

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3544

THE DENVER AND RIO GRANDE WESTERN
RAILROAD COMPANY

IN RE ACCIDENT

AT DOS, COLO., ON

NOVEMBER 20, 1953

SUMMARY

Date: November 20, 1963

Railroad: Denver and Rio Grande Western

Location: Dos, Colo.

Kind of accident: Head-end collision

Trains involved: Freight : Passenger

Train numbers: Extra 5571 East : 19

Engine numbers: Diesel-electric : Diesel-electric
units 5571, units 5531
5572, 5573, and and 5532
5574

Consists: 111 cars, caboose : 7 cars

Speeds: 20 m. p. h. : 5 m. p. h.

Operation: Signal indications

Track: Single, tangent; 1.0 percent
ascending grade eastward

Weather: Clear

Time: 4:55 a. m.

Casualties: 2 killed, 11 injured

Cause: Failure to operate east-bound train
in accordance with signal indications

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3544

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

THE DENVER AND RIO GRANDE WESTERN RAILROAD COMPANY

December 22, 1953

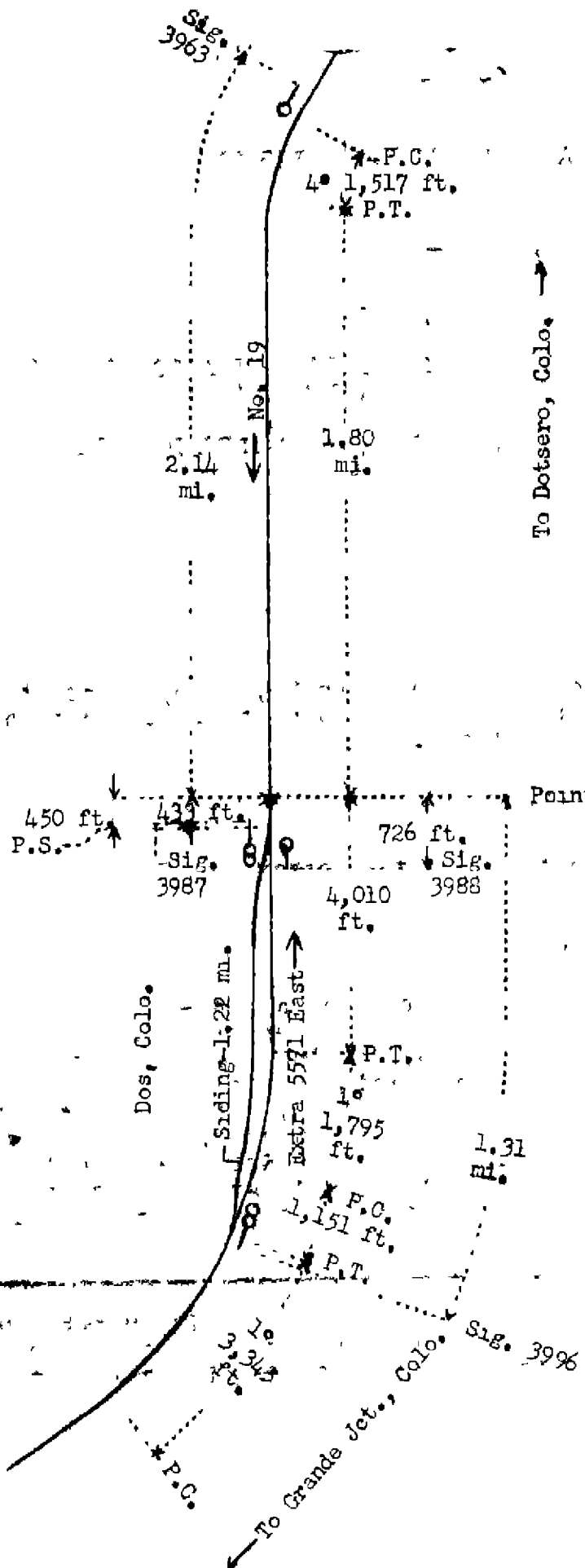
Accident at Dos, Colo., on November 20, 1953, caused by
failure to operate the east-bound train in accordance
with signal indications.

