

*The Chairman*

*Oct. 21/19*

REPORT OF INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE  
CHICAGO, ROCK ISLAND & PACIFIC RAILWAY NEAR  
HUDSON, N. MEX., ON AUGUST 27, 1919.

October 15, 1919.

On August 27, 1919, there was a derailment of a passenger train on the Chicago, Rock Island & Pacific Railway near Hudson, N. Mex., which resulted in the death of 2 employees and injury of 3 employees and 2 mail clerks. After investigation of this accident, the Chief of the Bureau of Safety reports as follows:

The Second District of the El Paso Division of the Chicago, Rock Island & Pacific Railway on which this accident occurred extends from Herrington, Kansas, to Tucuman, N. Mex. In the vicinity of the point of accident, it is a single-track line over which trains are operated by time-table and train orders, no block signal system being in use. The accident occurred at a point about 6,000 feet east of Hudson; for a considerable distance in both directions from the point of accident the track is straight. Beginning at a road-crossing located about 3,200 feet west of Hudson station and proceeding eastward, the grade is slightly ascending to the station, from which place to the point of accident there is a descending grade of .4 per cent. The track is laid with 80-pound rails, 30 feet in length, with an average of 18 oak and pine ties to the rail. Tie plates are used on approximately 35 per cent. of the ties, including all rail joints and all cases of renewed ties. The track is ballasted with gravel 8 to 10 inches in depth. Since January 1, 1919, 1,264 new ties have been applied

to this section of track, the allotment of ties to the section being 1,775. The surface, gauge and alignment of the track in the vicinity of the point of accident were good. Between milepost 434 and Tucumcari, which includes the point of accident, the speed of passenger trains is restricted by time-table to 55 miles an hour on tangents and 45 miles an hour on curves.

The train involved in this accident was eastbound passenger train No. 4, known as the Golden State Limited, being a through train en route from the Pacific Coast to Chicago. This train, in charge of Conductor Barton and Engineman Ford, consisted of locomotive 921, 1 mail car, 1 baggage and express car, 1 coach, 1 Pullman tourist car, 1 dining car, 3 Pullman sleeping cars and 1 observation car, in the order named, all of the cars being of all-steel construction. The train left Tucumcari at 5.48 a.m., passed Hudson, 12.7 miles east of Tucumcari, and at 6.15 a.m. was derailed while running at a speed estimated at 40 miles an hour. The weather at the time of the accident was clear.

Locomotive 921 came to rest on its left side across the track at an angle of about 35 degrees, the front of the engine being slightly outside of the south rail and the rear outside of the north rail. The tender rested on its left side attached to the engine and fairly in line therewith. The tank cistern became detached from its frame and lay about 20 feet back of the cab of the engine. The engine trucks were detached from the engine and lay upside down approximately 30 feet south

of the track and about 30 feet east of the front of the engine, while the tender trucks were badly broken up, the parts being scattered in such manner and degree as to render it impossible to identify with certainty which portions belonged to the forward truck and which to the rear truck. The mail car lay on its left side in line with the engine and tender, being separated from the tender about 7 feet. The baggage and express car lay on its left side across the track at an angle of about 45 degrees; the coach remained upright, coming to a stop with its front end 56 feet south of the track and its rear end 46 feet south of the track. The Pullman tourist car followed the coach, its rear end coming to a stop 16 feet south of the track. The dining car and the first sleeping car remained upright, leaning slightly to the south, while only the forward trucks of the next sleeping car were derailed. The two rear cars were intact and not derailed. The engineer and fireman were killed.

Conductor Barton, of train No. 4, stated that on account of cattle on the track, his train came to a stop at the first road crossing west of Hudson, and after the track was cleared proceeded eastward, having gained a speed of about 40 miles an hour when the derailment occurred. He stated that the brakes went on in emergency at about the same time that the derailment occurred and he did not know whether the engineer applied the brakes in emergency or whether this application was the result of a broken connection in the train line. On looking into the cab of the engine some time after the accident occurred he noticed that the reverse lever was in position for

reverse motion while the engineer's valve was in the emergency position. He further stated that he was unable to reach a conclusion as to the cause of the accident.

The statements of other members of the crew agree with that of Conductor Barton with regard to the speed of the train at the time of the derailment and also with regard to other essentials. Train Porter Fox, however, stated that it was not the first road crossing west of Hudson at which the train stopped on account of cattle on the track, but a crossing 3 miles west of Hudson.

