

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
DENVER & SALT LAKE RAILWAY
NEAR
SULPHUR, COLO.

ON
NOVEMBER 8, 1935

INVESTIGATION NO. 2018

SUMMARY

Railroad: Denver and Salt Lake
Date: November 8, 1935
Location: Sulphur, Colo.
Kind of accident: Derailment
Train involved: Passenger
Train number: D. & R. G.W. Train Second No. 5
Engine number: 1210
Consist: 9 cars
Speed: 38 or 40 m.p.h.
Track: 3° portion of compound curve; 0.28
percent descending grade
Weather: Cloudy
Time: 8:50 p.m.
Casualties: 1 injured
Cause: Spread rails due to track not being
adequately maintained.

January 10, 1936.

To the Commission:

On November 8, 1935, there was a derailment of a Denver and Rio Grande Western passenger train on the Denver and Salt Lake Railway near Sulphur, Colo., which resulted in the injury of one passenger.

Location and method of operation

This accident occurred on Subdivision 1 of the Denver and Salt Lake Railway, hereinafter referred to as the D. & S. L., which extends between Denver and Phippsburg, Colo., a distance of 167.99 miles. Trains of the Denver and Rio Grande Western Railway, hereinafter referred to as the D. & R.G.W., are operated over this line between Utah Junction, Colo., 3.8 miles west of Denver, and Crested, Colo., a distance of 124.68 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no form of block-signal system being in use. The accident occurred approximately 1.64 miles east of the station at Sulphur; approaching this point from the east, the track is tangent for a distance of 1,460 feet, followed by a compound curve to the left 1,569 feet in length, varying in curvature from $0^{\circ} 42'$ to $3^{\circ} 30'$, the accident occurring on the 3° portion of the curve at a point 322 feet from its western end. The grade for west-bound trains is 0.28 percent descending. The maximum speed permitted is 50 miles per hour for passenger trains and 35 miles per hour for freight trains.

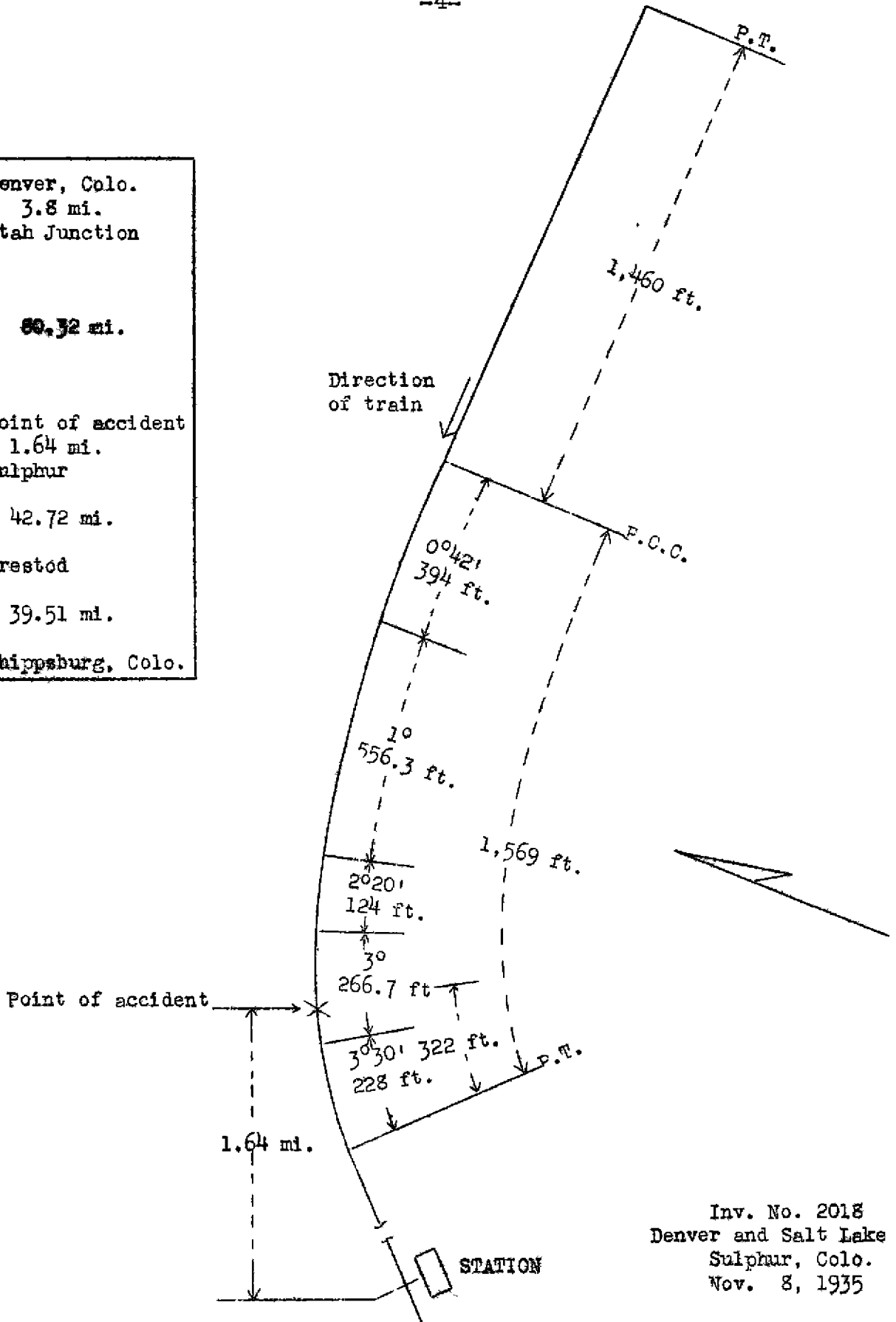
The track is laid with 100-pound rails, 39 feet in length, with an average of 22 ties to the rail length, single-spiked, fully tieplated, and ballasted with natural soil, composed chiefly of disintegrated granite. The rails were laid in May, 1935, on old ties, and replaced 30-pound rails. The track was not well maintained and no work of any importance had been performed since the new rails were laid.