REPORT OF THE COMMISSION

CLARKE, Commissioner:

On November 20, 1953, there was a head-end collision between a freight train and a passenger train on the Denver and Rio Grande Western Railroad at Dos, Colo., which resulted in the death of two train-service employees, and the injury of four passengers, one railway mail clerk, one train baggageman, one assistant train baggageman, one Pullman Company employee, one employee not on duty, and two train-service employees. This accident was investigated in conjunction with a representative of the Public Utilities Commission of Colorado.

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



•	Dotsero, Colo.
○	19.4 mi.
○	Fünstön
○	25.3 mi.
○	Rifle
○	12.5 mi.
X	Dos
	(Point of accident)
	4.9 mi.
•	Grande Valley
	4.7 mi.
○	Una
	23.9 mi.
○	Cameo
	17.0 mi.
•	Grande Jct., Colo.

Report No. 3544
 Denver and Rio Grande Western Railroad
 Dos, Colo.
 Nov. 20, 1953

Location of Accident and Method of Operation

This accident occurred on that part of the Grand Junction Division extending between Grand Jct. and Dotsero, Colo., 107.7 miles. In the vicinity of the point of accident this is a single-track line, over which trains are operated by signal indications. At Dos, 50.5 miles east of Grand Jct., a siding 1.22 miles in length parallels the main track on the north. The accident occurred on the main track at a point 450 feet east of the east switch of this siding. From the west there are, in succession, a 1° curve to the left 3,343 feet in length, a tangent 1,151 feet, a 1° curve to the left 1,795 feet, and a tangent 4,010 feet to the point of accident and 1.80 miles eastward. From the east there are, in succession, a 4° curve to the left 1,517 feet in length, and the tangent on which the accident occurred. From the west the grade for east-bound trains is, successively, 0.5 percent descending 2,000 feet, level 200 feet, 0.4 percent ascending 1,000 feet, level 2,000 feet, 0.8 percent ascending 1,000 feet, level 1,900 feet, and 1.0 percent ascending 384 feet to the point of accident. The grade for west-bound trains is 1.0 percent descending throughout a distance of 4,182 feet immediately east of the point of accident.

Controlled signals 3996 and 3988, governing east-bound movements on the main track at Dos, are located, respectively, 1.31 miles and 726 feet west of the point of accident. Automatic signal 3963 and controlled signal 3987, governing west-bound movements, are located, respectively, 2.14 miles east and 433 feet west of the point of accident. These signals are of the color-light type and are approach lighted. The aspects applicable to this investigation and the corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
3996	Yellow-over-red	Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	APPROACH
3988	Red over reflectorized letter "P" marker	Stop.	STOP

3963	Yellow	Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	APPROACH
3987	Red-over-yellow	Proceed medium speed through turnout, preparing to stop at next signal, except when entering siding, be governed by Rule 105.	DIVERGING APPROACH
	Red-over-red	Stop.	STOP

These signals form part of a traffic-control system extending between Una and Dotsero. Una is located 9.6 miles west of Dos. The control machine of the traffic-control system is at Funston, 37.8 miles east of Dos. The operator receives instructions from the train dispatcher in Grand Jct. Visual indicators are provided which show track occupancy of each OS section of the main track and bonded portions of the sidings, and also show when a controlled signal displays an aspect to proceed. The control machine is so designed that an indication will be displayed if at any time the position of a power-operated switch does not correspond to the position of its controlling lever. Approach, time, indication, and route locking are provided.

This carrier's operating rules read in part as follows

DEFINITIONS

MEDIUM SPEED. A speed not exceeding one-half authorized speed, but not exceeding 30 miles per hour.

RESTRICTED SPEED. A speed that will permit stopping short of another train or an obstruction, but not exceeding 15 miles per hour.

34. All members of train and engine crews must, when practicable, communicate to each other by its name, the indication of all signals affecting the movement of their train or engine * * *

105. Unless otherwise provided, a train or engine using a siding must proceed at restricted speed * * *

* * *

661. If a signal, permitting a train or engine to proceed after being accepted, is changed to a "STOP" signal before it is reached, the stop must be made at once. * * *

822. Employees whose duties are connected with the movement of trains, must familiarize themselves with the rules governing the duties of others as well as their own, and must be prepared in case of an emergency, to act in any capacity to protect the safety of trains.

