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 DECEMBER 19, 1925.

March 20, 1926.

To the Commission.

On December 19, 1925, there was a derailment of a passenger train on the Pennsylvania Railroad near Gallitzin, Pa., which resulted in the death of 1 passenger and the injury of 33 passengers and 4 employees.

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 5,644 feet east of SF block station and about 1½ miles east of the summit of the descending grade which extends from a point near the station at Gallitzin eastward to Altoona, a distance of nearly 12 miles. Approaching the point of accident from the west there are some short curves and tangents followed by a curve to the right of 8° 30', which is about 1,300 feet in length, the accident occurring on this curve at a point about 600 feet from its western end. The grade for a distance of about 1½ miles is descending varying between 1.30 and 2.35 per cent, being 1.71 per cent at the point of accident. The speed of trains on the curve on which the accident occurred, which is known as Bennington curve, is restricted to 30 miles an hour.

The track on the curve is laid with 130-pound rails, 39 feet in length, with 23 ties to the

rail-length, tie-plates are used, single-spiked on each side of the rail with an additional spike on the outside of the rail to assist in holding the tie plate in position. In addition, each rail is secured by eight rail anchors, while the track is ballasted with stone to a depth of about 2 feet below the bottoms of the ties and also is filled in to the tops of the ties.

The weather was clear at the time of the accident, which occurred at 3.27 or 3.28 a. m.

Description

Eastbound passenger train No. 32 consisted of one baggage car, one box car, one combination baggage and passenger car, two coaches, and three Pullman sleeping cars hauled by engine 3763, and was in charge of Conductor Simpson and Engineman Pyle. The first car was of wooden construction, while the others were of all-steel construction. Train No. 32 passed SF block station at 3.26 a. m., on time, and was derailed on Bennington curve while traveling at a speed believed to have been about 60 miles an hour.

Engine 3763 came to rest 274 feet beyond the point of derailment on its left side nearly at right angles with the roadway, with its head end fouling track 4 and its rear end partly down the embankment on the outside of the curve; the tender was on the north side of the right-of-way opposite the engine and about 40 feet distant from it. The first car came to rest against the driving wheels of the engine and was practically demolished. All of the remaining seven cars were derailed, four of them being either overturned or tilted at an angle of about 45°. The head end of the second car as it came to rest was nearly 400 feet beyond the engine, while the rear end of the sixth car stopped practically opposite the engine. All of these cars, with the exception of the first car, remained generally in line with the track.

Summary of evidence

On account of injuries sustained in the accident the enginemen and fireman were not interviewed until nearly a month after the occurrence of the accident. At that time Engineman Pyle said that after the engine had been coupled to the train at Pittsburgh, which is 102 miles from Gallitzin, the air brakes were tested and were reported to him by the inspector as being in proper working order. No

difficulty was experienced in making the few scheduled stops en route and at Johnstown he was informed by the conductor that there were passengers to be let off at South Fork, 16.3 miles from Gallitzin, this being a stop not on the schedule of this train. When approaching that point Engineman Pyle made a brake-pipe reduction preparatory to making the station stop and he said the air brakes applied in emergency, bringing the train to a stop before it reached the station platform. He then released the brakes and pulled ahead to the station where a second stop was made, to the best of his recollection, without getting an undesired quick action of the brakes. The next time the brakes were used was in making the running test at Gallitzin preparatory to starting down the grade toward Altoona. In making this running test Engineman Pyle said he again obtained an undesired quick action of the brakes, bringing the train to a stop. After starting the train from this point he used enough steam to pass over the summit of the grade at a speed he estimated to have been about 5 or 6 miles an hour, and then shut off steam and let the train drift with the idea in his mind that should he again obtain an undesired quick action of the brakes when applying them for the purpose of controlling the speed of the train on the heavy descending grade, the train would be brought to a stop close to or just west of Bennington curve, which would give him an opportunity of restoring the brake-pipe pressure before the train increased speed to any great extent and prior to the time it passed around the curve. Engineman Pyle did not, however, remember anything which took place after starting down the grade until he recovered consciousness in the hospital at Altoona; in fact, he said that when he first recovered consciousness he did not recall anything at all about the trip, until the conductor came to see him and talked with him about it. When asked what had produced the undesired quick action of the brakes when stopping at South Fork and when making the running test at Gallitzin, Engineman Pyle said he thought it might have been due to a leak around the triple valves. Engineman Pyle further stated that both his experience and his instructions would require that after obtaining an undesired quick action of the brakes no attempt to release should be made until the train had been brought to a stop and that if he tried to release the brakes before a stop had been made it would only result in releasing the brakes on the first few cars in the train and would be certain to break the train in two, since the UC triple valves would have drained the train line. He further

