INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE FLORIDA EAST COAST RAILWAY NEAR TITUSVILLE, FLA., ON MARCH 16, 1928.

April 17, 1928.

To the Commission:

On March 16, 1928, there was a derailment of a passenger train on the Florida East Coast Railway near Titusville, Fla., resulting in the death of 2 employees and 2 persons carried under contract, and the injury of 11 passengers and 3 employees.

Location and method of operation

This accident occurred on the Third District of the Northern Division, extending between New Smyrna and Fort Pierce, Fla., a distance of 117 miles Between New Smyrna and Edgewater Junction, 2.1 miles south, this is a double-track line; between Edgewater Junction and Titusville, 27.7 miles south, within which territory the accident occurred, this is a single-track line, while between Titusville and Fort Pierce it is a double-track line. The single-track portion of the Third District between Edgewater Junction and Titusville is known as the "old main" and is used for the movement of all northbound traffic; the only southbound movements over this portion of single track are confined to local passenger and local freight trains, portions of two branch lines, known as the "new main", being utilized between these same two points as a main track for southbound traffic. For the greater portion of the distance these two main tracks are several miles distant from each other. Trains are operated by time-table and train orders; there is also an automatic block-signal system in use on these tracks, but this signal system only governs northbound movements on the "old main" and only southbound movements on the "new main". The accident occurred on the "old main" at a point approximately 427.7 feet south of the north yard-limit board, this point being about 1/2 mile north of the station at Titusville; approaching this point from the north there is a long tangent, followed by several comparatively short tangents and curves leading to a 5° 53' curve to the right 1,051 feet in length, the accident occurring on this curve at a point approximately 381.1 feet from its northern end. The curve is on a fill for its entire length, the fill varying from 2 to 7 feet in height. The grade is practically level.

The track is laid with 90-pound rails, 33 feet in length, with an average of 19 ties to the rail length and fully tie-plated, and is double-spiked on the outside and single-spiked on the gauge side on the curve on which the accident occurred, ballasted with limestone rock ballast to a depth of from 18 to 24 inches. Rail anchors are also used. The maximum superelevation of the outside rail of the curve was 3½ inches, while the maximum gauge was 4 feet 9 inches. The track is maintained in excellent condition.

The weather was clear at the time of the accident, which occurred at about 3.57 a. m.

Description

Southbound passenger train No. 37 consisted of four express cars, one baggage car, two coaches, and two Pullman cars, in the order named, all of steel construction, hauled by engine 435, and was in charge of Conductor Boyd and Engineman Clark. This train left New Smyrna at 3 a. m., according to the train sheet, on time, and was approaching Titusville when it was derailed while traveling at a speed variously estimated to have been between 40 and 75 miles per hour.

Engine 435, its tender, the first seven cars and the forward truck of the eighth car were derailed to the left. The engine and its tender came to rest on their right sides in a badly-damaged condition; the first car came to rest on top of the tender and engine, in an upright position; the second and third cars, both of which were demolished, came to rest on their left sides, between the engine and the track, the forward end of the second car being about one-half a car-length beyond or south of the head end of the engine and 439.3 feet from the initial mark of derailment; the fourth and fifth cars were on their left sides north of the engine, badly damaged, while the sixth car was leaning to the left, clear of the road bed, and the seventh car was practically upright. The employees killed were the engineman and fireman.

Summary of evidence

Conductor Boyd, of train No. 37, was riding in the sixth car in the train as it approached Titusville, at which point it was to meet northbound train No. 98. The meeting-point whistle signal was sounded and steam shut off when the train was about 1½ or 1¾ miles north of the point of accident, bunching the slack, but no air-brake application was made, although he said it was customary to steady the train prior to reaching the sharp curve to the right

