INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD NEAR GALLITZIN, PA., ON AUGUST 29, 1927.

October 14, 1927.

To the Commission:

On August 29, 1927, there was a derailment of a passenger train on the Pennsylvania Railroad near Gallitzin, Pa., which resulted in the death of two employees and the injury of three employees. The investigation of this accident was made in conjunction with representatives of the Public Service Commission of Pennsylvania.

Location and method of operation

This accident occurred on that part of the Pittsburgh Division extending between Pittsburgh and Altoona, Pa., a distance of 113.8 miles. In the vicinity of the point of accident it is a four-track line over which trains are operated by time-table, train orders and an automatic block-signal system. The tracks are numbered from north to south as follows, 4, 3, 2, and 1, the accident occurring on track 2, the eastbound passenger track, at a point 5,370 feet east of SF block station; approaching this point from the west there are several slight curves and short tangents, followed by a curve to the right of 8° 30' which is 1,135 feet in length, the accident occurring on this curve at a point about 230 feet from its western end. The grade for a distance of about 1½ miles is descending for eastbound trains, varying from 1.42 to 2.36 per cent, it is 1.73 per cent at the point of accident. The speed of passenger trains on the curves in this immediate vicinity is restricted to 30 miles per hour.

The curve on which the accident occurred begins in a rock cut and then extends out on to a fill which is about 120 feet in height. The track at this point is laid with 130-lb. rails, 39 feet in length, with 22 or 23 ties to the rail-length, tie-plated, and is double-spiked on the inside of each rail and triple-spiked on the outside, with six rail anchors to each rail-length. This portion of the track was raised and ballasted in June of this year, at which time it was also re-tied and the spacing of the ties corrected where necessary; the ballast is of crushed stone, filled in level with the tops of the ties. The general maintenance of the track is good.

The weather was slightly foggy at the time of the accident, which occurred at about 2.23 a. m.

Description

Eastbound passenger train No. 28, known as the Broadway Limited, consisted of one club car, eight Pullman sleeping cars and one observation car, all of steel construction, hauled by engines 1462 and 5443 and was in charge of Conductor Simpson and Enginemen Garrett and Hunter. It passed SF block station at 2.31 a. m., three minutes late, and was derailed at a point slightly more than 1 mile east of SF block station while traveling at a speed variously estimated to have been from 35 to more than 40 miles per hour.

Engine 1462 was derailed toward the outside of the curve and came to rest on its left side across track 4 with its head end 405 feet beyond the point of derailment Engine 5443 crossed tracks 3 and 4 and went part way down the embankment on the outside of the curve, coming to rest at a point approximately 50 feet below the level of the tracks, while the tender cistern continued down the embankment and stopped at a point about 100 feet below the track level. The club car followed the tender down this embankment and came to rest on its left side at right angles to the track with its rear end at the foot of the embankment. The first sleeping car came to rest in an upright position with its rear end extending across tracks 3 and 4 and the head end of the car projecting outward over the fill. The next three sleeping cars were also derailed but remained upright. The employees killed were the engineman and fireman of the leading engine.

Summary of evidence

Engineman Hunter, in charge of the second engine, said that after departing from Pittsburgh a running test of the air brakes was made and that air-brake applications were also made at two other points en route together with a running test at Gallitzin, nearly 1 mile west of SF block station. After starting down the grade at this point the brakes were applied while the train was passing through the first part of the tunnel located a short distance east of Gallitzin station and then again in the vicinity of the home signal at SF block station, not being released between that point and the point of accident; he did not know the extent of the last application but said it was rather substantial. Engineman Hunter further stated that he had noticed nothing unusual in the handling of the train and no indication of anything wrong with his own engine, and was of the opinion that the lead engine was the first to be derailed He estimated the speed at the time of the derailment to have been about 35 miles per hour.

Fireman Hartman's statements concerning the first part of the trip were similar to those of Engineman Hunter. In regard to the application of the brakes made in the vicinity of SF block station, however, he said that this application

was not released until the train reached the curve on which the accident occurred. Fireman Hartman had not noticed anything unusual and his first knowledge of anything wrong was when he heard a noise, followed immediately by the derailing of his own engine His estimates as to the speed of the train agreed with those of Engineman Hunter.

Conductor Simpson said that after leaving Pittsburgh the train was handled properly except at one curve where the speed apparently was a little too high. A road test of the air brakes was made as the train reached the top of the grade at Gallitzin, after which the brakes were released and Conductor Simpson thought steam was worked until the train had nearly reached the eastern end of Gallitzin tunnel, a very short distance west of SF block station. From this point the train was allowed to drift to a point east of SF block station before a light application of the air brakes was made. This did not seem to reduce the speed of the train to any great extent, but it caused Conductor Simpson to think that the engineman was using the brakes and would properly control the speed of the train on the descending grade. Conductor Simpson did not pay any further attention to the matter at this time as he was attending to a passenger who was to get off at Altoona, and he did not know what further application of the air brakes might have been made, but he was able to make the statement that the brakes were not released subsequent to the application which was made east of SF block station. After having attended to the passenger in question Conductor Simpson went into the wash room of the club car; it was at this moment that the train lurched as it reached the curve and he realized that it was going to be derailed. Until this time Conductor Simpson had not noticed that the speed was any higher than was customary, but judging from the motion of the train when it reached the curve he estimated that the speed probably was 40 miles per hour or more.

