

August 16, 1911

Interstate Commerce Commission,
Washington, D. C.

Dear Sir:

On July 12, 1911, a telegraphic report was received from the Oregon Trunk Railway of an accident which occurred near Dike, Oregon, July 10th. I had Inspectors Winters and Hays investigate this accident, and there is submitted herewith a summary of their report. This investigation was made in connection with the State Railroad Commission of Oregon, who assisted materially in reaching the findings submitted. Assistant Engineer Wells of the Oregon State Railroad Commission accompanied our inspectors to the place of the accident and rendered every assistance possible to make the investigation a thorough one.

ACCIDENT.

Southbound passenger train No. 102 of the Oregon Trunk Railway, consisting of locomotive No. 709, baggage car, smoker, and day coach, was derailed at about mile post 23, 1½ miles north of Dike, Oregon, at 3:35 P. M., on July 10, 1911. Seven passengers were killed, the fireman and several other passengers were seriously injured.

DESCRIPTION.

This train was derailed in a cut 535 feet from beginning of spiral, and 313 feet in on an 11-degree curve, as was indicated

by flange marks on the outside rail. The distance from the point of derailment to the end of cut was about 100 feet. The engine and three cars left the track beyond the end of the cut, the tank separated from the engine, rolling over and lying about 60 feet from the end of the cut and about 160 feet from point of derailment. Engine turned over on left side, the head end of baggage car ran by locomotive about 90 feet, the smoker about 50 feet, the coach falling over beside the engine, the cars remaining coupled. All of the fatalities occurred in the coach. The engine lay on the bottom of a fill about 30 feet from the track.

The speed of the train over the track in question was governed by a bulletin order, copies of which are issued daily, limiting the speed to 10 miles per hour.

The air pump, located on the left side of the engine just ahead of the cab, is attached to the boiler with two brackets and four 7/8 inch studs. These were broken off by the accident and three studs were pulled out of the boiler shell. The fatalities were due to the steam escaping through the stud holes, entering the open windows of the coach, located just forward of the center of the car. The windows of the opposite side of the car being closed contributed towards holding the steam in the body of the car. There were about fifteen people in the coach at the time of the accident, eight of whom including three railroad men escaped, the remaining seven persons being killed.

Locomotive No. 700 is of the Mastodon consolidation type, being a converted oil burner with tank capacity of 3850 gallons, increasing the weight of the tender to 104,000 pounds. The gauge of the tender wheels measured from 4 feet 7 1/2 inches to - -

4 feet 8 inches.

The derailment occurred on an 11-degree curve, 3,000 feet long, level track, but approaching a six-tenths grade. Track had 90 lb., 33 foot steel rails, 24 inch angle bars with four holes, 1 inch bolts, four-prong Goldie tie plates, fully spiked and ballasted with about four inches of river gravel, staggered rail, 20 ties to the rail.

The track was laid on a 14 foot crown in cut and 18 foot crown on fill, and at point of derailment had super-elevation of about four inches on the high or outside rail.

The gauge of track approaching point of derailment for some 200 feet shows 4 feet $9\frac{1}{4}$ inches and 4 feet $9\frac{7}{8}$ inches, and at point of derailment 4 feet $9\frac{1}{4}$ inches. Two measurements taken by the roadmaster after the accident show 4 feet 10 inches gauge. Maximum gauge permitted according to specifications is 4 feet $2\frac{1}{8}$ inches.

Investigation showed considerable irregularity in the super-elevation on the curve. This line was turned over to the operating department by the engineering department on July 1st. However, trains had been in operation for several months.

Testimony was given that a gauge of 4 feet 10 inches would derail. Immediately after the accident the gauge was reduced $7/8$ inches and seven rails were replaced.

A northbound passenger train passed over this point about two hours before the accident. Officials of the company claim that the accident was due to a sun kink in the track and excessive speed, locking front engine trucks, and causing engine to derail and tip over on the fill. Testimony of the engineer was

positive that it was caused by sun kink.

Testimony of the roadmaster was to the effect that no evidence of a sun kink was found after the accident, and that there was no displacement of track, spikes, or tie plates.

Testimony of train crew, including roadmaster and a dead-head conductor, who was riding on train, as to the speed of train varied from twelve to fifty-three miles per hour.

Our inspectors interviewed all of the train crew, with the exception of the fireman, who was too seriously scalded to permit of questioning, officers of the road, passengers who were on the train, as well as having access to all testimony taken by the State Railroad Commission and Coroner's Jury. Their report is that the accident was caused by the derailing of the rear truck of the tender in the cut, due to excessive speed and the irregular elevation of track on the 11-degree curve approaching derailing point, which resulted in a rolling or tipping movement of tender, causing the wheels to mount rail and run along on the ties, as indicated by the flange marks, tipping over on side and separating from the locomotive, rolling completely over. This resulted in the derailing of the engine, which tipped over on the left side near the bottom of the fill. The three passenger cars continued on the grade past the derailed tender and locomotive, the front pair of trucks of baggage car remaining on rails until just before train stopped, when train too lay over on its side, still coupled, falling so as to place east side of coach near bottom of the drivers on engine.

The locomotive tender gave evidence of raking the side of the cut and turning over. The broken draw bar, the broken draw

bar casting, the broken safety chain hangers, the marks of chafing irons between engine and tender, and the relative position of the engine and tender confirm the above in every respect.

The height of the fuel oil tank in the tender, the tank being practically full, contributed to the derailment of the tender.

The speed of the train at the time of the accident was about 25 miles an hour, which is 15 miles in excess of the slow order. Our inspectors do not consider the sun kink theory a good one and can find no evidence to substantiate such claim.

CAUSE.

The cause of this accident was the disregard of the Bulletin orders, restricting speed to 10 miles per hour on this curve, by the engineman and conductor of the passenger train, No. 102. The irregular condition of the super-elevation on the curve and the wide gauge of track as shown by the investigation were contributing factors to the accident as the speed of the train alone, had track conditions been proper, would not have caused the derailment.

As directed by the Commission, the President of the Oregon Trunk Railway Company submitted a copy of the report made by his General Superintendent on this accident. As an interesting sidelight, I quote from that report as follows:

"It was unfortunate that Roadmaster McCurdy gave the 53 mile per hour speed evidence before the Coroner's jury. He could have, as well as not, said that he could not say what did cause the trouble, and that, with all due regard for the truth, as he nor no other human can actually say what the derailing cause was. A 'sun kink' would have better fitted surrounding conditions than

any other probable cause, and have materially eased the tension, from a railroad point of view. To catch the speed, at the limit set by McCurdy, by counting the rail joints as the train passed over them, by visual observation, is, with anything like a reasonable degree of accuracy, an impossibility. The truck wheel of the engine locking so far back on the frame would have strongly supported the theory that the track was excessively out of line, similar to sun kink action."

Respectfully submitted,

Chief Inspector of
Safety Appliances.