on which the accident occurred. At this time he was engaged in working on his reports but he expressed the opinion that the speed of the train was no higher on this occasion than at other times while rounding this particular curve, estimating it to have been between 45 and 50 miles per hour, about the same as it had been after leaving Scottsmoor. According to Conductor Boyd's statements, the train stopped and headed in at the north switch of the siding at Scottsmoor, not northbound train No. 6, which was waiting at that point, continued through the siding, which has a capacity of 231 cars, at a speed of about 10 miles per hour, stopped at the south switch, headed out on the main track, stopped again in order to close the switch, and then proceeded, and he said that on departing from Scottsmoor he looked at his watch, while the train was in motion, and noticed that it was 3.43 a. m., while he fixed the time of the accident at 3.55 a. m., saying that he and Baggagemaster Few arrived at that figure on looking at their watches after climbing out of the car after the accident, at which time it was 3.57 a. m. Conductor Boyd further stated that a running test of the air brakes was made when leaving New Smyrna and that they worked properly at that point and also in making various stops en route; that it was customary to apply the brakes approaching the curve to the left, preceding the sharper curve to the right on which the accident occurred, but that no such application of the brakes was made by Engineman Clark. The conductor also stated that he had noticed that when an engineman is making his first trip southbound he does not apply the brakes for these curves, but that on subsequent trips an application is always made.

Baggagemaster Few, of train No. 37, having completed his work and locked the baggage-car door, went back into the next car in the rear, the sixth car, where he was riding at the time of the accident. While rounding the curve he put his head out of the window to ascertain his location and as he did so the accident occurred. His statements as to what transpired, the handling of the train, speed, stops, time of departure from Scottsmoor, time of the accident, etc., agreed practically in detail with those of Conductor Boyd. Baggagemaster Few further stated, however, that in his opinion the speed of 45 or 50 miles per hour on the curve was from 15 to 20 miles per hour higher than is the usual practice.

Flagman Disbennett, of train No. 37, stated that on departing from Scottsmoor, when the train had gotten under way, he looked at his watch and it was 3.45 a. m. He noticed no air-brake application made prior to the emergency air-brake application at the time of the accident, at which time the speed was between 40 and 50 miles per hour, not over 50 miles per hour. He was of the opinion that the train was handled in the usual manner as it approached the point of accident, saying that he did not

feel uneasy as to the speed at which it was traveling.

The statements of other employees who were riding on train No. 37, some being off duty and others en route to their point of work, were considerably at variance, particularly as to the speed. Engineman Harless, who was riding in the eighth car, was unable to estimated the speed as he was not paying particular attention to the matter but he thought that schedule speed was being maintained. Electrical Foreman Slade, who was riding in the seventh car, as were other electrical employees, said that after a passenger had asked him how fast the train was traveling he looked out of a window and then estimated the speed to have been from 60 to 75 miles per hour; this was at a point about 2 or 3 miles north of the point of accident and he said that he did not notice any reduction in speed prior to the accident. Electrician Tant also estimated the speed to have been between 60 and 75 miles per hour and in his opinion the accident was caused by excessive speed, while Electrician Helper Hill estimated the speed to have been between 55 and 60 miles per hour. The statements of these employees also indicated that the meeting-point whistle signal was sounded when approaching Titusville; Engineman Harless thought that a light air-brake application was made at about the time this signal was sounded, but the rest of these employees noticed no air-brake application prior to the emergency application at the time of the accident and they also said that they heard the exhaust of the engine until the accident occurred.

Night Chief Dispatchers Fuller and Chiles noticed interference on the telegraph wires at 3.57 a. m., apparently as a result of the occurrence of the accident, while Train Dispatcher Cavanaugh said that at the time of the interference he did not look at the clock immediately but that he did look at it afterwards and it was then 4 a. m., and he placed the time of the interference at about two or three minutes prior to the time at which he looked at the clock.

Section Foreman Whitaker stated that on the day prior to the accident he passed over the track at the point where the accident occurred on four different occasions, twice on a motor car and twice on foot. The track then was in good condition, while about two weeks prior to the accident he took cross levels and gauged the curve and found it to be uniform throughout. He also stated that in December he raised the elevation of the outside rail 1 inch, since which time the elevation has been maintained between $3\frac{1}{4}$ to $3\frac{1}{2}$ inches, and he thought the curve was good for a speed of 45 miles per hour. His inspection of the track after the accident disclosed no indications of tampering, and in his opinion track conditions failed to contribute to the accident in any way, excessive speed being the cause.

General Roadmaster Clark said that there was no speed restriction on the curve and that he did not think that any was necessary owing to its location with reference to the yard, and he thought it was safe for a speed of 50 miles per hour. In his opinion the engine truck was the first to derail and he attributed the cause of the accident to excessive speed coupled with an application of the brakes on the curve. Trainmasters Yeager and McDonald, Roadmaster Morgan, Supervisor Coleman, Car Foreman Neighbors and Wrecking Foremen Bobo and Skipper shared the opinion of General Roadmaster Clark as to the cause of the accident; the trainmasters estimated the speed at the time of the accident to have been from 60 to 65 miles per hour. Trainmaster McDonald also said that the watches of the engineman and fireman were found and turned over to him after the accident; the crystals of both watches were broken and they were otherwise damaged. The fireman's watch had stopped at 3.57 while the engineman's watch showed 4 o'clock, however, the trainmaster was informed that the hands of the engineman's watch had been moved in getting the dirt off the face of the watch.

