

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3015
SEABOARD AIR LINE RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR HAMLET, N. C., ON
AUGUST 19, 1946

SUMMARY

Railroad: Seaboard Air Line

Date: August 19, 1946

Location: Hamlet, N. C.

Kind of accident: Collision

Trains involved: Freight : Passenger

Train numbers: 72 : First 5

Engine numbers: 242 : 268

Consists: 40 cars, crane, : 10 cars
engine in tow,
caboose

Estimated speeds: 15 m. p. h. : 45 m. p. h.

Operation: Signal indications

Tracks: Double; tangent; 0.10 percent
descending grade northward

Weather: Clear

Time: 7:50 a. m.

Casualties: 1 killed; 12 injured

Cause: Rotating portion of crane moving
in freight train fouling adjacent
main track in front of approaching
passenger train

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3015

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

SEABOARD AIR LINE RAILROAD COMPANY

October 14, 1946

Accident near Hamlet, N. C., on August 19, 1946, caused by the rotating portion of a crane moving in a freight train fouling an adjacent main track in front of an approaching passenger train.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

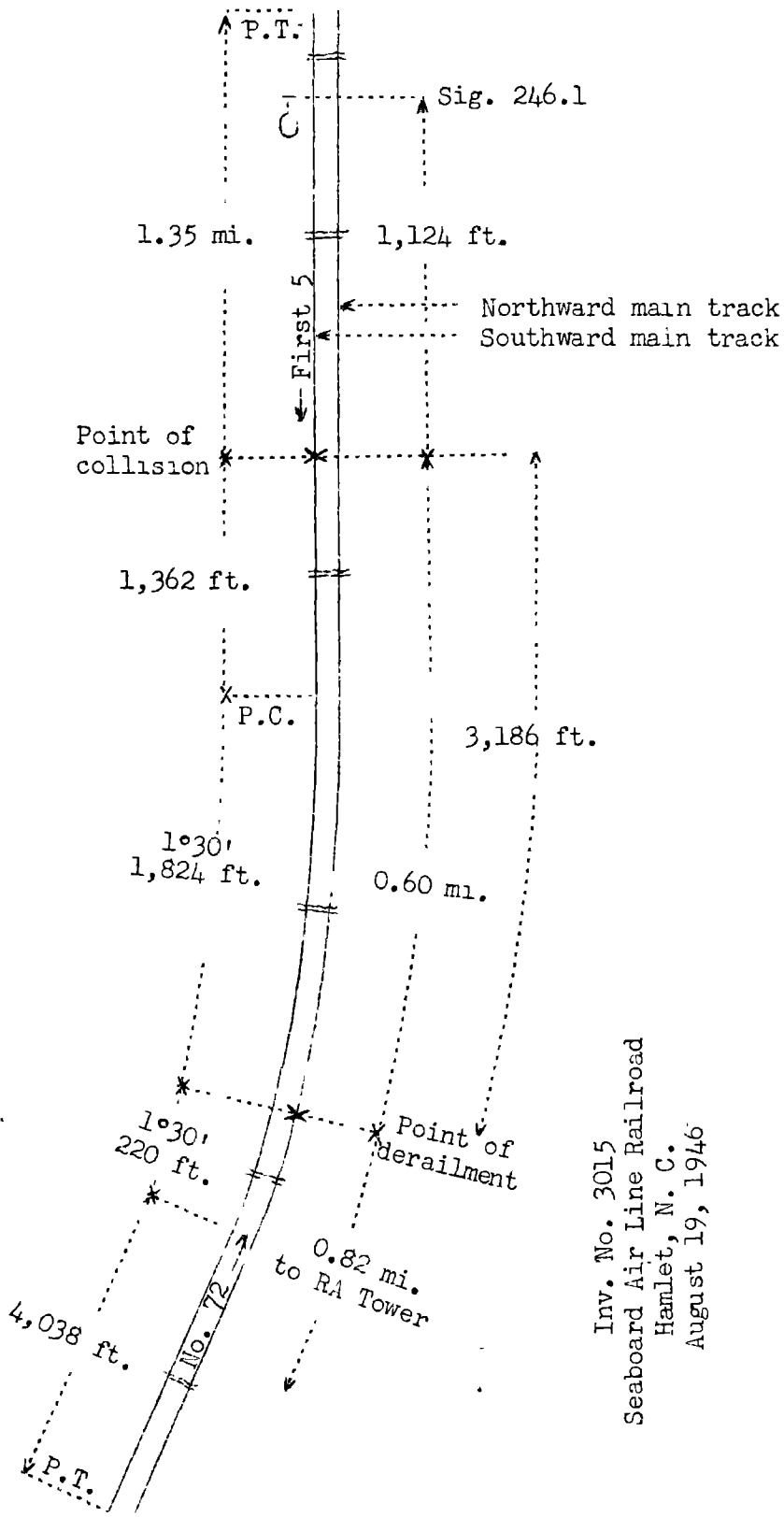
On August 19, 1946, there was a collision between a passenger train and the rotating portion of a crane moving in a freight train on an adjacent main track on the Seaboard Air Line Railroad near Hamlet, N. C. This accident resulted in the death of one employee, and the injury of four passengers, three railway-mail clerks, four railway-express messengers and one 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.

