

INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3016

NORFOLK AND WESTERN RAILWAY COMPANY

REPORT IN RE ACCIDENT

NEAR WINDSOR, VA., ON

AUGUST 19, 1946

SUMMARY

Railroad: Norfolk and Western

Date: August 19, 1946

Location: Windsor, Va.

Kind of accident: Derailment and collision

Trains involved: Passenger : Freight

Train numbers: 21 : Extra 1207 East

Engine numbers: 123 : 1207

Consist: 5 cars : 149 cars, caboose

Estimated speed: Standing : 15 m. p. h.

Operation: Timetable, train orders and automatic block-signal system

Tracks: Double; tangent; 0.246 percent ascending grade eastward

Weather: Clear

Time: 8:55 p. m.

Casualties: 1 killed; 13 injured

Cause: Irregular alinement of track, and failure properly to control speed of freight train in compliance with flagging signals

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3016

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

NORFOLK AND WESTERN RAILWAY COMPANY

October 21, 1946.

Derailment near Windsor, Va., on August 19, 1946, caused by irregular alinement of track, and collision caused by failure properly to control the speed of the freight train in compliance with flagging signals.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On August 19, 1946, there was a derailment of a passenger train, and derailed equipment of this train was struck by a freight train on an adjacent track, on the Norfolk and Western Railway near Windsor, Va. The derailment and the collision resulted in the death of 1 train-service employee and the injury of 11 passengers and 2 train-service employees.

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.

Location of Accident and Method of Operation

This accident occurred on that part of the Norfolk Division extending between Norfolk and Crewe, Va., 128.78 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 timetable, train orders and an automatic block-signal system. The passenger train was being operated on the westward main track, and the freight train was on the eastward main track. The derailment occurred on the westward main track 34.29 miles west of Norfolk and 0.87 mile west of the station at Windsor, and the collision occurred 485 feet westward. The main tracks are tangent throughout a distance of 10 miles immediately east of the point of derailment and 44 miles westward. The grade on the westward main track is level at the point of derailment. The grade for east-bound trains on the eastward main track is 0.246 percent ascending 1.45 miles to the point of collision and 144 feet eastward.

In this vicinity the distance between the center-lines of the main tracks is 13 feet. The track structure consists of 131-pound rail, 39 feet in length, laid on an average of 24 treated ties per rail length. It is fully tieplated with double-shoulder tieplates, spiked with 4 spikes per tie-plate, provided with 6-hole angle bars equipped with joint springs and an average of 8 rail anchors per rail length, and is ballasted with crushed stone to a depth of 14 inches.

Automatic signal 345, governing west-bound movements on the westward main track, is 1,943 feet east of the point of derailment. Automatic signal 362, governing eastbound movements on the eastward main track, is 1.05 miles west of the point of collision. These signals are of the position-light type and are continuously lighted.

Operating rules read in part as follows:

10. Color Signals

Color	Indication
(a) Red.	Stop.

* * *

35. The following signals will be used by flagmen:

* * *

Night signals--A red light,
A white light,
Torpedoes and
Fusees.

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes and, when necessary, in addition displaying lighted fuseses.
* * *

* * *

The front of the train must be protected in the same way when necessary by the front trainman, or in his absence, by the fireman.

* * *

102. When a train is disabled or stopped suddenly by an emergency application of the air brakes or other causes, 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.

---No maximum authorized speed for trains moving in the vicinity of the point of accident was specified by rule or by special instruction.

Description of Accident

No. 21, a west-bound first-class passenger train, consisted of engine 123, a 4-8-2 type, one baggage-mail car, one passenger-baggage car, two coaches and one Pullman sleeping car, in the order named. All cars were of steel construction. This train departed from Suffolk, the last open office, 11.51 miles east of Windsor, at 8:12 p. m., on time, passed Windsor, passed signal 345, which displayed proceed, and was moving on the westward main track at an estimated speed of 60 miles per hour when it was derailed. The engine stopped on its left side, with the front of the engine 539 feet west of the point of derailment, 29 feet north of the westward main track, and at an angle of 35° to it. The tender, remaining coupled to the engine, stopped on its left side, across both main tracks and in line with the engine. The cars stopped practically upright and in line with the track, with the front end of the first car against the rear of the tender. The engine and tender and the first two cars were badly damaged. The third, fourth and fifth cars were considerably damaged. About 27 minutes after the derailment occurred, the tender of the engine, which obstructed the eastward main track, was struck by Extra 1207 East.

