INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PANHANDLE AND SANTA FE RAILWAY NEAR QUINLAN, OKLA., ON MAY 19, 1931.

July 1, 1931.

To the Commission:

On May 19, 1931, there was a derailment of a passenger train on the Panhandle and Santa Fe Railway near Quinlan, Okla., which resulted in the death of 1 employee, and the injury of 15 passengers, 4 mail clerks, and 1 Pullman porter.

Location and method of operation

This accident occurred on the First District of the Plains Division, extending between Canadian, Texas, and Waynoka, Okla., a distance of 108.1 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred at a point approximately 1.9 miles west of the station at Quinlan; approaching this point from the west, there is tangent track for a distance of 2,377.8 feet, and then a 5° 48' curve to the left 882.2 feet in length, the accident occurring at about the center of this curve. The grade is 1 per cent descending on the tangent track, followed by 0.73 per cent descending grade on the curve.

The track extends through a cut practically the entire length of the curve, this cut having a maximum height of 30 feet. The track is laid with 90-pound rails, 33 feet in length, with 20 hardwood ties to the rail-length, partly double-spiked and fully tie-plated, with 4 gage rods and 10 rail anchors to the rail-length. It is ballasted with crushed rock to a depth of approximately 10 inches and is well maintained. The speed is restricted to 50 miles per hour for passenger trains.

The weather was clear at the time of the accident, which occurred at 6.43 p.m.

Description

Eastbound passenger train No. 22 consisted of 2 express cars, 1 empty baggage car, 2 mail cars, 2 combination baggage and express cars, 2 coaches and 2 Pullman sleeping cars, in the order named, hauled by engine 3444, and was in charge of Conductor Melton and Engineman Taliaferro. All of the cars were of steel construction with the exception of the first two cars, which were of wooden construction with steel underframes. This train departed from Curtis, 5.9 miles west of Quinlan, at 6.37 p.m., nine minutes late, according to the train sheet, and was derailed near Quinlan while traveling at a speed estimated by the crew to have been between 35 and 40 miles per hour.

Engine 3444 came to rest leaning against the right or south bank of the cut, at an angle of approximately 40°, and about 305 feet beyond the first tie mark and 20 feet from the track. The tender remained coupled to the engine, leaning against the bank of the cut, with its rear end about 9 feet from the track. The first six cars and the forward truck of the seventh car were derailed; the first two cars were demolished, and the next four were practically at right angles to the track, within a space of 175 feet, the third car being suspended 10 or 12 feet above the track with its ends resting against both banks of the cut. The employee killed was the engineman.

Summary of evidence

Fireman Crews stated that he was sitting on his seat box and suddenly the engine lurched toward the left, at which time the engineman applied the air brakes in emergency; the entire engine seemed to drop on the ties, and then it lurched to the right and tipped over. The train had been traveling at a speed of about 45 miles per hour, approaching the curve west of the curve on which the accident occurred, when the engineman made a brake-pipe reduction and after leaving that curve he started releasing the brakes and was working a light throttle, the brakes having been released to some extent when the engine gave the sudden lurch. Fireman Crews estimated the speed at the time of the accident to have been between 35 and 40 miles per hour. The air brakes had worked properly en route, the engine had taken the curves smoothly, and no trouble had been experienced at any time; the last time he had looked around the engine was at Canadian, while Engineman Taliaferro looked the engine over at Amarillo, oiled it at Shattuck, and at Woodward walked

up on the right side as far as the front end, but he did not think that the engineman came over to the left side at that time. Fireman Crews said he saw nothing on the track ahead approaching the point of accident, and could advance no opinion as to the cause of the derailment unless it was due to something dropping down on the engine. It also appeared from his statements that he was not positive about seeing the automatic signal just west of the point of accident, but that the engineman called it as displaying a clear indication; the preceding signal was in the clear position.