Road Foreman of Engines Courtney stated that inspection of the engine after the accident disclosed that the throttle was open; he thought that Engineman Clark momentarily lost his location and that no air-brake application was made prior to the accident, nor was steam shut off. From the condition of the wreckage he was of the opinion that the accident was caused by excessive speed on the curve, estimating it to have been about 65 miles per hour. He did not consider that a speed-limit board at the approach to the curve was necessary and thought the curve was safe for a speed of 50 miles per hour.

Master Mechanic Morris did not think that the engine truck was the first to derail but was of the opinion that excessive speed caused the high rail of the curve to overturn and that the engine then turned completely over; he expressed the opinion that the speed was not less than 60 miles per hour.

Superintendent Pooser stated that he did not think it necessary to locate a speed-limit board at the approach to the curve as enginemen are not permitted to run an engine until they are thoroughly familiar with the road, and he thought that if an engineman did not properly control the speed of a train around a curve when he was thoroughly familiar with the physical characteristics of the road, the mere placing of a speed-limit board would not induce him to handle the train otherwise.

The investigation developed that it is customary to reduce the speed of southbound trains approaching the curve to the left preceding the curve to the right on which the accident occurred, and that it is necessary to do this in order to control the speed over the highway crossing and crossover at Titusville without resorting to severe braking. One experienced engineman said that he had operated around the curve to the right at a speed upwards of 50 miles per hour, although he also said that at different times train crews had requested him not to negotiate the curve at such a high rate of speed. Two other experienced enginemen stated that they never operated their trains around this curve at a speed in excess of 30 miles per hour, and that they always had their trains under control when approaching it.

Statements of members of the crew of train No. 6, which train was met by train No. 37 at Scottsmoor, were to the effect that train No. 37 headed in at the north switch of the siding at that point at 3.40 a. m., six minutes late. A check made on the third night following that on which the accident occurred showed that train No. 37 had consumed eight minutes in making movements at Scottsmoor, similar to those made on the night of the accident, except that at the time the check was made train No. 37 headed out on the main track at a crossover located about midway the length of the 231-car siding, instead of pulling through the full length of the siding as it did on the night of the accident.

Examination of the track was made by the Commission's inspectors after the occurrence of the accident. At this time the derailed Pullman car had been rerailed, leaving marks on the ties and making it difficult to identify definitely the first marks of derailment, although the indications were that the engine was the first to derail. At the point of derailment there was an abrasion on the gauge side of the head of the high rail of the curve, starting at the base of the head, 19 inches from the receiving end of a rail, and extending diagonally upward for a distance of 25 inches to the top of the rail. There was no mark across the top of the rail. The abrasion had the appearance of having been made by a flange crowding the east rail as the wheel climbed the rail. At a point 6 feet farther south, flange marks appeared on the ties, on the gauge side of the west rail, apparently made by the engine-truck wheels. Heavy marks then appeared on the ties at a point 3 feet farther south, on the gauge side of the west rail, and these marks led off abruptly to the east, leaving the ties within less than 50 feet. From this point on the track was destroyed for a considerable distance. Apparently the engine turned over to the left and skidded about 180 feet, making a ditch in the ground about 3 feet in depth; the engine then apparently struck a growth of palms having a heavy root formation, turned over on its right side and

skidded to an additional distance of 180 feet to the point where it came to rest.

Engine 435 is of the 4-8-2 type, with a combined weight, engine and tender, of 522,600 pounds; its driving wheel-base is 19 feet 7 inches. The weight is distributed as follows: engine truck, 54,500 pounds; driving wheels, 217,000 pounds; trailer truck, 50,500 pounds. Master Mechanic Morris said that classified repairs were completed on this engine October 12, 1927, and since that time it had made 18,786 miles. Thorough inspection of all the derailed equipment, including trucks, wheels, brake rigging, etc., was made. No loose wheels, tires or other defects of a like nature were disclosed and all flanges were in good condition. The brake hangers were all intact with the exception of one, on a truck of the second car; this brake hanger was broken but the safety hanger on this truck was still in place, indicating that the brake beam could not have come down.

