

Inv-2087

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT OF THE DIRECTOR

BUREAU OF SAFETY

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ACCIDENT ON THE

COLORADO AND SOUTHERN RAILWAY

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KENOSHA, COLO

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JULY 25, 1936

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INVESTIGATION NO. 2087

SUMMARY

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Railroad:	Colorado and Southern
Date:	July 25, 1956
Location:	Kenosna, Colo.
Kind of accident:	Derailment
Equipment involved:	Light engine
Engine number:	D & RGW 346
Speed:	20 m.p.h.
Track:	20° curve; 1.5 percent descending grade.
Weather:	Misting
Time:	7:35 p.m.
Casualties:	1 killed and 1 injured
Cause:	Excessive speed in view of existing track conditions.

August 29, 1936

To the Commission:

On July 25, 1936, there was a derailment of a light engine on the Colorado and Southern Railway near Kenosha, Colo., which resulted in the death of 1 employee and the injury of 1 employee.

#### Location and method of operation

This accident occurred on that part of the South Park Division, extending between Sheridan Junction and Como, Colo., a distance of 80.6 miles; this is a single-track, narrow-gauge line over which trains are operated by timetable and train orders, no form of block-signal system being in use. The accident occurred near mile post 75, or approximately 4,330 feet east of the station at Kenosha. Approaching this point from the west the track is tangent for a distance of 1,324 feet, followed by a  $10^{\circ}15'$  curve to the left 234 feet in length, tangent track for a distance of 226 feet, and then a compound curve to the right consisting of a  $20^{\circ}$  curve for 257 feet and a  $24^{\circ}$  curve for 345 feet, the accident occurring on the  $20^{\circ}$  portion of the curve at a point approximately 126 feet from its western end. The grade for east-bound trains for a distance of more than 2,000 feet, varies from 1.5 to 3.4 percent descending, it being 1.5 percent in the immediate vicinity of the point of accident.

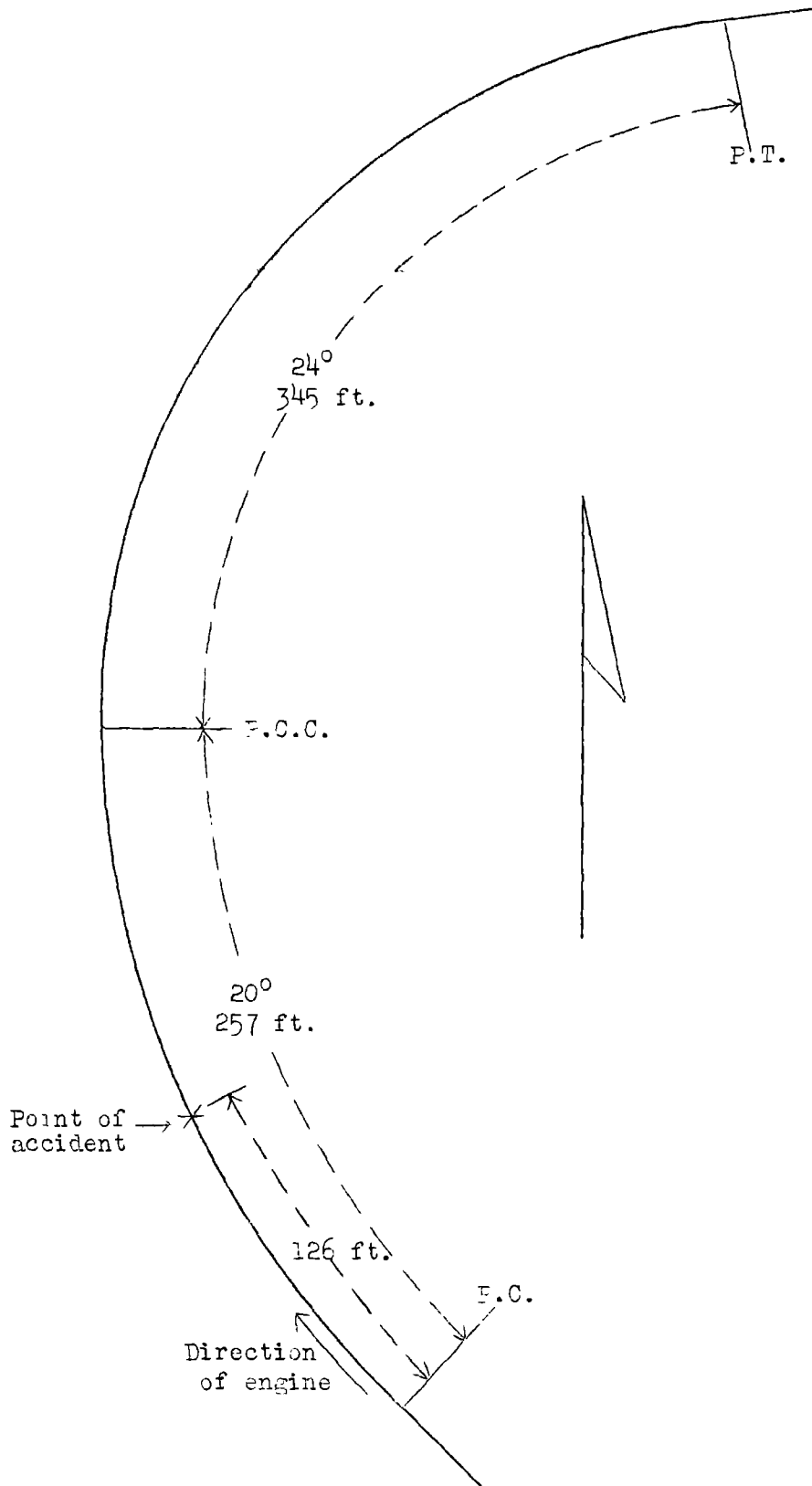
The track is 36-inch gauge, laid with 56-pound rails, 30 feet in length, with an average of 18 ties to the rail length, single-spiked, fully tieplated on curves and about 15 percent tieplated on tangents and is ballasted with cinders and gravel to a depth of about 10 inches. The speed of passenger trains is restricted to 25 miles per hour and that of freight trains to 12 miles per hour in this territory.