Conductor Melton stated that he was riding on the left side in the eighth car and as the engine was rounding the curve he was looking out of the window and saw a baggage car head away from the track toward the left and strike the side of the cut. At the time of the accident he showed in his report that the train was traveling at a speed of between 40 and 45 miles per hour, but later when he considered the time the train departed from Curtis, which he stated was at 6.36 p.m., and the time of the accident, 6.43 p.m., therefore consuming seven minutes in about 4 miles from Curtis to the point of accident, he felt that he might have been mistaken as to the speed at which the train was traveling at the time of the accident. He stated that the speed had been reduced on the curve west of the point of accident to 30 or 35 miles per hour, and while the brakes had been released to some extent after leaving that curve, yet they had not been entirely released before the accident. Conductor Melton noticed nothing unusual in the riding of the train at any time, stating that Engineman Taliaferro made a practice of steadying the train around the curves, that he was not in the habit of running at high rates of speed, and that he was considered a very competent engineman and not reckless. Conductor Melton did not inspect the track nor examine the equipment after the occurrence of the accident and could give no opinion as to its cause. Flagman Hagler and Train Porter Miller estimated the speed of their train at the time of the accident to have been 35 or 40 miles per hour.

Enginemen Young and Lane, who were deadheading on train No. 22, were riding in the eighth car when the accident occurred. They noticed no unusual speed after leaving Curtis and estimated it at 35 or 40 miles per hour at the time of the accident.

Roadmaster Haas stated that he arrived at the scene of the accident about one and one-half hours after its occurrence, inspected the track, and found it torn up

for a distance of about 264 feet. At a point about 35 or 40 feet west of where the track was torn up, he found five ties, flange-marked on the left side of each rail, these marks starting off toward the low side of the curve, and later he decided they were made by a baggage or express car, instead of by the engine. In numbering the rails from mile post 363 westward, this mile post being located on the curve 109 feet from its leaving end, beyond the point of accident, he found on the eighteenth rail, on the outside of the curve, four abrasions on the ball of the rail about 20 to 30 inches in length and spaced about 30 inches apart. Proceeding eastward, the seventeenth rail from the mile post was in an upright position and he noticed nothing peculiar on that rail. Deep indentations were found on the ball of the sixteenth rail, this rail being badly scuffed, and there were light abrasive marks on the inside web which appeared to have been caused by metal dragging against it; this rail was upright and spiked, but twisted to some extent. The eighteenth rail on the opposite or north side also had some abrasions on the ball; the seventeenth rail was in good shape, but the joint between the sixteenth and fifteenth rails was broken and the fifteenth rail was thrown out into the ditch about 6 feet. The entire track from that point for a distance of seven rail-lengths was apparently brushed off the roadbed, the track not being disturbed in any way beyond the ninth rail eastward, although the engine, tender and first car were on the bank beyond that point. Three gage rods were broken opposite the seventeenth rail and four opposite the sixteenth rail; these gage rods did not appear to have been struck by anything but had broken as a result of severe strain against both rails from the gage side. He found no flange marks on the outside of any of the high rails west of those that were torn up. Measurements were taken of the elevation and gage from the point of curve to the point of derailment, a distance of 10 rail-lengths the maximum elevation being $4\frac{3}{4}$ inches while the gage varied from 1/8 to 5/8 inch wide. Roadmaster Haas stated that while he had no doubt that the train had been traveling at a good rate of speed, yet he did not think it had exceeded the limit allowed in that territory, and he was more inclined to think that something had dropped from the engine, causing the rail to spread and breaking the gage rods, although this could have been a result of the accident. A binder bar found in the wreckage to the left of the engine, might have been the cause of the derailment. Roadmaster Haas stated that he had walked over the track in the vicinity of the point of accident on May 13 and had ridden over it on a motor car on the morning of the accident.

Section Foreman Narron, who was in charge of the section of track on which this accident occurred, stated that he arrived at the scene of the accident soon after its occurrence, inspected the track that evening and also on the following morning, and found the marks on the ties and rails, as stated by Roadmaster Haas, the flange-marked ties being just west of where the track was torn up. He added that the marks found on the ball of the rail on each side of the track, started at the gage side, crossed to the outside edge and then back to the gage side, starting and ending as a hair line, but being much wider in between the ends; also that the seven gage rods found broken west of where the track was torn up had all been broken on the left side of the track. He stated that he observed the track from Curtis to the point of accident and saw no marks of any kind that would indicate that anything had been dragging west of the point of accident, although the marks on the track at the point of accident indicated that something had dropped on the rail and slid over it, and he thought that the binder bar mentioned by the roadmaster might have made these marks. On the day previous to the occurrence of this accident he had been over this curve with his level board and found the track in good condition, and while the rail was slightly curve worn, it was not enough to be changed.