Measurements of the track north of the point of accident disclosed the superelevation and the gauge to be in good condition, although the high rail was slightly curve-worn; no indication of dragging equipment was found. The track was well maintained and nothing was developed in regard to track conditions that would have caused or contributed to the accident.

Conclusions

This accident was caused by excessive speed.

The estimates as to the speed of the train at the time of the accident varied from 40 to 75 miles per hour, and while there was some evidence to the effect that the engineman shut off steam some distance prior to reaching the point of accident, there was other evidence to the effect that steam was being worked when the accident occurred, and an examination of the engine after the accident showed that the throttle was still open. In either event, however, there is no conflict in the testimony to the effect that there had been no appreciable reduction in the speed prior to the time of the accident; not only did the condition of the wreckage and the statements of all the witnesses with the exception of the conductor, baggagemaster and flagman, indicate that the train was traveling at an excessive rate of speed when entering the yard at Titusville, but there was evidence to indicate that train No. 37 did not reach Scottsmoor until 3.40 a. m., in which event it is doubtful if it departed from the south switch at that point prior to 3.48 a. m., instead of 3.43 a. m., as stated by the members of the train crew. Under such circumstances, and allowing

two minutes in which to resume full speed within a distance of 1 mile, the train traveled the remaining distance of 8.65 miles to the point of accident within a period of approximately seven minutes. It is believed that a speed of 60 to 70 miles per hour at the time of the accident is more nearly correct than the estimates made by the members of the train crew of 40 to 50 miles per hour. The theory was advanced that an air-brake application was made a few seconds before the occurrence of the accident which possibly resulted in a somewhat rigid condition of the engine truck, thus creating a tendency for the engine-truck wheels to climb the rail, but the evidence on this point is not clear.

Engineman Clark had not made a trip southbound over the "old main" since December 12, 1926, but previous to that date he had operated trains over this track for several years, while from January 16, 1928, to March 11, 1928, he had been operating train No. 6 northbound over this line, skipping a trip each third day; under these circumstances he should have been thoroughly familiar with the physical characteristics of the road in either direction. The evidence also indicated that Engineman Clark appeared to have been in normal physical and mental condition on the night of the accident, and the fact that he was not asleep seems clear from the statements of various witnesses that he sounded a meeting-point whistle signal when approaching the point of accident. Under these circumstances any attempt to explain why he failed to reduce speed before rounding the curve is a matter of mere conjecture.

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.

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 MARSH RUN, PA., ON MARCH 16, 1928.

April 11, 1928.

To the Commission:

On March 16, 1928, there was a compound collision, in which three freight trains and one passenger train were involved, on the Pennsylvania Railroad near Marsh Run, Pa., resulting in the death of 1 employee and the injury of 17 passengers and 4 employees.

Location and Method of Operation

This accident occurred on that part of the Philadelphia Division known as the York Haven Line, which extends between Wago Junction and DY Block Station, near Harrisburg, Pa., a distance of 19.1 miles. In the vicinity of the point of accident this is a four-track line, the tracks being numbered from north to south 4, 3, 2, and 1. Tracks 4 and 3 are designated as the westbound and the eastbound freight tracks, respectively, while tracks 2 and 1 are the westbound and eastbound passenger tracks, respectively. Movements of trains over the freight tracks are controlled by time-table, train orders and a manual block-signal system, while on the passenger tracks train movements are controlled by time-table, train orders, and automatic block-signals supplemented by a system of automatic train control. The primary collision occurred on track 4 at a point 2,265 feet west of Marsh Run station; approaching this point from the east the track is tangent for a distance of 3,865 feet, followed by a 1°40' curve to the right 4,365 feet in length, the accident occurring on this curve at a point 1,565 feet from its eastern end. The grade at the point of accident is practically level, and the view was good.

The weather was clear at the time of the accident which occurred at about 8:12 a. m.

Description

Westbound freight train No. P-9 running on track 4, consisted of 76 cars and a caboose, hauled by engines 3098 and 1498, and was in charge of Conductor Rote and Enginemen Everhart and Shaffer. This train passed Cly,

the last open office, 7.8 miles east of Marsh Run, at 7:50 a. m., under a permissive signal indication, and shortly after passing Marsh Run, while drifting at a speed of 10 or 15 miles per hour, it was brought to a stop due to the parting of the train between the 50th and 51st cars. Shortly after the train had been brought to a stop it was struck by westbound freight train second No. TH-1.