In the vicinity of the point of accident the maximum authorized speeds are 65 miles per hour for passenger trains and 50 miles per hour for freight trains.

Description of Accident

Extra 5571 East, an east-bound freight train, consisted of Diesel-electric units 5571, 5572, 5573, and 5574, coupled in multiple-unit control, 111 cars, and a caboose. This train departed from Grand Jct. at 3 a. m., and passed Grand Valley, 4.9 miles west of Dos and the last siding west of that point, at 4 42 a. m. It was intended that Extra 5571 East would hold the main track and No. 19 would enter the siding at Dos. However, Extra 5571 East passed signal 3996, which indicated Approach, passed signal 3988, which indicated Stop, trailed through the east siding-switch at Dos, which was lined for entry to the siding, and while moving at a speed of about 20 miles per hour it collided with No. 19 at a point 450 feet east of the east siding-switch.

No. 19, a west-bound first-class passenger train, consisted of Diesel-electric units 5531 and 5532, coupled in multiple-unit control, two baggage cars, one baggage-mail car, two baggage cars, one coach, and one sleeping car, in the order named. All cars were of all-steel construction. This train departed from Dotsero at 2 30 a. m., 13 minutes late, departed from Rifle, 12.5 miles east of Dos, at 4 35 a. m., 2 minutes late, passed signal 3963, which indicated Approach, and while moving at a speed of about 5 miles per hour it collided with Extra 5571 East

A separation occurred between the first and second Diesel-electric units of Extra 5571 East. The first Diesel-electric unit stopped south of the track and approximately at right angles to it. The front end of this unit was in a depression at the base of a fill, approximately 12 feet east of the point of collision and 60 feet south of the center-line of the track. The rear end of the unit stopped near the top of the fill and approximately 15 feet south of the center-line of the track. The second Diesel-electric unit stopped with the front end down the north side of the fill, approximately 62 feet east of the point of collision and 50 feet north of the center-line of the track, and the rear end about 9 feet north of the center-line of the track. The rear two units stopped in diagonal positions behind the second unit. All units remained upright. The control compartment of the first Diesel-electric unit was crushed, and this unit was otherwise badly damaged. The other Diesel-electric units were somewhat damaged. The first four cars and the front wheels of the front truck of the fifth car were derailed. These cars stopped in various positions on or near the track. The first car was considerably damaged, and the other derailed cars were slightly damaged. A separation occurred between the Diesel-electric units of No. 19. The first unit stopped south of the track, parallel to the first unit of the opposing train, and approximately 36 feet east of the point of collision. The front truck of the second Diesel-electric unit was derailed. This unit stopped in line with the track. No other equipment of this train was derailed. The front end of the first Diesel-electric unit was crushed inward, and the unit was badly damaged. The second Diesel-electric unit was somewhat damaged. The second, fifth, and sixth cars were considerably damaged. The first, third, fourth, and seventh cars were slightly damaged.

The engineer of Extra 5571 East and the engineer of No. 19 were killed. The front brakeman of Extra 5571 East and the fireman of No. 19 were injured.

The weather was clear at the time of the accident, which occurred about 4.55 a. m.

The Diesel-electric units of both trains were provided with 24-RL brake equipment. A safety-control feature actuated by a foot-pedal was provided at the brake stand of each control station of the locomotives.

Discussion

The train dispatcher intended that No. 19 would enter the siding at Dos to meet Extra 5571 East. Soon after No. 19 departed from Rifle he instructed the operator at Funston to line the route for No. 19 to enter the siding at Dos. The operator said that about 4.35 a. m. he operated the levers to line the east siding-switch at Dos for movement to the siding. He said the visual indicators indicated that the apparatus had functioned properly and that the signals displayed the proper aspects for the movement.

