INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE ST. LOUIS-SAN FRANCISCO RAILWAY AT MONETT, MO., ON JANUARY 23, 1930.

March 22, 1930.

To the Commission:

On January 23, 1930, there was a derailment of a passenger train on the St. Louis-San Francisco Railway at Monett, Mo., which resulted in the death of one employee, and the injury of one passenger, two mail clerks, one express messenger, and one employee.

Location and method of operation

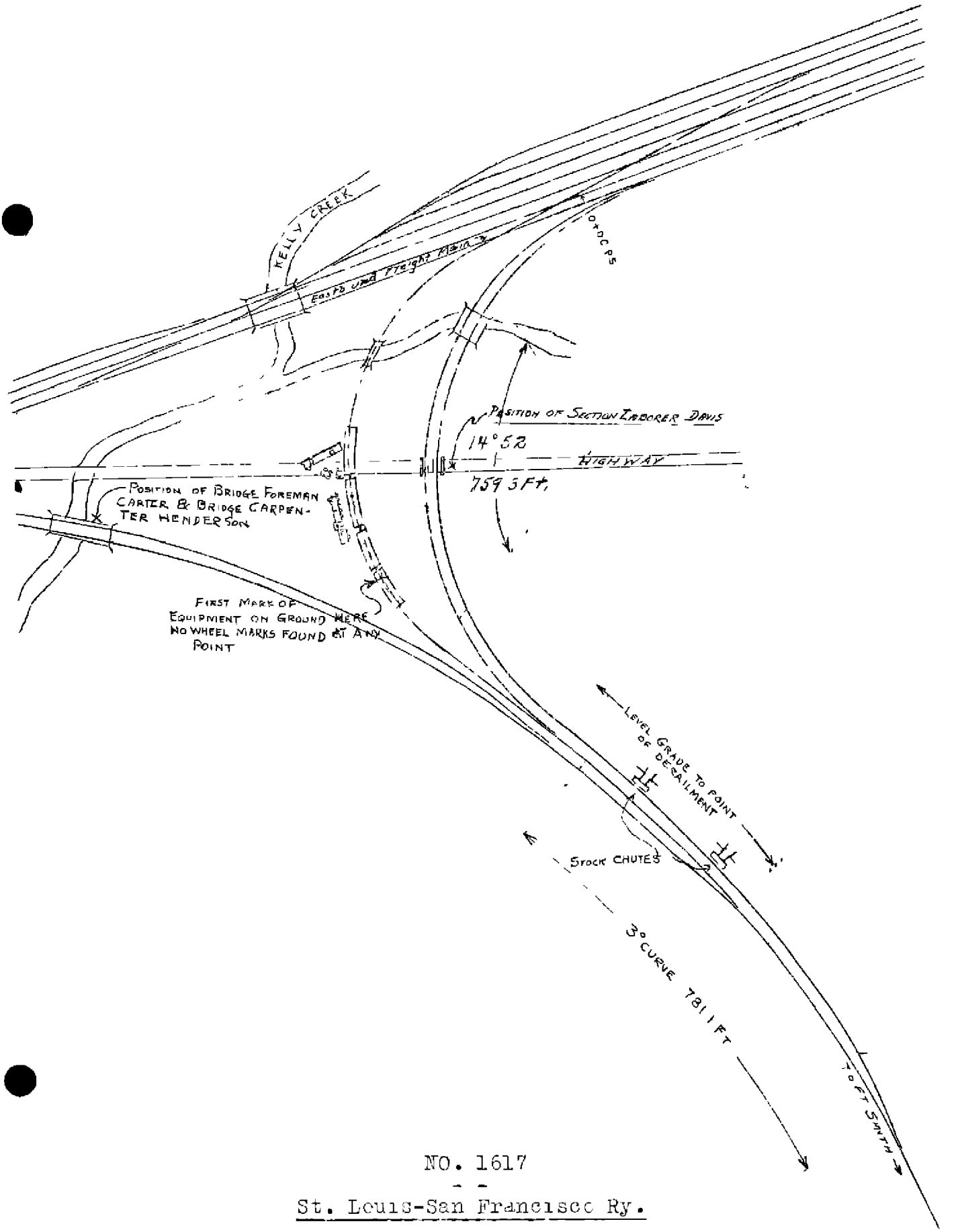
This accident occurred on the Fort Smith Sub-Division of the Central Division, which extends between Fort Smith, Ark., and Monett, Mo., a distance of 134.4 miles, and is a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. The accident occurred at a point 1,452 feet south of the station at Monett, referring to time-table direction, approaching this point from the south, there is a 3° curve to the left 731.1 feet in length and then tangent track for a distance of 302.9 feet, followed by a 1° 52' curve to the right 729.3 feet in length, the accident occurring on this curve at a point 147.2 feet from its southern end. The grade is level at the point of accident, although descending when approaching this point. The maximum speed permitted for passenger trains is 50 miles per hour.