It was misting at the time of the accident, which occurred about 7:35 p.m.

#### Description

Extra 346, consisting of east-bound light engine D. & R. G. W. 346, in charge of Engineman McGowan and Fireman Jonnson, departed from Como, 12.2 miles from Kenosha, at 6:30 p.m., according to the train sheet. Several stops were made en route, the last stop being made at Kenosha; the engine left this point about 7:25 p.m. and shortly afterwards was derailed while traveling at a speed estimated to have been about 20 miles per hour.

The engine and tender were derailed to the left and stopped



o	Denver, Colo.
	7.6 mi.
o	Sheridan Jct.
	68.4 mi.
■	Point of accident
o	Kenosha
	12.12 mi.
o	Como, Colo.

Inv. No. 2087  
Colorado and Southern Ry.  
Kenosha, Colo.  
July 25, 1936.

on their left sides to the left of and parallel with the track, with the engine truck approximately 94 feet beyond the point of derailment. The employee killed was the engineman and the employee injured was the fireman.

#### Summary of evidence

Fireman Johnson, of Extra 346, stated that he had been firing in yard service for about 10 years and this was the first road trip he had made other than a student trip a short time previously to acquaint himself with the road. After leaving Como a stop was made at Jefferson to take water and another at Kenosha to see if they were needed to assist another train. The brakes functioned properly when each stop was made. After leaving Kenosha he put in a fire and opened the injector, and on looking ahead he saw the curve and it seemed to him that they were traveling pretty fast for the curve. He closed the injector and started over to the engineman's side to speak to the engineman and just as he reached the other side the engine raised and then settled down. He looked out of the gangway and saw that the driving wheels were off the rail and the engine was so badly tilted that he jumped off immediately. As this was his first trip in road service he implied that he was not a good judge of speed but he estimated the speed of the engine to have been about 20 miles per hour. Fireman Johnson stated that the engineman appeared to be in normal condition and did not seem to be concerned about the speed of the engine, and did not say anything at the time of the derailment. About the only thing that Fireman Johnson could say as to the cause of the derailment was that it appeared as though the engineman lost control of the engine.

Engineman Williams stated that he operated engine 346 over this same territory on the day prior to the accident and the engine was in good mechanical condition. It is equipped with straight air brakes on the driving wheels and automatic brakes on the tender; he used both, experienced no trouble in holding the engine on the grade and had no occasion to use the water brakes, with which the engine is also equipped. He noticed nothing wrong with the track. He operated over the curve on which the accident occurred at a speed of 12 miles per hour, stating that he always takes it easy around the curves for safety reasons, and had never traveled at a speed of 25 miles per hour on that curve. He has been operating over this line for 19 years.

Conductor Cyr, of Extra 537, which followed engine 346 out of Kenosha, stated that he talked with Engineman McGowan on the day of the accident and he seemed to be in normal condition. Conductor Cyr said the track involved was good for 20 miles per hour, or even 25 miles per hour.