Extra 5571 East departed from Grand Jct. at 3 a. m. It was stopped at Cameo, 17 miles east of Grand Jct., to meet a west-bound train and then proceeded eastward. As this train was approaching the point where the accident occurred the engineer and the front brakeman were maintaining a lookout ahead from the control compartment at the front of the locomotive. The fireman was inspecting operation of the equipment in the engine compartment of the rear Diesel-electric unit. The conductor and the flagman were in the caboose. The headlight was lighted brightly. The brakes of this train had been tested and had functioned properly when used en route. The front brakeman said that as his train approached the west end of the siding at Dos signal 3986 indicated Approach, and both he and the engineer called this indication to each other. After the locomotive passed the west siding-switch he opened the window and inspected the train as it moved on the curve. Soon afterward he glanced eastward and observed that signal 3988 indicated Stop. He called the Stop indication, and then resumed his observation toward the rear of the train. Because he was leaning out the window of the control compartment he did not know whether the engineer called the signal indication. He estimated the speed was about 20 or 25 miles per hour when he completed his inspection of the train and closed the compartment window. At this time the headlight of the approaching west-bound train was visible. The brakeman said he expected the engineer to apply the brakes in time to stop short of the signal, and, since the engineer appeared to be normal and alert, he took no action to stop the train. When the speed was not reduced as the train closely approached signal 3988 he became concerned, crossed to the right side of the control compartment, and warned the engineer. He said that the engineer did not reply, and he immediately alighted from the locomotive at a point approximately 900 feet west of the signal. He did not know whether the brakes were applied before the accident occurred. The

fireman said that the engineer appeared to be in normal condition when he left the control compartment to patrol the engine compartments of the units about 30 or 40 minutes before the train reached the vicinity of the point of accident. He said that the brakes were applied in emergency a few seconds before the collision occurred. Both the front brakeman and the fireman said that there had been nothing unusual in the speech or actions of the engineer prior to the time the train approached signal 3988. The engineer was killed in the accident, and it could not be determined why he failed to operate his train in accordance with the indications of signals 3996 and 3988. The members of the crew in the caboose said they had observed nothing unusual in the movement of their train between Grand Jct. and Dos. They were not aware of anything being wrong until the brakes were applied in emergency.

As No. 19 was approaching the point where the accident occurred the engineer and the fireman 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 in the cars of the train. The headlight was lighted brightly. The brakes of this train had been tested and had functioned properly when used en route. The speed of the train was reduced by a service application of the brakes to about 27 miles per hour in compliance with the Approach indication of signal 3963. Signal 3987 indicated Diverging-Approach, and the indication was called by the enginemen. The fireman said that he and the engineer observed the headlight of the approaching east-bound train and assumed that the train would be stopped on the main track west of the east siding-switch. When their train was approximately 750 feet east of signal 3987 the indication of the signal changed to Stop. The fireman said that the engineer immediately made a further service brake-pipe reduction and the speed was reduced to about 15 miles per hour. When the east-bound train overran the east end of the siding and passed the signal, the engineer moved the brake valve to emergency position. The fireman said that he called a warning and entered the engine compartment of the unit immediately before the collision occurred. The engineer was killed in the accident.

After the accident occurred the signals involved were found to be displaying the proper aspects. Inspection of the traffic-control machine at Funston was made about 50 minutes after the accident occurred. The levers of the machine were found to be lined for a westward movement into

the siding at Dos. The visual indicators indicated that the switch lever and the position of the east siding-switch were not in correspondence. The east siding-switch at Dos was examined about 1 hour 55 minutes after the accident occurred, and it was found that the switch had been trailed through while locked in position for a diverging movement to the siding. The tests which were made after the accident occurred disclosed no defective condition of the signal apparatus.

According to the tape of the speed-recording device of the locomotive of Extra 5571 East, this train passed signal 3996 at a speed of about 35 miles per hour. Evidently no action was taken to reduce the speed of the train until an emergency application of the brakes was made at a point approximately 540 feet west of signal 3998. The speed was reduced to about 20 miles per hour at the point of collision.

Cause

This accident was caused by failure to operate the east-bound train in accordance with signal indications.

Dated at Washington, D. C., this twenty-second day of December, 1953.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,
Secretary.