The weather was cloudy at the time of the accident, which occurred at 8:50 p.m.

Description

Train Second No. 5, a D. & R.G.W. west-bound passenger train, consisted of 1 baggage car, 3 coaches, 1 dining car without tables, used for dancing, 1 dining car in service, 2 tourist Pullman cars, and 1 lounge car, hauled by D. & R.G.W. engine 1210, of the 2-8-2 type, and was in charge of Conductor Smith and Engineman Denman. This train passed Tabernash, the last open office, 19.78 miles east of Sulphur, at 8:19 p.m., and was derailed on approaching Sulphur while traveling at a speed estimated to have been about 38 or 40 miles per hour.

• Denver, Colo.	3.8 mi.
• Utah Junction	
	60.32 mi.
* Point of accident	1.64 mi.
• Sulphur	
	42.72 mi.
• Orestod	
	39.51 mi.
• Phippsburg, Colo.	



Inv. No. 2018
 Denver and Salt Lake Ry.
 Sulphur, Colo.
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The engine stopped to the right of the track at a point 625 feet beyond the point of derailment, with all of its wheels against the rails, the tender, which had been derailed, was on the rails when it stopped. The first car and the front truck of the second car also were derailed to the right, while the wheels of the rear truck of the second car were to the left, close to the rails. The next four cars were jack-knifed slightly to the left, the first three being partly overturned to the left. The right wheels of the front truck of the seventh car were derailed and against the gauge side of the north rail, while the opposite wheels of this same truck were on the south rail; none of the remaining equipment was derailed, and the air hose remained coupled throughout the train.