In the vicinity of the point of accident, the track is laid with 90-pound rails, 33 feet in length, with an average of 20 oak ties to the rail-length, fully tie-plated, double spiked on the outside and single-spiked on the inside, and ballasted with chats to a depth of 13 inches. The general maintenance of the track is good.

The weather was clear at the time of the accident, which occurred about 8.20 a. m.

Description

Northbound passenger train No. 712 consisted of one baggage car, one combination mail and coach, one chair car, and two Pullman sleeping cars, hauled by engine 1057, and was in charge of Conductor Miller and Engineman Canary. This train departed from Fort Smith at 4.35 a.m. on time, passed Purdy, 7.6 miles south of Monett, at



NO. 1617

St. Louis-San Francisco Ry.

Monett, Mo.

Jan. 23rd 1930 .

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9.15 a. m., 26 minutes late, and was approaching the station at Monett when it was derailed while traveling at a speed estimated at 25 miles per hour.

The engine and tender were derailed to the left, the engine coming to rest on its left side at a point 137 feet north of the first mark of derailment, with the tender bottom up, directly behind the engine. The first car and the rear truck of the second car were also derailed, the first car resting on its right side beyond the engine, clear of and nearly at a right angle to the track. The train stopped with the head end of the fourth car nearly opposite the rear of the engine. The employee killed was the fireman and the employee injured was the engineman.

Summary of evidence

Engineman Canary stated that he inspected the engine before train No. 713 arrived at Fort Smith, inbound, and noticed no defects. There was no brake-test made after the inbound engine had been cut off and his own engine coupled on, but after leaving that point he made a running test while traveling at a speed of 12 or 15 miles per hour and the brakes appeared to be in good working condition. All station stops were made in the usual manner except at three points where he ran by the stations, due to the platforms being covered with snow and to his failure to begin braking soon enough. The trip was made without incident until shortly after passing Garfield, 30.8 miles south of Monett, where the brakes were applied from some unknown source. As soon as the train stopped, he made an inspection and found the steam hose missing from the rear of the tender and the leading car. After consulting the conductor, it was decided to go to Seligman, the next station in advance, to make repairs. After the train had proceeded a short distance it was again stopped by some one applying the brakes from the train. The train then proceeded to Seligman, where the missing hose were replaced, and it was then backed up in order to take water, the stop being made from the engine. The signal line was working at this time, as he received a signal to proceed, and another running test of the brakes, made after leaving this point, showed that they were functioning properly. The train was traveling at a speed of 49 or 50 miles per hour when nearing Monett, and when it reached the one-mile board, south of Monett, he made a brake-pipe reduction of about 12 pounds, which had the desired effect and reduced the speed to about 35 miles per hour, the brakes then were released. A second application of the brakes was made when the train was about 600 feet south of the stock-track switch, this switch being located approximately 1,300 feet

