to the north end of the first car. At this time one laborer was on the first car, and another laborer was on the second car. The conductor said that when he boarded the runaway cut of cars the speed was about 5 miles per hour, and that it was increasing as the cars moved northward. The conductor, assisted by the laborer on the first car, applied the hand brake on that car, but the speed continued to increase. Then the conductor proceeded to the second car and attempted to apply the hand brake on that unit. This application was made by full exertion of the conductor and the laborer on the second car and with the aid of a pick-handle inserted through the spokes of the brake wheel. Before any retardation became apparent the rear portion of the train, which was being pushed by the engine, collided with the south end of the second car at a point 987 feet north of the point of separation. At this time the speed of the runaway cars was about 7 miles per hour, and the speed of the other portion of the train was about 15 miles per hour. When this collision occurred, the laborer on the first car was thrown to the ground, and was fatally injured, and the laborer on the second car was injured. As a result of the impact, a separation occurred between the first and the second cars, and these two units continued northward on the descending grade as separate movements. The automatic couplers at the south end of the

second car and at the north end of the third car did not couple as a result of the impact, although the knuckle was open at the front end of the third car. The conductor said that he again attempted to stop the second car by use of the hand brake. However, when it became apparent that the hand-brake system was ineffective he alighted from the car.

The engineer of Work Extra 1662 said that when the second stop was made to spot the ditcher, he made a 7-pound brake-pipe reduction, and then another 7-pound reduction to insure the proper release of the brakes, and that there was no excessive closure of slack during this stop. Soon afterward the brakes became applied in emergency as a result of the separation of the train, and about 1-1/2 minutes elapsed after the conductor closed the angle cock at the north end of the third car before the brakes released. In response to the proceed hand-signal given by the conductor before he boarded the runaway cars, the engineer operated the remainder of the train in pursuit of the two cars in an endeavor to couple to them and stop their movement. After this movement was started the conductor was lost to the engineer's view. However, the engineer continued to operate his train northward in response to hand signals given by maintenance-of-way employees, although the rules require movement to be stopped when signals by an authorized person cannot be seen. The engineer said that he thought these signals were being relayed from the conductor, but the conductor said that after he had proceeded to the first car he gave no further signals to proceed. After the separation occurred the front brakeman attempted to proceed over the moving equipment toward the north end but was able only to reach the first car ahead of the engine by the time the first collision occurred. The engineer said that, just before the first collision occurred, the fireman called a warning, and the engineer moved the brake valve to emergency position. However, the collision occurred before the brakes became effective. Immediately afterward, engine 1662 was detached and moved southward to Ben Hill, at which point the front brakeman communicated by commercial telephone with employees of a coal company at Stratford in an attempt to warn the crew of No. 101 concerning the runaway cars. At this time it was about 8:56 a. m. No. 101 passed Stratford at 8:56 a. m., 2 minutes late. Both Stratford and Ben Hill are closed stations.

The first car stopped 0.6 mile north of the second car. About 1 minute after the first car stopped, it was struck by No. 101. As No. 101 was approaching the point where the collision occurred, it was moving on a curve to the left. The speed was about 35 miles per hour, and the enginemen were

maintaining a lookout ahead. Because of track curvature and the wall of a cut on the inside of the curve, the view of the track ahead was restricted to a distance of about 900 feet. The fireman said that he first saw the car about 300 feet distant and called a warning to the engineer, who immediately placed the brake valve in emergency position, opened the sander valve, then closed the throttle. The speed was about 25 miles per hour at the time the car was struck. The brakes of this train had been tested and had functioned properly en route. No member of the train crew was aware of anything being wrong until the brakes became applied in emergency.

The crew of No. 101 held copies of train order No. 46, which required Work Extra 1662 to protect against all regular trains in the territory involved, if it did not clear the schedule times of regular trains at the last station in the rear. The crew of Work Extra 1662 intended to return to Ben Hill in order to clear the time of No. 101 at Stratford. The crew of No. 101 held no order restricting the movement of their train, except a slow order which restricted the speed to 35 miles per hour on the curve where the collision occurred.