Westbound freight train second No. TH-1, also running on track 4, consisted of 32 cars and a caboose, hauled by engine 120, and was in charge of Conductor Davidson and Engineman Simmers. This train passed Cly at 7:59 a. m., under a permissive signal indication, and collided with train No. P-9 while traveling at a speed variously estimated to have been from 25 to 50 miles per hour.

Eastbound freight train No. P-2-12-14, running on track 3, consisted of 69 cars and a caboose, hauled by engine 4626, and was in charge of Conductor Early and Engineman Diffenderfer. This train passed GS Block Station, 6.7 miles west of Marsh Run, at 8:01 a. m., and was side swiped by the wreckage of trains Nos. P-9 and second No. TH-1 while traveling at a speed of approximately 30 miles per hour.

Eastbound passenger train No. 992, running on track 1, consisted of one combination mail and express car and two coaches, hauled by engine 3333, and was in charge of Conductor Reichard and Engineman Norris. This train passed J. Block Station, 5.5 miles west of Marsh Run, at 8:05 a. m., and collided with the wreckage of train No. P-2-12-14 while traveling at a speed estimated to have been between 30 and 35 miles per hour.

The caboose and the four rear cars in train No. P-9 were destroyed. Engine 120, of train second No. TH-1, was derailed to the right and came to rest on its right side against the embankment while three cars in its train were badly damaged. The wreckage from this accident fouled track 3 and resulted in slight damage to the 22nd to 27th cars, inclusive, in train No. P-2-12-14, while the 28th to the 39th cars, inclusive, were derailed and more or less damaged. The wreckage from train No. P-2-12-14 fouled tracks 2 and 1 and was struck by train No. 992; the engine, its tender, the first car and the forward truck of the second car in that train were derailed, the engine coming to rest on its right side south of and nearly parallel with track 1; the tender and the first car were partly overturned. The wreckage caught fire immediately after the accident, resulting in more or less damage to equipment. The employee killed was the fireman of train second No. TH-1

Summary of Evidence

Engineman Everhart, of the leading engine of train No. P-9, stated that his train entered the block at Cly under a permissive signal indication and proceeded to Marsh Run at a speed of 15 or 20 miles per hour, the speed being gradually reduced beyond that point for the reason that he had shut off steam in order to increase the steam pressure. When the speed had been reduced to 8 or 10 miles per hour he noticed the air gauge drop from 70 to 50 pounds pressure, which resulted in bringing his train to a stop. He did not know at that time that his train had broken in two, nor did he feel any shock at the time of the collision, but upon looking back he saw flames, and realizing that something was wrong he sent his fireman back to the rear and then procured a flag and went forward to stop approaching trains. Engineman Everhart said that when his train came to a stop the eastbound freight train on track 3 had passed his engine, and that he did not see train No. 992 at any time.

The statements of Fireman Kauffman, of the leading engine, and Engineman Shaffer and Fireman Ulcau, of the second engine of train No. P-9, practically corroborated those of Engineman Everhart as to the movement of the train between Cly and the point of accident. Engineman Shaffer added that both the eastbound freight train and the eastbound passenger train passed at about the same time, the passenger train being opposite the caboose of the freight train; this was just before his own train came to a stop.

Conductor Rote, of train No. P-9, stated that when his train came to a stop the flagman started back immediately, and on getting off at the head end of the caboose the conductor saw the following train just east of the station at Marsh Run, and he remarked to the middle brakeman that if it was on their track an accident was going to occur. He continued to watch it and noticed that steam was not shut off until the engine was approximately eight car-lengths from his caboose. He also heard a whistle signal for brakes, sounded from the engine of the eastbound freight train on track 3 when the engine of that train passed the flagman. He did not know whether the flagman threw off a fusee before the train stopped. Conductor Rote further stated that he did not know what caused his train to come to a stop, and he was of the opinion that an attempt was made to start it again and that it was at this time that the train broke in two at the point where a broken coupler, due to a flaw, was afterwards found.