south of the point of accident, which further reduced the speed to about 25 miles per hour, and this was the speed at which the train was traveling at the time it was derailed. The brakes had not been released after this second application, and when he felt the engine overturning he moved the brake-valve handle to the emergency position. Engineman Canary did not think the brakes themselves had acted any differently on this trip than on previous trips, and said the brake applications coming in to Monett were made at about the same locations. He had previously operated trains around this curve at the same speed as the train was traveling on the day of the accident, and thought this speed was perfectly safe and that he could have stopped without difficulty before reaching the crossing 700 feet distant. He did not hear a communicating whistle signal to reduce speed while approaching Monett, although he did hear a signal to shut off the steam heat. Engineman Canary further stated that when the train first stopped near Garfield, he made a hasty examination of the engine but noticed nothing wrong. Upon arrival at Seligman, however, he discovered that the blow-off muffler box was missing from beneath the engine and the muffler pipe was bent. He examined the pilot, engine truck, and trailer truck, and they were found to be in good condition, and he had not heard anything strike the muffler box while en route nor had he noticed any obstruction on the track. Engineman Canary knew of no speed restrictions for the curve on which the accident occurred, and said he did not believe that the speed limit of 50 miles per hour had been exceeded by more than 1 or 2 miles at any time after starting the trip, saying he passed Purdy at 9.13 or 9.14 a. m., instead of 9.15 as shown by the train sheet, and therefore used more than eight minutes in traveling the distance of 7.4 miles to Monett. Engineman Canary's regular assignment is in freight service on the Springfield Sub-Division, but he said he is used in extra and emergency passenger service, he had made about 20 trips between Fort Smith and Monett, in addition to 3 trips in learning the road, and said he was familiar with that territory.

Conductor Miller stated that after the engine was coupled to the train at Fort Smith, a car man made the regular air-brake test and informed him that all of the brakes were working properly. After passing Garfield the train appeared to have run over some obstruction and he pulled the signal cord, giving the engineman an emergency stop signal, and the train came to a gradual stop. He then got off, in company with the train porter, inspected the train, and found the brake-pipe hose and the air-signal hose between the second and third coaches partly separated, which allowed the air to escape, he also noticed that the steam hose was missing between the tender and the first car.

Some of the brake beams of the cars were slightly bent, but he did not consider that this would interfere with the braking power of the train. He then sent the porter back to see if he could locate what the train had encountered, and in the meantime he looked under the train for some obstruction and for indications of something dragging, but did not find anything. It was then decided to go to Seligman to replace the missing hose, but shortly afterwards the train was again stopped, by either the porter or the flagman, and the porter went back and rolled some object off the track, but it was not until they reached Seligman that the conductor was told by the fireman that the muffler box was missing from the engine. After departing from Seligman, the engineman made a running test of the brakes, while a perfect stop was made at another station en route to Monett. It was 9.15 a. m. when they passed Purdy, but Conductor Miller did not feel uneasy about the speed of the train until it was somewhere in the vicinity of the yard-limit board; when about 1 mile south of the station, the speed had been 45 or 50 miles per hour, but a brake-pipe reduction reduced it to 35 miles per hour and this was the rate of speed when he began to feel uneasy, the brakes did not appear to release, however, and the speed had been reduced to about 25 miles per hour by the time the train passed the stock-track switch. Realizing that the train still was traveling too fast, he communicated a "reduce speed" signal to the engineman, but did not know what action was taken by the engineman as the train entered the curve on which the accident occurred and this might have retarded the speed somewhat; he thought the train was traveling between 20 and 25 miles per hour at the time of the accident. Conductor Miller was of the opinion the brakes were not released after they were applied near the yard-limit board, but was concerned about the speed of 25 miles per hour, as trains usually round this curve at a speed of between 15 and 20 miles per hour, although as a matter of fact he said he had been on trains that came around this curve probably as fast as his own train was moving on the day of the accident. After the accident he went back and inspected the track, but found no defects, and the only marks of derailment were on the ends of the ties.