Immediately after the two cars became separated from the work train, the conductor observed that the coupler-knuckles at the point of separation were closed and locked. Examination after the accidents disclosed that as a result of the first collision the north truck of the second car, the tender, had been displaced and was moved backward toward the center of the car. The cistern had been moved forward on the underframe, and the rear sheet was pushed inward. The south end-sill was broken, the guard arm of the coupler was broken, and the carry-iron was badly damaged. Because of damage the exact height of the center of the coupler at the south end of the second car above the tops of the rails could not be measured, but was approximated as having been 33-1/2 inches. The maximum wear of the knuckle-pin hole was 1/32-inch, the knuckle-pin was worn 1/32-inch, the knuckle lock was worn 1/32-inch, the coupler-knuckle face was worn 1/8-inch, and the total slack between the knuckle-pin and the coupler-head was 5/32-inch. The coupler at the "A", or north, end of the third car was gaged and the measurements indicated that the center of the coupler was 33-1/2 inches above the tops of the rails. The wear of the knuckle-pin and knuckle-pin hole was 1/32-inch each, the knuckle lock was worn 1/32-inch, the face of the coupler-knuckle was worn 1/8 inch, and the slack between the knuckle-pin and the coupler-head was 5/32-inch. Both of these couplers had 9-inch knuckle faces. After the truck of the second car was replaced and the brake mechanism was repaired, the hand brake functioned properly.

At the time the separation between the second and the third cars occurred, a heavy rain was falling. The ditcher, which was located about midway the third car, had been reversed with the boom pointing to the south and raised at an angle of about 45 degrees. The tender cistern was about half full of water. Apparently, when the train was moved southward, the slack was stretched, then, when the train was stopped to spot the ditcher, vertical movement caused by slack closure, the raised position of the ditcher boom and movement of water in the tender cistern resulted in the north end of the third car rising and the south end of the second car becoming depressed to the extent that the coupler-knuckle at the north end of the third car and the coupler-knuckle at the south end of the second car passed each other vertically, and a separation of the train occurred.

Examination after the accidents disclosed that the spreader-ditcher car, which was struck by No. 101, was badly damaged. The truck dead-lever at the "A" end of the brake mechanism on this car was broken across at the lower edge of the brake-beam fulcrum-pin hole. At this point the lever was 1 inch thick and 3-1/2 inches wide. This break was about 30 percent old fracture, and the remainder of the break was new. In addition, a former fulcrum-pin hole had been plugged by a metal plug 1-1/8 inches in diameter, and the dead lever had been bored for a new fulcrum-pin hole immediately below the former one. The break extended from one of the outside edges to the lower edge of the new hole and thence from the lower edge of the old hole to the other outside edge. After the accident, an air-brake test made with a single-car device of the spreader-ditcher car disclosed 2-1/2 pounds leakage per minute, and the brake became applied in emergency following a 7-pound service brake-pipe reduction. The automatic brake system is so arranged that a separation of cars resulting in the parting of brake-pipe hose, as in this case, causes an automatic application of the brakes at emergency rate of propagation, and the air brakes should hold cars stationary for a considerable period. However, the first and the second cars started to move out of control on the grade immediately after the separation occurred. It is apparent that the dead-lever at the "A" end of the first car broke when the emergency application of the air brakes occurred, and this defective condition nullified the effectiveness of both the hand-brake and air-brake systems

on this car. The second car was not equipped with air-brake mechanism. Apparently the hand brake of the second car was made ineffective in the first collision when the ditcher on the third car moved northward on its track on the deck of the car and struck the rear sheet of the tender on the second car and moved the front truck of the second car from its proper position, and thereby nullified the effectiveness of the hand brake on the second car.

The equipment of the maintenance-of-way service train had been inspected and repaired at Bellwood Yard during the night of November 30, 1948, three days prior to the accident. The air-brake equipment of the spreader-ditcher car was last cleaned and oiled 16 months and 5 days before the date of the accident, but was not cleaned and oiled during the repairs at Bellwood Yard on November 30.

Cause

It is found that this accident was caused by an undesired separation in a maintenance-of-way service train, and by cars moving out of control on a grade.

Dated at Washington, D. C., this ninth
day of March, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.