The statements of Supt. Briscoe, General Foreman Hackett, Master Mechanic Flanders, Mechanical Supt. Machovec, and Mechanical Engineer Lanning indicated that they had made careful investigation for the purpose of determining the cause of the accident, but their ideas differed as to just what occurred. The superintendent thought some of the marks on the binder mentioned by the roadmaster were flange marks and that the accident was due to the engine running over something; the general foreman did not think the binder had been loose, or low enough to strike a tie and cause the accident, while the master mechanic was of the opinion that none of the marks on the binder were flange marks and he said the indications were that the engine slid along against the side of the cut from 60 to 75 feet before rebounding and that he did not think the equipment could have been piled in the manner in which it was found had the train been running at any ordinary or allowable rate of speed. The mechanical superintendent thought the abrasions on the ball of the high and low rails mentioned by the roadmaster were made by the wheels of a coach sliding just before being brought to a stop, while he said tests showed that some of the marks on the binder considered significant by some of the witnesses could have been made by a spring hanger. The shearing of the bolts at either one of the ends of the binder would not

have been enough to allow it to drop down so it would strike anything, and it was his idea that the damage to the binder occurred after the actual derailment of the engine. He expressed the opinion that the accident was due to excessive speed. Mechanical Engineer Lanning said that the engine apparently was on its side during some of its movement along the side of the cut, and he also thought that the binder in question was in place until after the engine left the track. His observation of the engine while being rerailed and observations made while it was being moved away indicated that springs, equalizers and driving boxes were working freely, and there was no evidence that any moving part was defective.

Machinist Forson stated that on the day of the accident he inspected engine 3444 at Amarillo before its departure; he found the wedge on the right rear driving wheel a little tight and pulled it down; the cellar on this driving wheel was a little warm and he repacked that and then made an inspection of all of the cellar bolts and truck binder bolts, and found them all to be in good condition, with nuts and cotter keys on them.

Inspection of the track by the inspectors of this Bureau showed that the rails and ties were marked substantially as described by various witnesses. It was their opinion that the abrasions on the ball of the rail were made by some object dragging or sliding along on the surface of the rails, but that these abrasions were not connected with the derailment initially.

Engine 3444 is of the 4-6-2 type, having a total weight, engine and tender, of 556,400 pounds, and had received class 3 repairs on March 26, 1931. Inspection of this engine subsequent to the accident disclosed nothing that would have contributed to its cause; the flanges on all the wheels were in good condition, there was no excessive lateral, and the driving brake rigging and spring rigging were found to be intact and in their normal position. While the right engine-truck pedestal binder was found broken, lying on the ground to the left of the engine after the accident, it was not thought that it had any bearing on the accident, but rather that it broke after the engine became derailed; the rear 20 inches of this binder remained securely in place, bolted to the bottom of the rear pedestal jaw.

Conclusions

The cause of this accident was not definitely ascertained.

The first marks on the track were abrasions on the ball of the high and low rails, 61½ feet west of the first marks on the ties. These abrasions extended intermittently for a distance of about 13 feet. Beginning about 30 feet farther east, there were marks on an angle bar on the inside of the high rail of the curve, followed by the breaking of seven gage rods on their left ends and the marking of a few ties by wheels which had derailed toward the left or inside of the curve. Just east of these flange-marked ties the track was torn up for more than 200 feet. Several witnesses advanced the suggestion that the derailment was due to the right engine-truck pedestal binder having dropped down and then having been run over. A careful examination of this binder, however, coupled with various tests which were made, indicated considerable doubt as to whether the binder broke until after the engine became derailed, and the other examinations made of the engine failed to reveal any condition which it was thought could have caused the accident. The same thing may be said of the track; it was maintained in good condition, and while the elevation possibly was none too high for the maximum rate of speed permitted, which is 50 miles per hour, yet there was no positive evidence that would justify saying that the accident was due to excessive speed. The second automatic block signal west of the point of accident was seen by the fireman to be displaying a clear indication, and he was positive that the engineman called a clear indication at the signal immediately west of the curve on which the accident occurred. It is, of course, possible that there was an obstruction of some kind on the track sufficient to cause the derailment, but no definite statement on this point can be made, nor is it believed that any positive statement as to the primary cause of the accident is justified.

All of the employees involved were experienced men, 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.