Extra 1207 East, an east-bound freight train, consisting of engine 1207, a 2-6-6-4 type, 149 cars and a caboose, passed Poe, the last open office, 42.74 miles west of the point of derailment, at 7:21 p. m., passed signal 362, which displayed proceed, and was moving on the eastward main track at an estimated speed of 15 miles per hour when it collided with the derailed tender of No. 21. The engine and the first four cars were derailed. The engine and tender, remaining coupled, stopped on their right sides south of the eastward main track, with the front of the engine about 144 feet east of the point of collision. The engine and tender and the first two cars were badly damaged. The third and fourth cars were slightly damaged.

The weather was clear. The derailment occurred about 8:28 p. m. and the collision, about 8:55 p. m.

The engineer of Extra 1207 East was killed and the fireman was injured in the collision. The fireman of No. 21 and 11 passengers were injured in the derailment.

Discussion

No. 21 was moving on tangent track at a speed of about 60 miles per hour when it was derailed. As this train was approaching the point where the derailment occurred the headlight was lighted brightly, and the enginemen were maintaining a lookout ahead. The brakes of this train had been tested and had functioned properly en route. The engine had been riding smoothly. Signal 345, located 1,943 feet east of the point of derailment, displayed proceed for No. 21. Just before the derailment occurred the enginemen felt an unusual movement of the engine. Then the engine thrust hard to the right and to the left, and the engineer immediately moved the brake valve to emergency position, but the derailment occurred before the train could be stopped. Immediately after the derailment occurred the fireman proceeded westward to provide flag protection. Because of escaping steam in the cab of their engine, as a result of broken steam pipes, the enginemen were unable to obtain fuses from the engine, but a red and a white lantern were obtainable. The fireman had the red lantern, and had reached a point about 3,600 feet west of his engine when he saw the reflection of the headlight of a train approaching on the eastward main track about 1 mile distant. He immediately gave stop signals with the lighted red lantern. He said his signals were acknowledged by two short blasts on the engine of the approaching train, but the engine continued to work steam and the speed of the train was about 45 miles per hour when the engine passed him. The engineer of No. 21 and a maintenance-of-way employee were about 600 feet west of the engine of No. 21, and they gave stop signals with a lighted white lantern and a flashlight as Extra 1207 East was approaching. They said that, at this time, several

short blasts were sounded on the whistle of the approaching engine. They estimated the speed of Extra 1207 East as about 15 miles per hour when the collision occurred.

As Extra 1207 East was approaching the point where the collision occurred the speed was about 45 miles per hour. The enginemen were maintaining a lookout ahead. The front brakeman was in the brakeman's booth on the tender of the engine. The conductor and the flagman were in the caboose. The brakes of this train had been tested and had functioned properly en route. Signal 362, located 1.05 miles west of the point where the collision occurred, displayed proceed. When the engine was in the immediate vicinity of signal 362 the fireman saw stop signals being given with a lighted red lantern. The fireman said the engineer acknowledged these stop signals by sounding two short blasts on the engine whistle, then closed the throttle lever and made a light service brake-pipe reduction. The fireman did not observe whether this brake application was released. The speed had been reduced to about 20 miles per hour when the fireman saw stop signals being given with a lighted white lantern about 500 feet distant. Immediately afterward the engineer called a warning, and the fireman jumped from the engine. The conductor said he observed on the air gauge in the caboose that a brake-pipe reduction of about 10 pounds was made, then after the train had moved a distance of about 400 feet, an emergency application was made. The collision occurred immediately afterward. The engineer was killed, therefore, it could not be determined why proper action was not taken by him to stop the train in compliance with the stop signals given by the fireman of No. 21. Examination of engine 1207 after the accident disclosed that the throttle lever was in closed position, the independent brake valve was in running position, the automatic brake valve was in emergency position and the sander valve in closed position. All cars of this train were equipped with AB-type brake valves. There was no condition found that would prevent proper application of the train brakes.

Examination of the westward main track disclosed that throughout a distance of about 600 feet immediately east of the point where the engine of No. 21 was derailed the north and south rails alternately had been kinked laterally from 3/4 inch to 3 inches. Beginning at a point about 160 feet immediately east of the point of derailment the inside spikes of the north rail were raised from 3/8 inch to 5/8 inch at 32 ties westward and the track structure was forced out of alignment to the north from 1-1/2 inches to 3 inches. At the next 18 ties westward the inside spikes of the south rail were raised from 3/8 inch to 1/2 inch and the track structure was forced out of alignment to the south from 1-1/2 inches to 3 inches. At the next 15 ties westward the inside spikes of the north rail were raised from 5/8 inch to 1 inch and the track structure was forced out of alignment to the north from 2 to 3 inches. At 9 tie locations westward the inside spikes

of the south rail were raised high enough to permit the base of the rail to be free of the spikes, and this rail was canted outwardly. The adjoining rail westward was overturned to the south, and from this point westward to the point where the engine stopped the track was torn up. At a point 21.5 feet west of the east end of the canted rail wheel marks appeared on the gage side of the head of this rail. From this point westward to the point where the track was torn up wheel marks appeared on the web and the base of the canted rail and the overturned rail. At a point 29 feet west of the first mark on the south rail heavy wheel marks appeared on the gage side of the head of the north rail, then there were flange marks on the ties inside the north rail to the point where the track was torn up.