Division Engineer Bragg stated that he arrived at the scene of the accident at 10.20 a.m. and made an examination of the track in company with Trainmaster Kelley. He stated that they found the first mark of derailment about 20 feet to the rear of the last car in the train. This mark was evidently a very light flange mark on the north rail, where it appeared that something had lifted a wheel and it had come down on top of the rail, the mark being about  $1\frac{1}{2}$  inches from the gauge side. This mark continued along the top of the rail for a distance of 22 feet, gradually working to the north. Marks then showed that the wheel had dropped off upon the base of the rail, after which it was shown to have continued to work toward the north until within a distance of about 30 feet the marks indicated that the opposite wheel had worked nearly to the center of the track. The first 6 or 7 ties were not torn up or damaged, having only deep dents. About 184 feet east of the first mark

on the north rail, there was quite a deep cut again on the top of the north rail. This mark was very close to the outside of the rail and was about 3 inches long, undoubtedly having been made by a very hard blow of a wheel on top of the rail. From that point on, the track was so badly demolished and the rails so badly bent and broken that it was impossible to determine anything further in regard to the condition of the track prior to the derailment. The ties were so badly damaged that they were unfit for further service and he noticed 4 or 5 broken rails. An examination of the broken rails, however, showed no flaws or defects of any description, the rails apparently having broken as the result of a heavy side blow or strain. Division Engineer Bragg stated that he then started west toward Hudson with Mr. Kelley and they found a mark on the top of the north rail, which extended from the point of derailment west for about 2,000 feet. In places this mark was very plain; at some places it was only a scratch, at other places only a spot three-eighths inch wide and at a few places the mark was just barely distinguishable. He stated that the mark zigzagged from one side of the rail to the other. The inside top of the south rail for the same distance of 2,000 feet back from the point of derailment was cut in a manner similar to that of rails on the outside of a curve, a part of the top of the ball of the rail being shaved off. He stated further that the alignment of the track was exceedingly good, the surface was good and he noticed but a few slightly low joints. Examination of the track as far

back as Hudson station revealed nothing but a hexagonal one-inch nut, at the point 2,000 feet west of the derailment. It was impossible to connect this with the accident. The rear end of the draw bar connecting the engine and tank was bent 8 inches downward and 8 inches to the left, which would indicate that the derailment started in rear of the engine. He also stated that he was satisfied the forward truck of the tender was the first part of the train to be derailed. He reached this conclusion from the position of the equipment as it lay after the derailment, but beyond this he could establish no details as to the cause of the accident.

E. E. Kelley, road foreman of equipment, confirmed the statements of Division Engineer Bragg. He also stated that he examined the engineer's brake valve and the position of the reverse lever, finding the brake valve in the emergency position, the independent air-brake valve in the lap position and the reverse lever was about 7 notches ahead of the center, which is a fair working position for this type of engine. The reverse lever also had the bottom end of the martingales broken off, or the bolt out of the latch. Although not positive, he thought the forward tender wheels were first derailed, and he thought wheels were derailed before the trucks gave way. Mr. Kelley stated that he was of the opinion that it would be possible for the train to have gained a speed of 40 or 45 miles an hour at the point of derailment if it had made a stop at the first road crossing west of Hudson, but did not believe it could have attained

a speed of 55 or 60 miles an hour.

Roadmaster Lane stated that he considered the track at the point of accident safe for a maximum speed of from 65 to 70 miles an hour and while the track conditions were not absolutely perfect, he does not believe that the track conditions could have been a contributing factor to the cause of the derailment.

Section Foreman Kilms stated that he was at his section house at Hudson when train No. 4 passed on the morning of the accident and he estimated the speed at that time to be 55 or 60 miles an hour. He arrived at the scene of the accident shortly after its occurrence and examined the track, finding it to be in good condition and not over one-half inch out of surface or over one-fourth inch out of alignment at any place. He stated further that prior to the accident he was last over this piece of track the evening before. He said that he did not know whether or not the train stopped at the first road crossing west of Hudson, but if so, he thought it was unreasonable that the train could have gained a speed of 55 or 60 miles an hour at Hudson, the grade from the road crossing to Hudson being slightly ascending.