To Raleigh ↑

↓ To Hamlet

- Raleigh, N. C.
83.30 mi.
- Hoffman
6.78 mi.
- X Point of accident
1.42 mi.
- RA Tower
5.00 mi.
- Hamlet Yard
0.80 mi.
- Hamlet, N. C.



Inv. No. 3015
 Seaboard Air Line Railroad
 Hamlet, N. C.
 August 19, 1946

Location of Accident and Method of Operation

This accident occurred on that part of the Virginia Division extending between Hamlet and Raleigh, N. C., 97.3 miles, a double-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by signal indications. The freight train was being operated on the northward main track and the passenger train on the southward main track. The accident occurred 7.22 miles north of Hamlet and 1.42 miles north of RA Tower. From the south there are, in succession, a tangent 4,038 feet in length, a 1°30' curve to the left 2,044 feet and a tangent 1,362 feet to the point of accident and 1.35 miles northward. At the point of accident the grade is 0.10 percent descending northward.

At the point of accident the distance between the center-lines of the main tracks is 13 feet. The track structure consists of 100-pound rail, 39 feet in length, laid on an average of 22 treated ties per rail length. It is fully tieplated, single-spiked, provided with 4-hole angle bars and an average of 8 rail anchors per rail length, and is ballasted with crushed stone to a depth of 6 inches.

Automatic signal 246.1, governing south-bound movements on the southward main track, is 1,124 feet north of the point of accident. This signal is of the color-light type, and is continuously lighted.

Operating rules read in part as follows:

D-102. * * *

* * *

When a train is disabled so it may obstruct an adjacent track, trains on that track must be stopped.

721. Enginemen and firemen must * * * frequently look back, especially while rounding curves, to see whether train is intact.

812. * * *

* * * cranes * * * on their own wheels * * * must be placed in rear of train. Such shipments must in all cases be passed upon by Mechanical Department Inspectors and pronounced loaded in strict accord with M. C. B. Rules before being moved in through freight trains. * * *

* * *

Note: M. C. B. Rules mentioned above are now covered by Association of American Railroad Rules governing Loading of Commodities on Open Top Cars.

Rules of the Association of American Railroads governing the loading of commodities in open top cars read in part as follows:

* * *

Anchors must be attached to extreme front and rear of rotating portion. If construction of machine will not permit application to extreme rear, they must be placed as close to rear as construction will permit. Rods with hooked ends must not be used.

* * *

Boom end of crane must travel.

* * *

Because the freight train was hauling an engine in tow, the speed of this train was restricted to 25 miles per hour. The maximum authorized speed for the passenger train was 65 miles per hour.

Description of Accident

No. 72, a north-bound second-class freight train, consisting of engine 242, 6 freight cars, 1 crane, 34 freight cars, 1 engine in tow and a caboose, in the order named, departed from Hamlet Yard, 6.42 miles south of the point of accident, at 7:30 a. m., 2 hours 45 minutes late, departed from RA Tower, the last open office, at 7:45 a. m., and while it was moving on the northward main track and on a 1°30' curve to the left at an estimated speed of 15 miles per hour the front truck of the crane, the seventh unit in the train, became derailed at a point 0.82 mile north of RA Tower. This train, remaining coupled, continued to proceed, and the derailed wheels moved in line with the northward main track a distance of 3,186 feet to the point where the counterweight end of the rotating portion of the crane fouled the southward main track and was struck by First 5.

First 5, a south-bound first-class passenger train, consisted of engine 268, four express cars, one mail car, one baggage-express car, one passenger baggage car, two coaches and one Pullman sleeping car, in the order named. All cars were of steel construction. This train passed Hoffman, the last open office, 6.78 miles north of the point of accident, at 7:42 a. m., 14 minutes late, passed signal 246.1, which

displayed proceed, and while moving on the southward main track at an estimated speed of 45 miles per hour it struck the rotating portion of the crane.