Flagman Shunk, of train No. P-9, stated that when his train passed Marsh Run it was traveling at a speed of about 20 miles per hour, but after passing that point the

speed was reduced somewhat and shortly afterwards he felt a lurch of the train as though the slack had run in and he threw off a lighted fusee at a point about eight or nine car-lengths east of a road crossing located just east of where the accident afterwards occurred. He said that the train continued to reduce speed and that he got off the caboose just east of the crossing, before the train came to a complete stop; he then heard the rear of an approaching train and started back as quickly as possible, passed the fusee, which was still burning, and reached a point about 15 or 20 car-lengths from his caboose when the following train came into view, about 20 car-lengths distant. He continued to go back, waving his flag, until the engine of the approaching train was only three or four car-lengths from him, then he stepped off the track into a ditch on the engineman's side, without having time in which to put down torpedoes. As the engine passed him, without his stop signals having been acknowledged, he noted that the cab window was closed and he said he did not see the engineman. Flagman Shunk expressed the opinion that steam was not shut off, nor the brakes applied, prior to the accident, which occurred while the train was traveling at a speed of about 40 miles per hour.

Brakeman Singer, of train No. P-9, who had been riding in the caboose, said the flagman got off before the train came to a full stop. Shortly after it had stopped Brakeman Singer got off and then noticed the flagman about 12 or 15 car-lengths from the caboose and still running eastward. When train second No. TH-1 was within about four car-lengths of his caboose he saw the engineman of that train with his hands over his head, apparently for the purpose of protection. Brakeman Singer estimated the speed of train second No. TH-1 at from 30 to 40 miles per hour at the time of the accident, and was of the opinion that the engine was still working steam when the accident occurred.

Conductor Davidson, of train second No. TH-1, stated that cars were set out and picked up at various points en route, but that proper air-brake test was made each time after the train had been recoupled. He rode on the engine from Columbia to Shocks Plug, the latter being the last stopping point prior to the occurrence of the accident, and he said that when approaching Shocks Plug two torpedoes were encountered and the train was also flagged by the flagman of train No. P-9, which signals were acknowledged by his engineman; Conductor Davidson then returned to the caboose. He observed that his train entered the block at Cly under a permissive signal and estimated the speed between that point and the point of accident at about 25 miles per hour, while the brakes were used at one point, a short distance east of Marsh Run, for the purpose of reducing speed on a curve. After passing Marsh Run station he felt an emergency application of the brakes, followed

by the impact of the collision after the train had moved an additional distance of only two car-lengths. Conductor Davidson further stated that during the time he was in the presence of the engineman and fireman of his train prior to the accident they appeared to be normal in every respect and that there had been nothing in connection with the handling of the train that would have indicated otherwise. After the occurrence of the accident he inquired of the engineman and fireman as to its cause, but the engineman failed to answer his question while the fireman, still conscious, replied that he did not know. At the time of this investigation the condition of Engineman Simmers was such that he could not be interviewed.

The statements of Brakeman Campbell and Simon substantiated those of Conductor Davidson as to the brakes being applied in emergency just prior to the accident, and they estimated the speed of their train between Cly and the point of accident to have been between 25 and 30 miles per hour. Brakeman Simon added that after the accident he noticed a burning fusee about five pole-lengths east of the point where the engine of his train came to rest.

Engineman Diffenderfer, of eastbound train No. P-2-12-14, stated that his train was moving at a speed of 25 to 28 miles per hour around the curve on which the accident occurred when the fireman shouted to him to sound the whistle but before he could do so the fireman grabbed the whistle cord and signalled for brakes, the accident occurring shortly afterwards.

Fireman Bickle, of train No. P-2-12-14, stated that when his train passed the caboose of train No. P-9 that train was still moving slowly while his own train was traveling at a speed of 25 or 30 miles per hour. About 15 or 20 seconds later he observed another train approaching on track 4, about 25 or 30 car-lengths distant, moving at a speed of probably 30 miles per hour and still working steam. He immediately looked back and saw a burning fusee and also the flagman of train No. P-9 a short distance east of the fusee, running towards the approaching train and waving his flag. Realizing that a collision was imminent he called to the engineman to sound the whistle, but before the engineman had time to act he crossed over and did so himself. He said he did not see any one in the engine cab of train second No. TH-1 as it passed, being on the engineman's side of his own engine at the time.