Mr. and Mrs. H. C. Bryant, who reside at Hudson near the railroad tracks, stated that they heard train No. 4 whistle as a warning to cattle on the track at the first grade crossing west of Hudson, but they are fairly certain that the train did not stop for the cattle. They estimated the speed of the train

as it passed their house at 60 miles an hour and stated that the train seemed to be running smoothly at that time. They watched the train until it was derailed. Mr. Bryant had had experience working on the track and he said he thought the track was safe for the speed at which the train was running.

Mr. W. T. York, who lives 300 yards west of where the accident occurred, stated that he was standing in his front yard and could see the train plainly. The first thing that attracted his attention was dust flying from under the rear end of the tank, immediately after which the train went off the rails. He estimated the speed of the train at the time of derailment at between 50 and 60 miles an hour, and to the best of his knowledge the track was safe for that speed.

The testimony of nearly all of the employees and officials, which include officials of the El Paso & Southwestern Railroad as well as officials of the Chicago, Rock Island & Pacific Railway, agreed that the track under the engine as it lay after the derailment was practically intact and showed no marks of wheel travel on the ties; this would indicate that the engine had not been derailed until it turned over. There were no significant marks or scars on the engine trucks, and the wheels and flanges appeared to be in first-class condition. The cylinder cocks which normally ride about 3 inches above the rail, and also the pilot, were found to be intact; all the evidence was to the effect that there was nothing discovered in the condition of any part of the engine which might have caused or con-



tributed to the accident.

The tender trucks, on the other hand, were badly broken up, it being impossible to determine with reasonable certainty which parts belonged to the forward and which to the rear tender trucks. One brake beam remained attached to each truck frame. The two brake shoes remained attached to one of these brake beams and the other had only one shoe attached. A sheet metal plate on the bottom of the tender frame was torn or ruptured to a depth of about 12 or 14 inches on each side of the front edge in such a manner as to indicate that this had been done by a forward tender truck. Not more than two or three oil box columns remained attached to the truck frame, the others being broken and the pieces scattered. One of these breaks showed some evidence of old origin. One tie bar was broken at the point of connection with the inside column and another tie bar was entirely detached from the column and badly bent. This tie bar showed marks on the lower surface and the edges which indicated that it had come in contact with the top and edge of the rail; this might have happened either in time to cause the accident or as a result of it. The bolts which attach the tie bar to the oil box columns remained in the tie bar just mentioned and the end of one of these bolts was secured and rubbed bright, indicating that this was probably due to its riding on the top of the rails. The nut on this same bolt was also secured and scarred and had a notch worn in the corner, indicating with reasonable certainty that it had been in contact with the inside and corner

of the ball of the rail. One of the tender truck springs was found to be broken, having 6 or 7 broken leaves. This was an old break. Careful inspections of all the equipment failed to disclose any indications of loose or defective wheels or flanges.

A subsequent examination of the trucks of the tender of a locomotive of the same type as locomotive 921 was made for the purpose of observing the position of the spring hangers and if possible to anticipate the consequences in the event of the failure of one of these parts. One of the spring hangers was found actually in slight contact with the tie bar when the locomotive was at rest and the surface of the metal of the tie bar presented a somewhat bright and burnished appearance at the point of contact, indicating that the condition was of some duration and frequency.

While the cause of this accident could not be determined, the most plausible explanation would seem to be the failure of a spring hanger on one of the tender trucks. It is possible that in the event of the breaking of one of these parts there might be created a sudden blow or thrust upon the tie bar of sufficient force to break it, thereby resulting in the alignment of the wheels becoming modified sufficiently to contribute to a derailment.

Statements of the outside witnesses differ from the statements of the members of the crew as to the speed at which the train was running when derailed, the members of the crew all agreeing that the speed was about 40 miles an hour while the out-

side witnesses estimate the speed at a considerably higher rate, and while excessive speed might reasonably have been a contributing factor to the derailment it is believed that the members of the crew were in a position to give a more accurate estimation; also if it be true that the train stopped at the first road crossing west of Hudson as claimed by the crew, it is hardly probable that the speed of the train at the time of the derailment could have been more than 40 miles an hour, as the grade from the crossing to Hudson is ascending and it is not believed the train would have had sufficient time to gain a speed as high as 60 miles an hour.

The crew of train No. 4 at the time of the derailment had been on duty 1 hour and 10 minutes after a sufficient period off duty to comply with the Hours of Service Law.

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