There was no defective condition of the engine of No. 21 prior to the accident, and there was no indication of dragging equipment or of any obstruction having been on the track. The investigation disclosed that the last movement on the westward main track in the vicinity of the point of derailment was Extra 1203 West, a west-bound freight train, which passed this point about 2 hours 40 minutes prior to the derailment. The consist of this train included a scale test-car, which was the first car ahead of the caboosé. After the accident occurred, the conductor of Extra 1203 West reported to the division officers that when his train was moving at a speed of about 60 miles per hour in the vicinity of the point where the derailment occurred he observed an unusual lateral thrusting movement of the scale test-car, and he opened the conductor's valve on the caboosé. The train stopped with the caboosé standing about 3,000 feet west of the point where No. 21 later was derailed. The conductor said the front end of the car thrust to the south and the rear end to the north. The conductor and the flagman inspected the scale test-car, but no defective condition of the car was observed. Then the conductor looked eastward from a point near the caboosé, but he did not observe any displacement of the track structure, but this lateral movement ceased about 2,500 feet east of the point where the caboosé stopped, and the conductor could not see the track beyond this distance. No examination of the track was made by a member of the crew of Extra 1203 West, and no report of the occurrence was made until the train reached Petersburg, about 47 miles westward, where the car was set out, and the conductor instructed the car foreman at Petersburg to inspect the car. Extra 1203 West did not exceed a speed of 40 miles per hour between the point where the train was stopped and Petersburg, and the scale test-car rode smoothly. The section foreman in the charge of the track in this territory inspected the main tracks in this vicinity about 2 hours before Extra 1203 West passed this point, and no defective condition of the track was observed. No examination of the track was made by the track force between the time Extra 1203 West stopped at this location and the time No. 21 was derailed.

The scale test-car involved, N. & W. 514751, is a 4-wheel, rigid wheel-base type, steel car, and its weight is 100,000 pounds. Each pair of wheels is mounted in a pedestal arrangement, and the journals are provided with roller bearings. The wheels are of wrought-steel construction, and the diameter of the wheels is 36 inches. Each pedestal is provided with one semi-elliptical spring. The distance between the centers of the wheels is 7 feet, and the overall length of the car is 15 feet. Prior to the accident, there was no speed restriction specified for trains handling this car. After the accident, members of the mechanical force inspected the scale test-car and no defective condition of the car was observed. The lateral motion and the flange wear were within the prescribed limits. During tests several days after the accident occurred, the scale test-car was placed next ahead of the caboose of a freight train of similar consist to that of Extra 1203 West on the day of accident. Observations made of the action of this car while moving in the test train at a speed of 45 miles per hour and above disclosed that the car would thrust laterally to the right and to the left at the rate of one thrust to each 39-foot rail length. Throughout a distance of about 9 miles the test train was moving at a speed of 51.5 miles per hour, and within 1.5 miles of this territory examination disclosed that the rails were kinked laterally about 1/2 inch. The engineer of tests stated that the track at the point where No. 21 was derailed had been displaced sufficiently, by the action of the scale test-car when it was moving in this territory in Extra 1203 West at a speed of approximately 60 miles per hour, to cause the engine of No. 21 to become derailed.

Extra 1207 East was moving on a 0.246 percent ascending grade at a speed of about 45 miles per hour when the fireman of No. 21 gave stop signals from a point about 3,600 feet west of his derailed engine. The engine of Extra 1207 East was about 1 mile west of the fireman when he first gave stop signals and, at that time, the engineer of Extra 1207 East acknowledged the stop signals by sounding the engine whistle. If the engineer of Extra 1207 East had taken proper action to stop his train when the stop signals were first observed, there was sufficient distance between the location of his engine and the derailed equipment of No. 21 in which to stop Extra 1207 East short of the obstruction.

Cause

It is found that the derailment was caused by irregular alinement of track, and the collision by failure properly to control the speed of the freight train in compliance with flagging signals.

Dated at Washington, D. C., this twenty-first day of October, 1946.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.