Flagman Pfeiffer stated that he noticed no unusual handling of the train en route and was not alarmed about the speed approaching Monett. He estimated that the train had been traveling 50 miles per hour, but this speed had been reduced to 35 miles per hour by the time the train passed the yard-limit board; it was further reduced to about 25 miles per hour before it entered the curve on which the accident occurred, and was running at about this

same speed when the derailment occurred. The flagman further stated that he was the one who gave the engineman the signal to shut off the steam heat when approaching Monett. Immediately after the accident, he went back to flag and did not notice any marks on the rails or ties, or in the snow, to indicate that anything had been dragging, and he did not find any obstructions south of that point that could have contributed to the cause of the accident.

Train Porter Austin stated that when he felt an unusual motion of the train, between Garfield and Seligman, he remarked to the conductor that the train must have struck a broken rail. After the train stopped, he got off with the conductor and adjusted the hose connections between the second and third cars, and upon instructions from the conductor he went back behind the train to see what the trouble was and found a belt and a spring hanger from one of the cars lying on the track. Train Porter Austin and the flagman were on the rear platform when the train started and they noticed some object on the track after the rear of the train had passed over it, the flagman at once applied the brakes by means of the tail hose and they went back and rolled this obstruction from the track; at the time he did not know what it was. After replacing the steam hose at Seligman, the train proceeded and he did not notice any unusual handling of the train until it reached a point about 1 or 1½ miles from Monett, when he realized the train was traveling much faster than usual when approaching curves and commented to the conductor to this effect. Due to the speed of the train when it entered the curve, he braced himself expecting something to happen. He did not feel any application of the brakes or notice any reduction in speed between the point where he first became apprehensive, and the point of accident, and was unable to give any estimate of the speed, but felt certain that the train would not take the curve at the speed at which it was traveling.

Bridge Carpenter Henderson stated that he was working on a bridge located on another part of the road, approximately 200 yards west of the point of accident, and when he observed train No. 712 approaching he became alarmed about its safety in rounding the curve south of the station, due to its speed, which he estimated as between 35 and 50 miles per hour. Bridge Foreman Carter, who was also working on the same bridge, stated that Carpenter Henderson called his attention to the speed of train No. 712 while it was approaching the point of accident, and although he did not pay particular attention, he thought the train was traveling at a speed of about 40 miles per hour when it was in the vicinity of the stock-track switch. Section Laborer Davis stated that he was working in the vicinity of the point of accident, when his attention was attracted by the whistle

of the train, and as it was traveling at a high rate of speed he watched it continuously until the derailment occurred. He estimated the speed at 50 miles per hour when he first noticed the train, and there did not appear to be any reduction in speed prior to the accident. After the accident, he examined the track south of where the equipment came to rest and found no marks indicating that anything had been dragging.

Section Foreman Stolle stated that he inspected the track subsequent to the accident and did not detect any marks, or anything that could have contributed to the cause of the accident. Measurements were taken of the gauge and alinement at several points 15 feet apart, south of the point of accident, and they indicated perfect track conditions, the gauge running from one-eighth to one-half inch wide, with a maximum elevation of 3 inches, the track was not damaged at the point of derailment.

General Foreman Brooke, of the Bridge and Building Department, stated that he assisted in examining the track in the vicinity of the point of accident, about five minutes after its occurrence, and found nothing wrong with the track. The only mark of derailment was a furrow cut in the roadbed about 15 inches from the gauge side of the west rail, which appeared to have been caused by the wheels on the left side of the engine, and there were also some marks on the ties, but they did not look like flange marks.

Division Engineer Gelwix stated that upon his arrival at the scene of accident, he made a careful examination of the track but was unable to find any marks on the rails. The track was in first-class condition, with no sign of a tendency to spread at the point of derailment; in fact, no repairs were made to the track except at a point north of the initial point of derailment, where three rails were bent on the inside of the curve. Measurements taken of the cross level, beginning at a point south of the first mark of derailment, and extending northward for a distance of 65 feet, showed that the elevation was one-half inch under what it should have been, but he did not consider this unusual, as it was not uncommon to find a variation of from one-fourth to one-half inch either over or under correct elevation, even on curves through high-speed territory. The elevation of 3 inches would be safe up to a speed of 33 miles per hour, although for easy riding the speed of a train should not be more than 17 miles per hour. This variation of one-half inch in elevation, however, probably would reduce the maximum safe speed on this

curve, under which there would not be danger of derailment, to 28 miles per hour. In his opinion, this under-elevation was not a contributing factor to the derailment, and he thought that train No. 712 approached this curve and was derailed while traveling at a speed of not less than 40 miles per hour.