Summary of evidence

Enginemen Denman stated he had shut off steam and was operating a drifting throttle, and that the train was traveling at a speed of about 40 miles per hour when he saw a streak of fire from around the right cylinder and the engine became derailed. He immediately applied the air brakes in emergency and the train moved a distance of between 6 and 8 car lengths before stopping. While the tender was not derailed when the train stopped, it was his opinion from the marks on the right side of the wheels that they had been derailed and then rerailed themselves. Engineman Denman stated that the engine rode alright and there was no tendency to nose while passing around the curve, but he was of the opinion that the track on which the new rails had been laid was not as smooth as the track east thereof, which still had the 80-pound rails in service, and he did not feel justified in operating the train over this new track at the maximum speed of 50 miles per hour. Engineman Denman was qualified on February 14, 1935, to handle trains on this joint track, and had been working on this district since that time. He had operated a freight train on his previous trip and at that time did not notice any unusual condition in the track.

Fireman Benson thought the speed of his train did not exceed 40 miles per hour after leaving Granby, located 9.79 miles east of Sulphur. At times the engine seemed to roll, but not enough to cause alarm, and he did not notice any nosing action of the engine on curves, the first intimation he had of anything wrong being when the engine truck seemed to jump the track.

Conductor Smith stated he had been operating in freight service over this district intermittently since January, 1935, having made only one trip in passenger service prior to the trip on which the accident occurred. Between Willows and the point of accident, a distance of less than 3 miles, he noticed a roll of

the train as he was passing through the cars on his way to the baggage car; he did not think that a speed of 40 miles per hour was exceeded after leaving Granby, but did not know any reason why the maximum speed was not attained. There appeared to be nothing wrong with the equipment after the accident and he concluded it was due to some defect in the track. Head Brakeman McCafferty thought the train rode fairly smoothly, while Flagman Hübbersberger noticed a rolling action between Tabernash and the point of accident.

Head Foreman of Equipment McCarthy, of the D. & R. G. W., who was on the engine at the time of the accident, stated that the highest speed attained was between 40 and 45 miles per hour on passing through Granby; after leaving that point the brakes were applied several times and the train was drifting at a speed of between 38 and 40 miles per hour when the accident occurred. He was looking back toward the tender and his first thought was that the engine had struck something; it started to jump up and down and then the tender apparently left the track, but before the train stopped the tender was riding smoothly. Engineman Denman did not say anything to him about the condition of the track and he did not know of any reason why the train could not have been running at a speed of 50 miles per hour, saying that the track was safe for this speed. His inspection of the track showed that some part of the equipment had dropped on the inside of the left rail, these marks extending for a distance of about 90 feet, and then on the opposite rail there were indications that a wheel had climbed the rail, running along for a distance of 25 or 30 feet before dropping down on the outside. Inspection of the engine wheels showed that the aluminum paint had been worn off on the right engine-truck wheel and also on the left No. 3 and No. 4 driving wheels. Subsequently he made a thorough inspection of the engine at the roundhouse; he found the flanges in good condition and the lateral motion on the engine was within the requirements.

Trainmaster Kemp, of the D. & R. G. W., also was on the train; in his experience in riding over this track he considered it safe for the authorized speed, having ridden on Train No. 5 on the day prior to the accident and also on Train No. 6 on the day of the accident. Just prior to the accident he was walking through the train toward the rear end and on reaching the dining car he stopped and asked the dining-car superintendent if there had been any roughness and was told by the superintendent that the train had been riding very smoothly.

Master Mechanic Rice, of the D. & R. G. W., inspected the engine at the scene of the accident and again after it had been taken to the roundhouse, and found the tires and flanges to be in good condition, although the No. 1 and No. 2 driving tires were

slightly worn, but not enough to take the gauge. The tires were checked for distance from back to back and were within the prescribed limits. He also inspected the cars and could not find any defects that might have caused the accident.