Track Supervisor Jones stated that on his arrival at the scene of the accident he found a wheel mark on the top of the rail, for a distance of about 2 feet, and also wheel marks on 2 ties where the engine left the track, but there were no marks in the center of the track. There were marks on the ends of 15 ties, 2 ties were broken and the track thrown from  $1\frac{1}{2}$  to 2 inches out of line and 15 ties were slued. It was his opinion that the engine leaped into the ditch and turned on its side and that the side-rods struck the ends of the 15 ties and threw the track out of alignment; he also thought the engine must have been traveling at a speed of 40 or 45 miles per hour when it became derailed. He repaired the track in about 45 minutes. He stated that he maintains a superelevation of 2 inches on this curve, which is safe for a speed of 30 miles per hour on narrow gauge track, and he considered the track safe for a speed of 25 miles per hour. Measurements were taken for gauge and cross levels; the gauge was 1 inch wide at one joint; the levels were normal.

D. & R. G. W. engine 346 is of the 2-8-0 type, 36-inch gauge, and has a total weight, engine and tender, of 127,260 pounds, with the weight distributed as follows: engine truck 10,260 pounds, front drivers 13,790 pounds, intermediate drivers 16,940 pounds, main drivers 17,810 pounds, rear drivers 15,460 pounds, and loaded tender 53,000 pounds. The main and intermediate driving wheels have no flanges. The tender has a capacity of 2500 gallons of water and 6 tons of coal and was loaded at the time of the accident. Inspection of engine and tender revealed no defects that could have caused or contributed to the accident. There was only slight wear on the treads and flanges and the lateral was not excessive. All driving box wedges and boxes, spring rigging and brake rigging were in good condition and the latter above the  $2\frac{1}{2}$ -inch limit. The engine truck, of the swing type, showed no indication of fouling, the boxes and pedestals, radius bar and braces and radius clevis were in good condition. The cistern had a cross splash plate located about the middle of the tank and in good condition. All brake rigging on tender was in good condition with exception of rear bottom rod which was slightly bent. The front side bearings showed proper clearance, but the right rear side bearing was bent. All brake shoes of engine and tender were in good condition and showed no signs of overheating. The air pump governor was adjusted to 90-110 pounds pressure; feed valve adjusted to 70 pounds train pipe pressure and reducing valve on engine brakes adjusted to 40 pounds brake cylinder pressure.

Inspection of the track by the Commission's inspectors showed that within a distance of 9 rail lengths or 136 ties, 23 ties were broken, there being six adjacent broken ties at one point. In addition, in many places spikes were not close to the rail base, several spikes were loose enough to be

removed by hand and some were missing, and at numerous places the ties were churning and the track was centerbound. The gauge at several points was 1 inch wide. There was a heavy V-shaped mark on the shoulder of embankment on the outside of the curve approximately 123 feet from the west end of the curve, about 3 feet 4 inches from the outside rail; the next mark was on a tie about 3 feet beyond; this was a deep abrasion extending across the end, 8 inches from the base of the outside rail. The following tie showed 2 parallel marks across the end, 8 and 10 inches from the base of the rail. There were no corresponding marks between the rails nor near the inside rail. No further marks were found on the track for a distance of over 50 feet and this was near the point where the engine stopped; at this point 2 ties had been replaced. The flange mark on the ball of the north rail, mentioned by Track Supervisor Jones, was not discernible at the time of this inspection.

Measurements of the superelevation and gauge, made by the railroad company, show that the superelevation of the outside rail of this curve varied from  $1/2$  to  $1\ 1/2$  inches to within 26 feet of the point of accident; it then was 2 inches to the point of accident. The gauge varied from 36 inches to 37 inches, it being  $36\frac{3}{4}$  inches at the point of derailment.

#### Discussion

It appears from the evidence that as Extra 346 was approaching the curve on which the accident occurred the fireman, thinking the speed was too high for the curve, became alarmed and crossed over to the engineman's side of the cab to find out if there was anything wrong; as he did so, the derailment occurred. Other witnesses who observed marks on the track and the position of the derailed equipment expressed the opinion that the engine must have been traveling at a high rate of speed; the estimates of speed varied from 20 to 40 or 45 miles per hour. The mark on the shoulder of the embankment on the outside of the curve, followed by marks on the ends of the ties outside the outer rail, with no corresponding marks between the rails or near the inside or low rail, indicates that the engine turned over from centrifugal force.

Examination of the engine failed to reveal any defects that could have contributed to the derailment. The track was found to be in poor condition; it was center-bound in many places and the ties were churning and a number were broken; in many places the spikes were not close to the rail base, several were loose enough to pull out by hand and some were missing. There was an average of less than 2 inches superelevation on this  $20^\circ$  curve, and gauge and surface were uneven. It is therefore believed that the condition of track contributed to some extent to the cause of this accident.

Conclusion

It is believed that this accident was caused by engine 546 entering a sharp curve at a rate of speed for which the track conditions did not provide an adequate margin of safety.

Respectfully submitted,

W. J. PATTERSON,

Director.