Locomotive Inspector Scherry stated that he inspected engine 1057 while it was on a pit at Fort Smith but did not notice anything loose under the engine, although he could not remember whether the muffler was securely fastened, there was nothing irregular about the brake pipes or the brake valve of the engine. Car Inspector Swift stated that after the ergine was coupled to the train at Fort Smith, he made the regular air-brake test and the brakes on all of the cars worked properly. Air Brake Foreman Bryant stated that a test was made of the brakes on the cars which remained on the track, and after making a 20-pound brake-pipe reduction, the piston travel on each car was measured and found to be proper, except that the piston on the cylinder of one of the Pullman cars would not set, on account of the crossover pipe entering the cylinder being broken, which condition he thought was a result of the accident. He also inspected the train immediately after the derailment and found all angle cocks open.

Superintendent Hagers stated that there is no speed restriction on the curve on which the accident occurred other than the maximum speed shown in the time-table. The rules, however, provide that trains must approach railroad crossings at grade, etc., prepared to stop unless signals indicate proceed and the track is clear, and that such stops shall be made not less than 100 feet before reaching the crossing. A crossing of this character is located approximately 700 feet beyond the point of accident, and trains should be operated accordingly. It was his opinion that the speed of the train was responsible for the accident.

Conclusions

This accident is believed to have been caused by excessive speed.

An examination of the track and equipment failed to disclose anything which could have contributed to the accident, and while damage to air hose and brake beams had resulted due to the train having passed over the blow-off muffler box while en route, yet there was ample evidence to indicate that the brakes were in proper working order when approaching the point of accident. The train crew

estimated the speed of the train at the time of the accident at about 25 miles per hour, although eyewitnesses to the accident fixed the rate of speed at a much higher figure. According to the statements of Division Engineer Gelwix, he considered that the elevation on this curve was sufficient to permit a train to negotiate it safely at a speed of 33 miles per hour although a slight variation in the elevation a short distance south of the point of derailment would reduce the safe limit of speed to about 28 miles per hour. In view of the fact that the only marks of derailment found on the track were some marks on the ends of the ties on the outside of the curve, coupled with the distance the engine traveled after it became derailed, it is believed that the engine overturned as a result of a speed in excess of the safe limit.

Rule 93 of the Rules of the Transportation Department requires trains to approach railway crossings at grade prepared to stop, and such a crossing is located 692 feet beyond the point of derailment, for which trains of this division were required to stop unless a proceed signal were received. This situation, coupled with circular instructions addressed to enginemen and calling attention to the fact that passenger trains were approaching Monett yard at too high a rate of speed, which circular was reissued approximately every six months, appeared to have been considered sufficient to cause trains to be operated on this curve at a safe rate of speed. Rule 841 of the Rules for the Maintenance of Way and Structures, however, provides that where the speed permitted by the time-table is higher than the elevation of curves will permit, speed must be reduced accordingly, and this rule also provides that signs "shall" be placed one-fourth mile from the beginning of each curve where the speed is to be reduced, showing the maximum permissible speed. In this particular case, the permissible speed under the time-table is 50 miles per hour, and the elevation on a curve of this degree obviously could never be made safe for such a rate of speed, yet no sign had been put up in accordance with the requirements of rule 841. The installation of such a sign would provide a guide for the benefit of enginemen entering Monett over this line and would eliminate the necessity for reissuing the circular instructions to enginemen referred to above.

The employees involved were experienced men, although Engineman Canary had done most of his running on another sub-division, and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,
Director.