Engineer Maintenance of Way Turner stated that he was employed by the D. & S.L. as assistant engineer at the time of the accident, having been subsequently promoted to engineer maintenance of way. On his arrival at the scene of the accident he found that the track had spread, the outer rail having been pushed outward; on measuring from the original position of the tieplates he found the gauge to have been $3/4$ inch wide, and as said he did not consider this particularly hazardous with good tie conditions although he thought it should be remedied. The majority of the ties were oak, there being an occasional fir tie; there was no indication of churning track and the elevation was uniform. It was his opinion that the track prior to the accident, was safe for a passenger train speed of 50 miles per hour and that the cause of the derailment was excessive speed. He stated that the train traveled a distance of approximately 680 feet after it became derailed, and he thought that this was an unusual distance, considering the friction set up when it became derailed and literally breaking every tie in the track. Engineer Maintenance of Way Turner further stated that no new ties had been placed in the track within a distance of 50 feet on either side of the point of accident during the current year, and he thought there were enough ties in good condition for safe operation and that generally speaking, the track was in good condition. He had nothing to do with the laying of the new rails between Willows and Sulphur, although he had walked over the track on three or four occasions and ballast stakes had been set in anticipation of a ballast raise, but because of other work on various passing tracks and the lateness of the season it was not considered advisable to start the ballast project in 1935. Volcanic cinder ballast is used and can not be handled satisfactorily after freezing temperatures set in, on account of the material not running readily out of the cars, while some difficulty also is experienced in loading it at the cinder pit when mixed with snow. He also stated that a track inspector makes a daily trip on a motor car over the track between Tabernash and Crested, a distance of 62.5 miles.

Roadmaster Duncan, of the D. & S.L., stated that prior to September 20, 1935, he had been track inspector between Tabernash and Crested and his method of inspection was each day to cover a portion of the track on foot, then riding on his motor car at a speed of about 10 miles per hour, watching for loose or broken rails, angle bars or wide gauge. He was succeeded by W.P. Groome as track inspector, but due to an accident at Rollinsville, Colo.,

on November 5, neither he nor Track Inspector Groome had been over the track between November 4 and 8. He considered the general condition of the ties on the Sulphur section to be good, and that a sufficient number of new ties had been placed to carry the track over until 1936, and he said he did not find any churning ties nor were they center-bound at the point of accident, although a short distance eastward the ties were churning at points where the joints of the 80-pound rails had existed before the laying of the 100-pound rails. It was his opinion that the accident was due to excessive speed, stating that a large percentage of D. & R. G. W. passenger trains exceed the speed limit on curves and that he had advised his superior officer of that fact in the past.

In an interview with Mr. W. B. Franklin, who was in charge of the students who chartered the train to go to a football game at Salt Lake City, Mr. Franklin stated that he had been somewhat perturbed as to whether or not the train would arrive at Salt Lake City in time for the game, due to the fact that the train was running so slowly.

At the time of inspection of the track by the Commission's inspector the equipment had been removed and new ties replaced the old ones west of the point of accident. The general condition of the track was not good, however, and it had been the intention to retie and ballast the entire section during the fall, but the early arrival of freezing weather caused a postponement. Examination after repairs had been made showed that within 31 rail lengths, or a distance of 819 feet, 71 ties were split from the end inward under the base of the rail, and most of these were split into the spike location, lessening the holding value of the spike; most of these splits were on the south side of the track. The ties were generally centerbound and three of them were broken in the center. No shoulder was maintained on the south side and at four points the ties were churning, very badly in three of these cases, one of the joints being depressed 1 1/2 inches under the weight of a passing train. Many of the ties were deeply cut by the tieplates and at four places the spikes could be pulled out by hand. Inspection of the rails showed aluminum paint marks on the inside of the ball of the south or left rail and there also were aluminum paint marks on the inside of the ball of the right rail and flange marks on the web of this rail.

Discussion

The evidence indicates that the track spread and that the north rail then turned over, allowing the engine wheels to drop between the rails, as indicated by marks on the rails. Examination

showed the track to be in poor condition, the gauge was 3/4 inch wide at the point of accident, and the super-elevation on the curve varied from 2 1/4 to 3 1/8 inches, being 2 1/4 inches at the point of accident, with a curvature of 3°, in addition, approximately 15 percent of the ties were found to be split, and they were generally centerbound. There was insufficient ballast, with no shoulder maintained on the south side, and at four points the ties were churning. New rail had been laid in this track during the spring of 1935, and it was said that the intention had been to retie and ballast in the fall, the need for work at other points, combined with the lateness of the season, making a postponement necessary.

Conclusion

This accident was caused by spread rails, due to track not being adequately maintained.

Respectfully submitted,

W. J. PATTERSON,

Director.