The engine, the first three cars and the front truck of the fourth car of First 5 were derailed. The engine stopped on its left side, 201 feet south of the point of collision, immediately west of the southward main track and practically at right angles to it. The tender was torn loose from the engine and stopped upright, in reverse direction, parallel to the engine and against the driving-wheel assembly. The first two cars stopped upright, across both main tracks, at right angles to them, and immediately north of the tender. The third car stopped at an angle of 30 degrees to the track, with the rear end on the roadbed, and leaned to the west at an angle of 45 degrees. The first car was destroyed. The cab of the engine was demolished, and the engine and the second car were badly damaged. The third and fourth cars were slightly damaged. The engine and the first six cars of No. 72 were not derailed or damaged. The crane and the eighth car overturned to the east and stopped east of the northward main track and parallel to it. The front truck of the ninth car and the tenth to fourteenth cars, inclusive, were derailed. The eleventh to fourteenth cars, inclusive, were demolished and the remainder of the derailed equipment was badly damaged.

The weather was clear at the time of the accident, which occurred about 7:50 a. m.

The engineer of First 5 was killed, and the fireman was injured.

United States Army crane 2587, the seventh unit of No. 72, is a self-propelled rotating hoisting crane having a lifting capacity of 25 tons, and is equipped with a 50-foot boom. At the time of the accident the boom, which had been detached, was on the eighth car. The operating cables were disconnected. The crane, exclusive of the boom, weighs 132,200 pounds. It is 26 feet 3 inches long between the pulling faces of the couplers, 10 feet 6 inches wide, and 14 feet 2 inches high. The cable winding drum, the internal-combustion motor, the operating controls and the boom fulcrum are mounted on a cast-steel rotating platform 15 feet 6-1/2 inches long, 5 feet wide at the boom-end, and 10 feet wide at the motor, and the other end is 10 feet wide and 1 foot thick to provide counterweight for the boom-end. The platform is mounted about 8 inches above the body of the car and on a vertical rotating shaft located 4 feet 6-1/2 inches from the boom-end and 11 feet from the counterweight end. Four rollers are provided at points equidistant from the vertical shaft. The platform is moved by a pinion gear which meshes with a circular rack attached to the body of the car. The crane is provided with two 4-wheel trucks spaced 13 feet 8 inches between center pins,

and the wheelbase of each truck is 5 feet 6 inches long. A system of gears and shafting transmits power from the hoisting motor to the axles of the trucks.

Discussion

No. 72 was moving at a speed of about 15 miles per hour as it approached the point where the accident occurred. Soon after this train entered the $1^{\circ}30'$ curve to the left immediately south of the point of accident, the front truck of the crane became derailed. The train remained coupled and the derailed wheels of the crane continued in line with the track a distance of 3,186 feet northward to the point where the rotating portion of the crane, which had swung to a position at right angles to the tracks and fouled the southward main track, was struck by First 5. The engineer and the front brakeman had observed their train as it moved on a curve to the right about 4,100 feet south of the point of derailment, and the fireman had observed the train as it entered the curve on which the derailment occurred. None of these employees saw any indication of derailment prior to the accident. The conductor and the flagman were in the caboose, and they had made running inspections of their train at frequent intervals. Soon after the train entered the curve on which the derailment occurred the conductor saw an unusual amount of dust in the vicinity of the front of the train, and he was making an attempt to stop the train by the use of the conductor's valve when the collision occurred.

At First 5 was approaching the point where the accident occurred the speed was about 60 miles per hour, in territory where the maximum authorized speed was 65 miles per hour. The enginemen were maintaining a lookout ahead. The members of the train crew were in various locations throughout the cars of the train. The engineer was killed in the accident. The fireman said that he and the engineer first saw that the crane was fouling the southward main track from a distance of about one-fourth mile, and the engineer immediately moved the brake valve to emergency position. The speed of First 5 was about 45 miles per hour when the collision occurred. The brakes of this train had been tested and had functioned properly en route.

Beginning at the south end of the curve on which the crane was derailed, the superelevation increased $1/4$ inch in each 19.5 feet throughout the first 251 feet. The derailment occurred 487.5 feet north of the south end of the curve, where the curvature was $1^{\circ}30'$, the gage was 4 feet 8- $1/2$ inches and the superelevation was 4- $1/2$ inches. Marks on the track structure indicated that the outer edges of the treads of the left wheels of the front truck of the crane had moved diagonally inward on the top of the low rail a distance of 18 inches, then the wheels dropped to the ties inside the low rail at a

point 1 foot 7 inches northward. From this point northward the ties were marked about 8 inches inside the low rail and the ties and ballast were marked between 12 inches and 24 inches outside the west rail throughout a distance of 3,186 feet. Boiler-plate punchings, which were used as ballast on the crane, had been spilled between the main tracks at a point 62 feet north of the first mark of derailment. There was no mark indicating that the right wheels of the front truck of the crane had been in contact with any portion of the track structure after this truck became derailed. Marks on the outside of the left truck-side frame and on other portions of the derailed truck indicated that the left side of the truck had slid on the west rail at an angle to the left from the point of derailment to the point of collision.

