

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
CHICAGO & NORTH WESTERN RAILWAY NEAR BELLE PLAINE, IOWA,
ON SEPTEMBER 16, 1921.

September 29, 1921.

On September 16, 1921, there was a derailment of a passenger train on the Chicago & North Western Railway near Belle Plaine, Iowa, which resulted in the death of 2 employees and 1 trespasser, and the injury of 1 passenger, 3 employees, and 2 trespassers. After investigation of this accident the Chief of the Bureau of Safety reports as follows:

Location and method of operation.

This accident occurred on subdivision 3 of the Iowa Division, extending between Belle Plaine and Boone, Iowa, a distance of 86.4 miles. This is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. Trains on double track keep to the left. The accident occurred at a point about 2.4 miles west of Belle Plaine. Approaching the point of accident from the east the track is tangent for more than 1 mile, the grade is undulating and is 0.38 per cent ascending at the point of accident. The track is laid with 100-pound rails, 33 feet in length, with about 20 oak and treated hardwood ties to the rail-length, ballasted with about 12 inches of stone. At the point of accident the track is on a fill of about 12 feet on the south side of the track and 6 feet on the north side. It was raining at the time of the accident, which occurred at about 3.00 a. m.

Description.

The train involved in this accident was westbound passenger train No. 7, which consisted of 1 deadhead coach, 1 baggage car, 4 sleeping cars, 1 observation car, and 1 sleeping car, in the order named, all of steel construction, hauled by engine 1590, and was in charge of Conductor Speer and Engineman Lea. Train No. 7 departed from Belle Plaine at 2.42 a.m., 6 minutes late, and was derailed by a washout while traveling at a speed estimated to have been about 35 miles an hour.

The engine came to rest on its left side at the foot of the embankment, the tender cistern was torn from the frame and lay between the engine and the westbound track. The first three cars were derailed, the first being torn from its trucks and tilted at an angle of about 45 degrees. The employees killed were the engineman and fireman.

Summary of evidence.

When train No. 7 arrived at Belle Plaine, Conductor Speer was informed by Engineman Lea that it had been raining very hard and that water was running over the track in a cut about $1\frac{1}{2}$ miles east of Belle Plaine; Flagman Atzen also said he saw water running over the track at that point and that he sent word to the crew of eastbound train No. 26, which had arrived at Belle Plaine a few minutes before train No. 7. The statements of the conductor and flagman, as well as those of Baggageman Frey and Brakeman Dugan, indicated that there was little or no rain falling at Belle Plaine

while their train was there. Conductor Speer also said that the crew of train No. 26 notified his engine crew that it had been raining hard west of Belle Plaine, but that the track conditions seemed to be good. None of these employees knew that there was anything wrong until the accident occurred, nor had any orders been issued to them relative to track or weather conditions. They did not see any water running over the tracks immediately after the occurrence of the accident, Baggage man Frey estimating that the water was about $3\frac{1}{2}$ feet below the tops of the rails.

Dispatcher Alexander, on duty at the time of the accident, has jurisdiction westward from Belle Plaine to Boone. He said that shortly after coming on duty at midnight he received reports of rain at Marshalltown, 34.7 miles west of Belle Plaine. Shortly afterwards heavy rains were reported from different points and as a precaution he placed an order at Marshalltown for all westbound trains to run carefully on account of heavy rain, looking out for bad places, and also notified two eastbound trains to look out for high water. He was unable to get in communication with Belle Plaine until about 3.40 a.m., although he had heard of high water near that point.

Dispatcher Belden, whose jurisdiction extends eastward from Belle Plaine, said that when he received word from the operator at Belle Plaine that the crew of train No. 7 had reported water in the cut east of Belle Plaine, this was his first information of any hard rain, and that he told

the operator at that point to hold trains Nos. 7 and 26, but the trains departed before the operator was able to stop them. Dispatcher Belden further stated that the dispatcher's wire failed at about 12.30 a.m., while the telegraph wire was out of commission from 12.45 a.m. to 1.30 a.m. As time passed, both telegraph and telephone communication became worse, and at times there were no means of communication.

Section Foreman Ryan said he was called out at 12.35 on account of high water conditions and on reaching the yard office at Belle Plaine was informed of the accident to train No. 7. On reaching the point of accident, he found about 150 feet of roadway washed out under the ties, leaving the south rail of the westbound track unsupported. He had never experienced any high water at this point during a period of 14 years. Roadmaster Kratoska said the roadway was entirely washed out from under the ties for a distance of 300 or 400 feet ahead of the wreckage, at some points to a maximum depth of 5 or 6 feet.

Engineman Masterson, of train No. 26, said he did not notice any indications of high water west of Belle Plaine which caused him to think the track unsafe either for eastbound or westbound trains, and at no point near where the accident occurred did he see any water running over the track. Engineman Olney, of train No. 2, which passed train No. 7 at a point about 1/2 mile east of where the accident occurred, did not notice anything to indicate that the track

was soft, neither did he see any water over the track, he had dimmed the headlight of his engine when approaching train No. 7 and said that the engineman of that train did likewise, and that if there was any water over the track west of Belle Plaine he must have passed it while the headlight was dimmed. Engineman Baird, of train No. 25, the last westbound train to pass the point of accident, said his train left Belle Plaine at about 1.25 a.m.; he did not notice any water on or near the tracks.

A statement of O. C. Burrows, observer for the United States Weather Bureau at Belle Plaine, was to the effect that there was a light shower between 11.30 p.m., September 15, and 12.30 a.m., September 16, and that heavy rain fell intermittently between 1.45 a.m. and 7 a.m.; the total rainfall during the night amounted to 3.72 inches.

On the north side of the roadway there is a drainage area, with a water course running through it at right angles to the roadway about 350 feet west of the point of accident, this is diverted to a shallow ditch extending eastward along the north side of the roadway. The soil in the vicinity is of a sandy nature and usually absorbs the water. On the night of the accident, however, the heavy rainfall resulted in the water in the ditch rising to such an extent as to flow across the track from north to south, washing out the roadway on the south side, half way under some of the ties and under others practically their full length, for a distance of about 600 feet.

Conclusions.

This accident was caused by a washout.

The evidence indicated that shortly before the occurrence of the accident there was an unusually heavy rainfall in this vicinity, resulting in the roadway being washed out at a point where no previous difficulty had been experienced. At the time of the accident steps were already under way to make sure that the tracks were safe for the passage of trains, the section foreman at Belle Plaine having been called out about 1/2 hour before the accident occurred, while one of the dispatchers had tried to hold train No. 7 at Belle Plaine for the purpose of warning the crew as to the general conditions prevailing.

All of the employees involved were experienced men. At the time of the accident they had been on duty about 4 hours, previous to which the engine crew had been off duty about 31 hours, and the train crew 18 hours or more.