

RAILROAD ACCIDENT INVESTIGATION

Report No 3822

THE COLORADO AND SOUTHERN RAILWAY COMPANY

BROOMFIELD, COLO

SEPTEMBER 22, 1958

INTERSTATE COMMERCE COMMISSION

Washington



SUMMARY

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DATE	September 22, 1958	
RAILROAD	Colorado and Southern	
LOCATION	Broomfield, Colo	
KIND OF ACCIDENT	Head-end collision	
TRAINS INVOLVED	Passenger	Freight
TRAIN NUMBERS	30	Extra 700D North
LOCOMOTIVE NUMBERS	Diesel-electric unit 9936B	Diesel-electric units 700D, 700C, 119B, and 119A
CONSISTS	7 cars	51 cars, caboose
ESTIMATED SPEEDS	20 m p h	30 m p h
OPERATION	Timetable and train orders	
TRACK	Single, 2°01' curve, 0.77 percent descending grade southward	
WEATHER	Clear	
TIME	6:48 a m	
CASUALTIES	3 killed, 18 injured	
CAUSE	Inferior train occupying main track on time of superior train without protection	

INTERSTATE COMMERCE COMMISSION

REPORT NO 3822

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

THE COLORADO AND SOUTHERN RAILWAY COMPANY

January 23, 1959

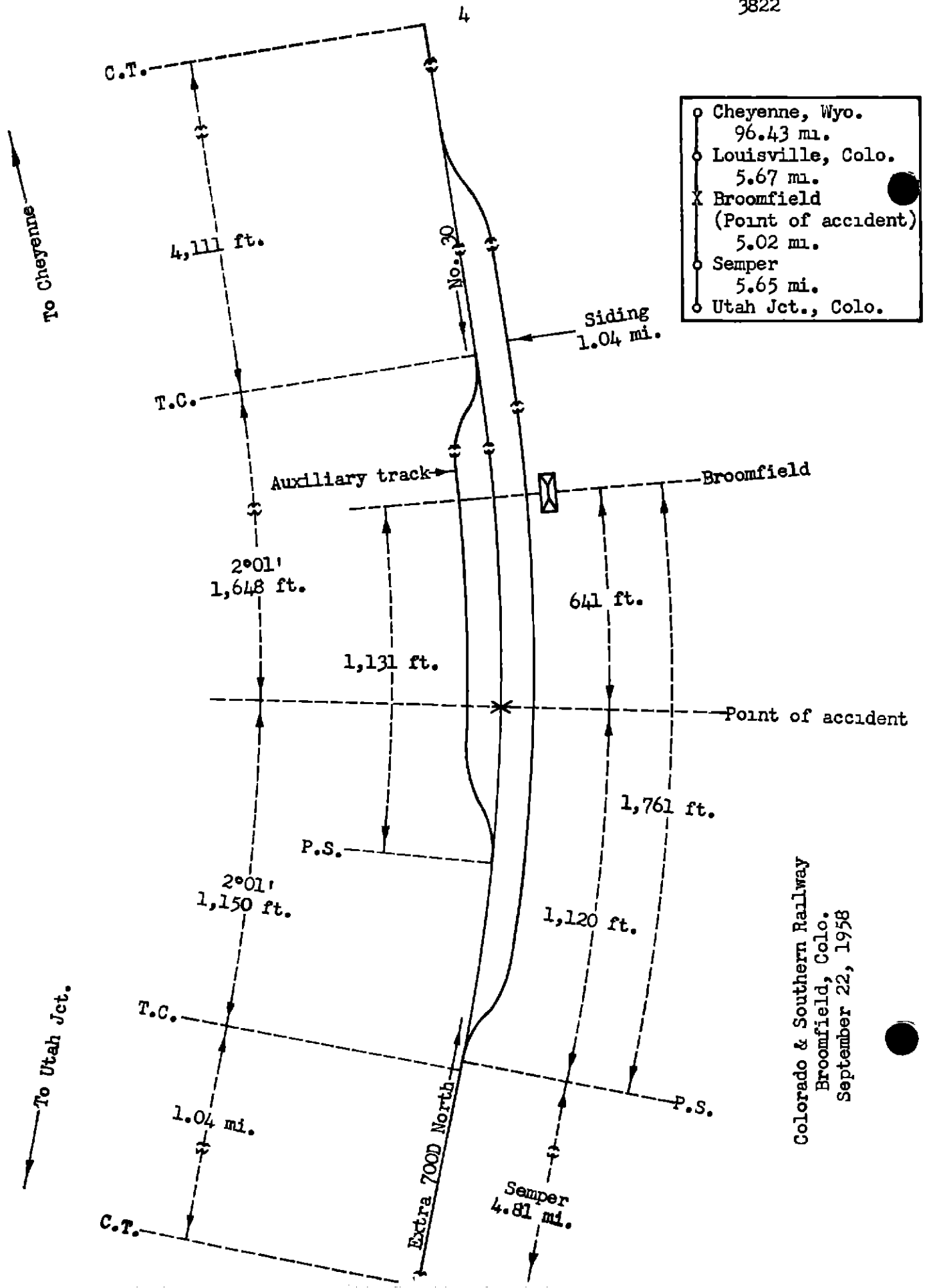
Accident at Broomfield, Colo , on September 22, 1958, caused by an inferior train occupying the main track on the time of a superior train without protection