The crane involved was en route from Maxton, N. C., 29.42 miles south of the point of accident, to Fort Bragg, N. C., a distance of 92 miles. Before the crane was moved from Maxton the counterweight of the rotating portion was arranged to be at the north end of the crane. The crane was moved from Maxton to Laurinburg, 7.1 miles, on August 15. Because the rotating portion had not been properly secured and had become displaced, the crane was placed on a spur track at Laurinburg. On August 16, United States Army personnel re-aligned the rotating portion of the crane and guyed it at the boom end by an arrangement of two stays crossing each other diagonally and extending from the eyes of the boom-fulcrum downward to the upper flanges of the side sills. Each of these stay arrangements consisted of a turnbuckle connecting two eye-bolts 1-1/4-inch thick. Twisted wire cable 3/4-inch thick and about 5 feet long and consisting of 7 strands of 6 wires each were passed singly through each eye-bolt and through the eye of the boom-fulcrum at the upper end, and through the eye of a flat hook at the side-sill end. The loose ends of each length of cable together with the strength portion were held by safety clips clamped together by two 5/8-inch bolts and nuts and provided with elongated holes 1-1/32 inches by 7/8 inch at their minimum dimensions. Two clips were used at each end of each stay. After the rotating portion of the crane had been secured, the assistant general car foreman inspected the crane, and then the crane was moved northward to Hamlet, 15.1 miles, where it was assembled in the train of No. 72, about 4 a. m., August 19. Other members of the car department inspected the crane in the train of No. 72 at Hamlet, and the train departed at 7:30 a. m. These employees thought that the rotating portion of the crane was properly secured and in accordance with the rules. After the accident, one of the stay arrangements was found between the main tracks at a point 52 feet north of the first mark of derailment, and the other stay was found in the vicinity of the point of collision. Examination of the first stay disclosed that the lower length of cable remained in place through the lower eye-bolt and the flange hook and the cable clamps were in place and tightly clamped. The upper length of cable was securely attached to the upper eye-bolt and tightly clamped,

but the other end had pulled through its clamp and was free of the eye of the boom-fulcrum.

The rules of the Association of American Railroads, governing the movement in trains of rotary machinery on its own wheels with boom detached, provide that, to prevent displacement the front and the rear ends of the rotating portion must be securely anchored by the application of rods measuring 1-1/4 inches in diameter for cranes of the same weight as the crane involved. The rods must be secured by nuts and washers. If lock nuts are not used, the threaded ends of the rods must be riveted. To prevent vertical movement, two hardwood blocks 2-1/2 inches by 4 inches by 12 inches must be driven between the rotating portion and the car body and nailed to hardwood members, which must be 6 inches wide and 2 inches less in thickness than the distance between the rotating portion and the car body, and must extend outside the rotating portion and be secured to the car body by 3/4-inch bolts. In addition, the security of the machinery to be moved must be certified by an authorized inspector, who is required to attach to each side of the machine a prescribed form bearing certification that the machinery is properly secured and that the propelling mechanism is disengaged. In the instant case, the propelling mechanism was disengaged.

The investigation disclosed that the rotating portion of the crane had not been properly secured, and that the prescribed forms of certification of security had not been attached to the crane, in accordance with the rules of the Association of American Railroads. The rotating portion of the crane had been braced, to prevent lateral movement, by two stays consisting of clamps, wire cable, eye bolts and turn-buckles attached diagonally crosswise each other at the boom end and between the eyes of the boom fulcrum and the side sills of the car body. No stays were arranged to brace the counterweight end, and no jack or blocking was provided to prevent vertical movement. As a result during movement of the crane there was some vertical motion of the rotating portion and each time the boom end pivoted downward the cable stays became increasingly slackened, and the slack permitted lateral motion of the rotating portion. Because of repeated vertical and lateral movement the cable slipped free of the clamp at the end attached to the eye of the boom. When the crane entered the curve to the left, the counterweight swung to the left or low side of the curve. This displacement of the rotating portion caused the crane to incline toward the low side of the curve and the right wheels to rise above the high rail, and then the left wheels dropped inward from the low rail. Since the track centers were 13 feet apart at the point of collision, when the counterweight end was turned toward the southward main track and at right angles to the tracks it extended 4-1/2 inches beyond the

east rail of the southward main track, the track on which First 5 was being operated.

Cause

It is found that this accident was caused by the rotating portion of a crane moving in a freight train fouling an adjacent main track in front of an approaching passenger train.

Dated at Washington, D. C., this fourteenth day of October, 1946.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.