Baggagemaster Sutton said he noticed a light application of the air brakes both before and after the train had passed through the tunnel and it was not long afterwards that the car in which he was riding, which was the club car, lurched heavily and was derailed, he was not positive as to the speed at the time but thought it was about 30 or 35 miles per hour.

Flagman Clemens said a road test of the air brakes was made at Gallitzin and that he did not remember noticing any other application of the air brakes until the train approached the curve on which the accident occurred. The application made at that time seemed to be an ordinary application and in a few seconds the train came to a very abrupt stop. Flagman Clemens further stated that he had not noticed anything unusual in the handling of the train or any excessive speed when rounding curves and he was not able to give any definite information as to its speed at the time of the accident.

The statements made by the operators on duty at AR and SF block stations, which were the last two block stations to be passed by train No. 28, were to the effect that the train was moving at about the usual rate of speed and that they noticed nothing in any way unusual. The trackwalker stated that he walked westward on track 2 on the night of the accident, passing the curve on which the accident occurred at about 10.25 p. m., at which time he noticed nothing wrong.

The car and air-brake inspectors on duty at Pittsburgh stated that the cars in the train were in good condition and that the air brakes were in proper working order. Engines 1462 and 5443 had also been inspected prior to their departure on train No. 28 and an examination of the work reports failed to disclose a defect which could have contributed to the accident. It was noted that on one of the work reports covering engine 1462, made during the period between August 22 and August 28, an inspector had reported that the engine-truck wheels and the trailer-truck wheels were fouling the main frame. The foreman at this particular point of inspection, however, reported that repairs were not necessary, there being no defect, and an examination of these wheels after the accident revealed no indications of their having rubbed against anything recently. The truck frame was marked but apparently the marks were not of recent origin as paint which afterwards had been applied to the truck frame had not been worn off. Further detailed examination of the two engines involved in this accident, made at the point of accident and also after their removal to the shops at Altoona, failed to develop anything which could have contributed to the occurrence of the accident. In addition, the air-brake equipment was removed and tested, but these tests failed to show that there was anything to prevent this part of the equipment from operating properly.

The first mark on the track was located several feet east of a rail joint in the outer or left-hand rail and consisted of a light mark extending across the running surface of the rail, followed by marks on the spike heads on the outside of this rail and then by flange marks on the ties which led sharply to the left. The first marks on the inside of the right rail were about opposite the point where the mark appeared on the running surface of the left rail and consisted of a flange mark on a tie at a point about 10 inches from the gauge side of the rail; this mark was followed by other marks which led to the left until they ran off the ends of the ties. Tracks 2, 3, and 4 were torn up for a distance of 375 feet and a substantial portion of the track materials was carried with the equipment to where it finally came to rest. Careful examination was made of the track, while measurements were taken at 11-foot intervals beginning at a point 352 feet west of the point of derailment. There was nothing wrong with the track structure itself nor were there any broken rails. The measurements showed that the elevation gradually increased until it

reached a maximum of 3 7/8 inches, the average being 3 3/4 inches. The gauge was 4 feet 8 3/4 inches immediately west of the point of the curve while between the point of the curve and the point of derailment it varied between 4 feet 8 3/8 inches and 4 feet 8 5/8 inches. There were five points on the curve where the gauge was 4 feet 8 3/8 inches, four of these being located 150 feet or more west of the point of derailment, while the other was located approximately 55 feet from the point of derailment.

Conclusions

This accident was caused by excessive speed.

Examination of the track and equipment failed to disclose any defects which could have contributed to the occurrence of this accodent On the other hand, however, the condition of the wreckage and the manner in which the track structure was torn up and carried along with the equipment indicated quite clearly that the speed must have been in excess of the maximum authorized speed on this curve The conductor thought the speed was 40 miles per hour or more, and it is believed that this estimate is more nearly correct and that the accident was due to operating the train at a rate of speed too great for existing track conditions.

With respect to the track conditions it is to be noted that the track was well constructed and in general it was well maintained, on the other hand tight gauge was in evidence at several points, while the average elevation was only 3 3/4 inches. This situation is similar to that which existed on this same curve on April 27, 1921, at the time of the derailment of eastbound train No. 64 as a result of excessive speed; at that time tight gauge was noted at several points on the curve while the elevation was approximately 4 1/4 inches, or about 1/2 inch more than was the case in the present instance. While the desirability of keeping down the elevation on curves located on heavy grades is well recognized, yet it should be borne in mind that the lowering of elevation requires a corresponding lowering of the maximum speed allowed, if a reasonable margin of safety is to be maintained. What constitutes a reasonable margin of safety may be an open question, but in view of the comparatively low elevation on this $8\frac{1}{2}^{\circ}$ curve it is apparent that the margin of safety was not sufficient to permit the speed at which this train was running.

Undoubtedly, the officials of different railroads have different ideas with respect to the elevation of curves on heavy grades, and by way of contrast it might be well to call attention to the fact that in the investigation of an accident which occurred on the Lehigh Valley Railroad near Mountain Top, Pa., on February 16, 1926, where the curvature was 8° with an authorized speed of 30 miles per hour, it appeared

that the gauge was maintained at 4 feet 9 inches with an elevation of 6½ inches.

All 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.