REPORT OF THE COMMISSION¹

FREAS, Commissioner

On September 22, 1958, there was a head-end collision between a passenger train and a freight train on the Colorado and Southern Railway at Broomfield, Colo , which resulted in the death of 3 train-service employees, and the injury of 13 passengers, 2 railway-express messengers, and 3 train-service employees. This accident was investigated in conjunction with a representative of the Public Utilities Commission of Colorado

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



Colorado & Southern Railway
 Broomfield, Colo.
 September 22, 1958

Location of Accident and Method of Operation

This accident occurred on that part of the Northern Division extending between Utah Jct , Colo , and Cheyenne, Wyo , 112.8 miles, a single-track line over which trains are operated by timetable and train orders. There is no block system in use. At Semper, 5.65 miles north of Utah Jct , a siding about 4,100 feet in length parallels the main track. At Broomfield, Colo , 10.7 miles north of Utah Jct , a siding 1.04 miles in length parallels the main track on the east. The south switch of the siding is 1,761 feet south of the station at Broomfield. An auxiliary track parallels the main track on the west in the vicinity of the point of accident. Each end of this track connects with the main track. The south switch is located 1,131 feet south of the station. The accident occurred on the main track at a point 1,120 feet north of the south switch of the siding at Broomfield and 641 feet south of the station. From the south there are, in succession, a tangent 1.04 miles in length, a 2°01' curve to the left 1,150 feet to the point of accident and 1,648 feet northward. From the north there are, in succession, a tangent 4,111 feet in length and the curve on which the accident occurred. The grade is 0.77 percent descending southward at the point of the accident.

In the vicinity of the point of accident the view of the track ahead from a locomotive moving in either direction is considerably restricted by curvature of the track and structures erected near the right-of-way.

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

TIMETABLES

5 * * *

Unless otherwise specified, the time applies

On single track, at the switch where an opposing train clears * * *

OPERATING RULES

73 Extra trains are inferior to regular trains

S-87 An inferior train must keep out of the way of opposing superior trains and failing to clear the main track by the time required by rule must be protected as prescribed by Rule 99.

Extra trains must clear the time of opposing regular trains not less than five minutes unless otherwise provided * * *

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 forward trainman or in his absence by the fireman.

* * *

The maximum authorized speeds in the vicinity of the point of accident are 59 miles per hour for passenger trains and 45 miles per hour for freight trains. However, the speed of all trains is restricted to 20 miles per hour over a street crossing located 541 feet north of the point of accident.