stated that with the old type triple valve he could have obtained a release at a speed of 40 miles an hour but that he would not want to attempt it at any less rate of speed.

Fireman Paschall said that after getting the undesired quick action when the brakes were applied as the train approached South Fork, the engineman allowed the train to come to a full stop and then pulled ahead to the station. The station, however, is on an ascending grade and he said the engineman did not make another application of the brakes at that point but merely shut off steam and that the train did not come to a full stop for the second time. When the stop was made at Gallitzin as a result of the second undesired quick action of the brakes, Fireman Paschall was standing on the deck of the engine and he said that the engineman did not make any comment on the action of the brakes, which action was not entirely unusual, but merely worked steam enough to start the train through the tunnel between Gallitzin station and SF block station at a speed of about 15 miles an hour. As the train proceeded down the grade Fireman Paschall called the signal indications to the engineman and when about 1 mile east of SF block station, moving at a speed of about 25 miles an hour, the engineman made a service application of the air brakes. This was the first application which had been made since the train started down the grade and he said it did not result in an undesired quick action, as had previously been the case. Fireman Paschall said he did not notice whether or not this application of air brakes had been released prior to the time the accident occurred. At the time this application was made he was standing on the deck of the engine, having been engaged in washing it, and he said that he had just gotten back on his seat box when the engine started to turn over to the left, at which time it was moving at a speed he estimated to have been about 30 miles an hour.

Conductor Simpson said that at Pittsburgh the engine was late in coupling to the train, and for this reason the air-brake test was made hurriedly, that he saw the inspectors going over the train and that he was told all the air brakes were in good working order. He verified the statements of the engine crew as to the stops west of the station at South Fork and when making the running test at Gallitzin. The stop at Gallitzin did not worry him as this was what occasionally occurred due to the fact that a heavy reduction was made

and that rather than release the brakes at a low rate of speed, jarring the passengers and possibly causing damage to the equipment, the engineman would allow the train to come to a stop. After the stop had been made Engineman Pyle whistled off and proceeded. Conductor Simpson said the speed was about 45 or 50 miles an hour when passing SF block station, this being about the usual rate of speed at that point, and that when the train had reached a point about 1 mile east of SF block station, at which time he was in the head end of the fifth car of the train, he remarked to Head Brakeman Bennett that the engineman had better apply the air brakes. Just as he had finished making this statement he felt the air brakes being applied, at which time the speed was about 60 miles an hour, and he said he could hear a sizzling sound which told him that the wheels were sliding. He thought the brakes were applied about 20 seconds before the derailment occurred and that the speed had not been materially reduced within that time. Conductor Simpson expressed the opinion that Engineman Pyle delayed too long in making the application of the air brakes and that when they finally were applied they applied in emergency, causing the wheels to slide. He did not know whether the emergency effect was what the engineman intended, or whether it was due to an undesired quick action of the brakes, but he said he thought that there was sufficient distance beyond the point where the brakes were applied, provided they had been applied in service application, to have permitted the speed to be reduced sufficiently to allow the train to round the curve in safety.

Head Brakeman Bennett was with the conductor in the fifth car in the train. He did not notice the speed but said the air brakes were applied before the train reached the curve and that about that time Conductor Simpson remarked something to the effect that the engineman had better apply the brakes, or that he had better make a heavier application. Head Brakeman Bennett was positive that the brakes were applied while the train was still on the straight track west of the curve and said it was not until the train started around the curve that he realized the speed was unusual. As the train entered the curve the air-brake application seemed to be stronger and he could hear the grinding of the brake shoes.