Engineman Norris, of train No. 992, stated that his train was running about 30 or 35 miles per hour on clear signal indications as it rounded the curve approaching

Marsh Run when his fireman notified him that a box car had rolled across track 1 from the train on track 3; he did not see it himself, on account of his position on the outside of the curve, but at once applied the brakes in emergency, his train colliding with the wreckage immediately afterwards.

Fireman Rembold, of train No. 992, stated that he was riding on his seat box looking ahead and shortly after his engine had passed the caboose of the train on track 3 he heard the brakes apply on that train and at about the same time noticed some cars lying on track 1 about five car-lengths distant, or as soon as they came into view around the curve; he immediately informed the engineman to that effect and the latter applied the air brakes in emergency.

The statements of members of the train crews of trains Nos. P-2-12-14 and 992 brought out no additional facts of importance.

Brakeman Wintermyer, off duty at the time of the accident, was in the yard at his home near Marsh Run station when the accident occurred. He stated that he saw train No. P-9 pass and about two or three minutes later he noticed another train approaching on track 4 at a rapid rate of speed. He then looked westward and observed train No. P-9, which he thought had come to a stop, and at once realized that an accident was unavoidable. After the occurrence of the accident Engineman Simmers and Fireman Williams, of second No. TH-1, were brought to his home and given first-aid treatment, during which time the engineman voluntarily exonerated the flagman of train No. P-9, saying that the engineman of the train on track 3 had whistled for brakes and that he then saw the flagman; Engineman Simmers did not think the flagman was at fault. Brakeman Wintermyer also quoted Engineman Simmers as saying that he made no attempt to stop and did not shut off steam or apply the brakes as he considered it was then too late, but that he did tell the fireman to jump and also took hold of him with the intention of pushing him off the engine. Brakeman Wintermyer estimated the speed of train second No. TH-1 at 50 miles per hour at the time it passed his home, with the engine working steam.

Operator Long, on duty at Cly at the time of the accident, verified the block record as to the times at which trains No. P-9 and second TH-1 passed that point. He stated that both trains entered the block under permissive signal indications, which statement was corroborated by Signal Maintainer Huston.

Road Foreman of Engines Humble stated that he made an inspection of engine 120 at the scene of the accident

and found the throttle closed, the brake valve in the emergency position and the reverse lever, which was of the screw type, in the reverse position.

Conclusions

This accident was caused by the failure of Engineman Simmers, of train second No. TH-1, to operate his train under proper control after entering a block under a permissive signal indication.

Under the rules governing movements on track 4, it is provided that a train other than a passenger train may be permitted to follow a train other than a passenger train into a block under a permissive signal indication. It is also provided that when such a movement is made the following train must proceed with caution and be prepared to stop short of a train or obstruction. In addition to these rules governing the operation of train second No. TH-1, the investigation indicated that Flagman Shunk threw off a fusee when train No. P-9, reduced speed just east of Marsh Run station, and that when his train had come practically to a stop near the road crossing this flagman got off and started back as quickly as possible, and that he reached a point approximately 14 car-lengths east of the crossing; this flagman, who could have been seen by Engineman Simmers a distance of about 1,800 feet, continued to give stop signals until the engine of train second No. TH-1 passed him still working steam and without acknowledging the stop signals. It further appeared that an emergency whistle signal to stop was sounded by the fireman of the eastbound train on track 3 and this also should have enabled Engineman Simmers to take some action toward reducing the speed of his train to a considerable extent. Notwithstanding the requirements of the rules, and the visible and audible signals to stop which the evidence indicates were given, it appears that Engineman Simmers was operating his train at a comparatively high rate of speed and that he made practically no effort to bring it to a stop; as a matter of fact, Brakeman Wintermyer quoted Engineman Simmers as saying that he did not try to stop, although this latter statement is not in line with the statements of the road foreman of engines that after the occurrence of the accident he found the throttle closed, the brake valve in the emergency position, and the screw reverse gear in the reverse position. In view of all the evidence, however, Engineman Simmers clearly is responsible for the occurrence of the accident, although the reason for his failure to operate under proper control in the occupied block and to bring his train to a stop in time to avert the accident could not be ascertained.

There was no possible way of preventing the accidents involving the other two trains; train P-2-12-14 was passing

on track 3 at the time, while train No. 992 had passed the caboose of train No. P-2-12-14, and apparently was within a very short distance of the wreckage from that train when it was thrown across tracks 2 and 1.

Had an adequate train stop or train control device been in use on track 4 this accident would not have occurred.

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,

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Director.