Description of Accident

No. 30, a southbound first-class passenger train, consisted of diesel-electric unit 9936B, 4 baggage cars, 1 mail-baggage car, 1 coach, and 1 sleeping car, in the order named. The cars were of conventional all-steel construction. The 4th and the 7th cars were equipped with tightlock couplers. This train departed from Cheyenne at 4:04 a. m., 11 minutes late, departed from Louisville, Colo., the last open office, 5.67 miles north of Broomfield, at 6:39 a. m., 1 minute late, passed the station at Broomfield at 6:47 a. m., on time, and while moving at an estimated speed of 23 miles per hour it collided with Extra 700D North at a point 641 feet south of the station at Broomfield and 1,120 feet north of the south siding-switch.

Extra 700D North, a northbound freight train, consisted of diesel-electric units 700D, 700C, 119B, and 119A, coupled in multiple-unit control, 51 cars, and a caboose. This train departed from Rice Yard, Denver, Colo., 4.5 miles south of Utah Jct., at 6:15 a. m. As the train passed Prospect, 2.4 miles south of Utah Jct., the members of the crew received copies of a Clearance Form A and several train orders, including train order No. 18 which read in part as follows:

Engine 700D run extra Prospect to Cheyenne * * *

All first class trains due at * * * Cheyenne at or

before 4:20 a. m. have passed * * * No. 30 has no signals

Extra 700D North passed Utah Jct. about 6:28 a. m., passed Semper at 6:38 a. m., passed the south siding-switch at Broomfield about 6:47 a. m., and while moving at an estimated speed of about 30 miles per hour it collided with No. 30.

The front truck of the locomotive, and all trucks of the 1st to the 3rd cars, inclusive, of No. 30 were derailed. The underframe of the 1st diesel-electric unit of Extra 700D North mounted the underframe and superstructure of the locomotive of No. 30 and the control compartment of the locomotive of No. 30 was crushed. The first car stopped to the rear of the locomotive with the front end on the track structure and the rear end approximately 10 feet west of the main track. It leaned to the west at an angle of about 15 degrees. The 2nd car stopped upright to the rear of the 1st car with the front and rear ends, respectively, approximately 12 feet west and 10 feet east of the main track. The 3rd car stopped upright to the rear of the 2nd car with the front end approximately 11 feet east of the main track and the rear end on the track structure. The locomotive was heavily damaged. The 2nd car was destroyed. The 1st car, and the 3rd to the 5th cars, inclusive, were somewhat damaged. The 6th car was slightly damaged. The 1st and the 2nd diesel-electric units, the front truck of the 3rd diesel-electric unit, and all trucks of the 9th to the 13th cars, inclusive, of Extra 700D North were derailed. The 1st diesel-electric unit stopped on top of the front end of the locomotive of No. 30. The 2nd diesel-electric unit stopped upright with the front truck on top of the rear truck of the 1st unit and the rear end on the track structure. The 3rd diesel-electric unit stopped upright on the track structure to the rear of the 2nd unit. The derailed cars stopped on or near the

track structure. The 1st diesel-electric unit was destroyed. The 2nd to the 4th diesel-electric units, inclusive, were somewhat damaged. Three of the derailed cars were destroyed and 2 were heavily damaged.

The engineer and the fireman of No. 30, and the engineer of Extra 700D North were killed. The flagman of No. 30, and the front brakeman and the fireman of Extra 700D North were injured.

The weather was clear and it was daylight at the time of the accident, which occurred about 6 48 a m.

During the 30-day period preceding the day of the accident the average daily movement in the vicinity of the point of accident was 7 3 trains.

The locomotive and the caboose of Extra 700D North were provided with two-way radio-telephone equipment.

Discussion

The rules of this carrier provide that an inferior train must clear the time of an opposing superior train not less than 5 minutes before the leaving time of the superior train unless otherwise provided. They also provide that when an inferior train fails to clear a superior train by the time required by rule it must be protected as prescribed by Rule No. 99. No. 30 was due to leave Broomfield at 6 47 a m, and to leave Semper, 5 02 miles south of Broomfield, at 6 53 a m. If Extra 700D North proceeded to Semper to meet No. 30 it was required to clear the main track or be protected not later than 6 48 a m, and if it proceeded beyond the south switch of the siding at Semper it was required to clear the main track or be protected not later than 6 42 a m.