Baggagemaster Wolfendale, who was in the baggage end of the combination car, said he had

not noticed anything unusual in the handling of the train except at South Fork and at Gallitzin. At the latter point he thought the engineman made too heavy an application of the air brakes. The engineman immediately whistled off, however, and proceeded, and Baggagemaster Wolfendale said he did not notice any excessive speed descending the grade such as would usually result in knocking down the piles of newspapers in the car; finally he felt a severe application of the air brakes which he estimated to have been about 30 seconds prior to the time of the accident, saying that he had a habit when such an application was made of going back into the other end of the car in order to avoid having baggage fall on him, and that on this occasion he had time enough to make this movement before the accident occurred.

Flagman Young said the stops at South Fork and at Gallitzin were not rough stops, but apparently were due to heavy braking, he said the air brakes were applied before reaching Bennington curve and to the best of his knowledge they had not been released before the train was derailed. He had not noticed that the train was being operated at an excessive rate of speed and fixed the time of the accident as a few seconds prior to 3.29 a. m.

At the time train No. 32 was derailed a freight train was proceeding in the same direction on track 1. The conductor and the flagman of that train were riding in the caboose and they estimated the speed of their own train at about 20 miles an hour and the conductor said he thought train No. 32 was moving at a speed of about 40 miles an hour, while the flagman said the speed of that train was about 30 miles an hour and that fire was flying from the brake shoes. This flagman said the accident to train No. 32 happened at about 3.27 a. m.

Signalman-Operator Houser, on duty at SF block station, said train No. 32 passed the block station a few seconds before 3.26 a. m., moving at a speed of about 35 miles an hour, and that at that time the brakes apparently were applied as he could see fire flying from the brake shoes. He thought it was 3.27 a. m. when he noticed from the signal apparatus that something was wrong, but said this estimate as to the time was only a guess.

Night Track Walker McMahon, who was walking westward toward SF block station, said train No. 32 passed him a short distance east of the block station, running at about the usual passenger train speed for that locality, approximately

35 miles an hour, and he said that at that time there was no fire flying from the brake shoes.

The last engine to pass over this track prior to the accident was engine 3546, in charge of Engineman Warner, who passed SF block station on track 2 at 3.17 a. m.; he said the track seemed to be in good condition and that he did not notice any unusual motion of his engine, while on its arrival at Altoona he made the usual inspection but did not find any of the parts to be missing. His statements were corroborated by those of Fireman Schreiber. Similar statements were made by Engineman Mauk, of train No. 40, which passed SF block station on track 2 at 3.05 a. m.

The first wheel marks appeared on the ties on the outside of the left or high rail of the curve about 8 inches from the base of the rail. These marks led off to the left at an angle of about 30°. The first flange marks on the inside of the low rail were 26 feet farther east and apparently were made by tender-truck wheels, none of these marks continued any distance, however, before reaching the point where the track was entirely torn up, which was also the case with tracks 3 and 4. Careful examination of the track failed to disclose any condition which could have contributed to the occurrence of the accident.

Assistant Master Mechanic Elsey directed the removal from the derailed engine of the various parts of the air-brake equipment, these parts being taken to the test department at Altoona and subjected to tests. The only thing that developed was that when the distributing valve was tested it was found the equalizing piston ring leaked to the extent of 11 pounds per minute. Chief Air Brake Inspector Walker said this undoubtedly was due to the condition of the valve after having passed through the accident.

Car Inspectors Lay and Jurksait said they examined the running gear of the cars in train No. 32 prior to its departure from Pittsburgh and found everything to be in good condition.

Air Brake Inspector Gerst, on duty at Pittsburgh, said that about 11.50 p. m. he made an advance air-brake test of the equipment of train No. 32 which was then on hand in the station, in order to locate any defects which might exist prior to the time the engine was coupled to the train, but no defects were discovered.

At about 12.35 a. m. the baggage car and the box car arrived from the American Express warehouse and were attached to the head end of the train, while the road engine was coupled to the train at 12.38 a. m. After the train line had been charged the engineman made a brake-pipe reduction and Inspector Gerst said he went over the equipment to see if the air brakes were operating properly, after which he made a report to this effect to the engineman.

H. W. Lehr, General Foreman of Passenger Car Inspectors, said that the piston travel on the cars as they left Pittsburgh varied between 6 and 7½ inches. After the accident the P-2 triple valve on the first car was found to have been so badly damaged that it could not be tested which was also the case with one of the L-3 triple valves under the sixth car in the train. All the other triple valves were tested but no defects were discovered.

The triple valves on the cars in train No. 32, given in order beginning with the first car in the train, were of the following types P-2, H-2, UC, UC, P-2, L-3, UC and UC, while engine 3763 had No. 6 ET brake equipment. Mr. Walker, Chief Air Brake Inspector, said he did not think the manner in which these various types of triple valves were assembled in the train would cause or tend to cause the undesired quick action described by Engineman Pyle, and said that they would work in harmony in service application. He verified the statements of Engineman Pyle as to the results which would follow with UC triple valves in use had he attempted to release the brakes before the train had come to a stop, saying that with the UC triple valves the brake-pipe pressure would have to be restored approximately to 90 pounds before those valves would go to the release position and that it would be the delayed release of these valves which might cause the train to break in two; there would, of course, be no difficulty in releasing the UC triple valves after a service application. He did not think, however, that the undesired quick action of the air brakes was common but rather that it was occasional and occurred without any degree of regularity. He said that several things could happen to cause such an action of the brakes, as a leak in the brake pipe or its connections allowing the brake-pipe pressure to fall too rapidly, a dirty condition of a triple valve which would cause it to become slow in its movement and not to operate correctly, too

quick a reduction by the engineman, or the action of the engineman in overreaching the service position of his brake valve. Mr. Walker was asked if each of the various types of triple valves which was in use in train No. 32 would respond alike with the same reduction of brake-pipe pressure, and he replied in the negative, saying that the P-2, H-2, and L-3 triple valves would apply on light reductions, approximately 3 pounds, while the UC triple valves were designed not to apply until the brake-pipe reduction had reached approximately 6 pounds. The brake-cylinder pressures, however, with a reduction of more than 6 pounds, would be the same for all of these types of triple valves, and in this connection he stated that their enginemen were instructed to make an initial reduction of 8 pounds in order to insure the operation of all the triple valves. Mr. Walker estimated that if a train started down Gallitzin grade at a speed of 10 miles an hour without any application of the air brakes being made it would pass SF block station at a speed of 25 or 30 miles an hour, the signal bridge east of that point at a speed of about 40 miles an hour, and that it would be running at a very high rate of speed approaching the curve on which the accident occurred.

Conclusions

This accident was caused by the operation of train No. 32 at a rate of speed in excess of the limit prescribed for the curve on which the accident occurred.

Chief Air Brake Inspector Walker said that a train of the character involved in this accident, starting down the grade at a speed of 10 miles an hour, with no application of the air brakes being made, would be running at an exceedingly high rate of speed in the vicinity of the point of accident, a rate which he was unable to estimate. In view of this statement and the evidence that no application of the air brakes was made until just prior to the occurrence of the accident, and in view of the condition of the wreckage after the accident, it is believed that the conductor's estimate that the speed of the train was 60 miles an hour when the brakes were applied is approximately correct.

While Engineman Pyle's mind was not entirely clear as to what transpired after his

train started down the grade, he seemed to be anticipating an undesired emergency application when he next applied the air brakes, which would require bringing his train to a full stop, and that he was calculating as to where this stop would be made. Apparently he intended it to be at a point immediately west of the curve on which the accident occurred, which would have given him an opportunity to recharge the train line, release the brakes, and operate the train around the curve in safety, but in delaying the making of this brake application he allowed the speed of the train to increase to such an extent that when the application finally was made there was little or no opportunity of reducing speed to a safe rate prior to the occurrence of the accident.

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.