As No. 30 was approaching the point where the accident occurred the enginemen were in the control compartment at the front of the locomotive. The conductor and the front brakeman were in the sixth car, and the flagman was in the seventh car. The brakes had been tested and had functioned properly when used en route. The headlight was lighted. The speed was reduced to 20 miles per hour to comply with the speed restriction at the street crossing north of the station at Broomfield, and it was increased slightly as the train entered the curve on which the accident occurred. The conductor, the front brakeman, and the flagman, who were the surviving members of the crew, said that their first knowledge of anything being wrong was when the brakes of the train became applied in emergency immediately before the collision occurred. The speed of the train was not materially reduced before the collision occurred.

The surviving members of the crew of Extra 700D North said that before the train departed from Denver they compared the time indicated by their watches with the time indicated by a standard clock and there was only a slight variation. The fireman said that the engineer and he compared time before the train departed from Denver and that there was only a slight variation in their watches. He said that the engineer appeared to be normal. As Extra 700D North was approaching the point where the accident occurred the enginemen and the front brakeman were in the control compartment at the front of the locomotive. The conductor and the flagman were in the caboose. The brakes of this train had been tested and had functioned properly when used en route. The headlight was lighted. The surviving members of the crew said they had expected that the train

would take siding at Semper to clear No 30. The fireman said that when the train was in the vicinity of Utah Jct, he asked the engineer where he intended to clear the main track for No 30 but he did not receive a satisfactory answer. He said that as the train was approaching the south siding-switch at Semper the engineer initiated a service application of the brakes. However, the brakes were released and the train proceeded northward. The train passed the south siding-switch at 6 38 a m. The fireman said he immediately warned the engineer that they should have taken siding at Semper. The engineer replied that they had sufficient time. The fireman said that shortly after the train passed the siding-switch, a member of the crew in the caboose called the engineer by radio-telephone and asked him where he intended to clear the main track for No 30. The fireman said the engineer replied that the meet would be made at Broomfield. As the train proceeded northward the fireman continued to warn the engineer that the train was occupying the main track on the time of No 30, but he took no action to stop the train. He said that the engineer initiated a service application of the brakes when the train was approximately 750 feet south of the south siding-switch at Broomfield but the application was not sufficient to stop the train short of the switch. The fireman said that he then observed No 30 closely approaching on the curve and that he called a warning. Both the fireman and the front brakeman entered the engine compartment immediately before the collision occurred. The fireman said he thought that the engineer did not initiate an emergency application of the brakes but that the brakes became applied in emergency as a result of the collision. The front brakeman was inexperienced. He said he heard the fireman warn the engineer several times that the train was occupying the main track on the time of No 30. However, he said that since he was unfamiliar with the designations and locations of the sidings, he was relying on the judgment of the engineer regarding the meeting point. The conductor said that when the train was in the vicinity of Semper the flagman informed him that the front end of the train had passed the south siding-switch. The conductor immediately called the engineer by radio-telephone and informed him that he should have taken siding at Semper. He asked the engineer where he intended to clear the main track for No 30. He said that he was unable to understand the engineer's reply. He then instructed the engineer to stop the train, provide flag protection for the front end, and to move the train to the siding at Semper at the north switch. The engineer did not take action to comply with these instructions. The conductor said he then thought that he might have overlooked a provision in the train orders regarding the movement of the train with respect to No 30. He said that he proceeded to reread the orders. After rereading the orders and as the train was closely approaching Broomfield he called the engineer by radio-telephone and told him that he would apply the brakes in emergency if the engineer did not take immediate action to stop the train. The conductor said that the brakes became applied in emergency as he was about to operate the caboose emergency brake valve. A witness estimated that the speed of Extra 700D North was about 30 miles per hour when the collision occurred.

The engineer of Extra 700D North was killed in the accident and it could not be determined why he did not clear the main track for No 30 in the manner prescribed by the rules, and, failing to do so, why he did not stop the train and provide flag protection.

Cause

This accident was caused by an inferior train occupying the main track on the time of a superior train without protection.

Dated at Washington, D C , this twenty-third
day of January, 1959

By the Commission, Commissioner Freas

H D McCoy,

Secretary

(Seal)