INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE PENNSYLVANIA RAILROAD AT ALTOONA, PA., ON JULY 30, 1933.

December 5, 1933.

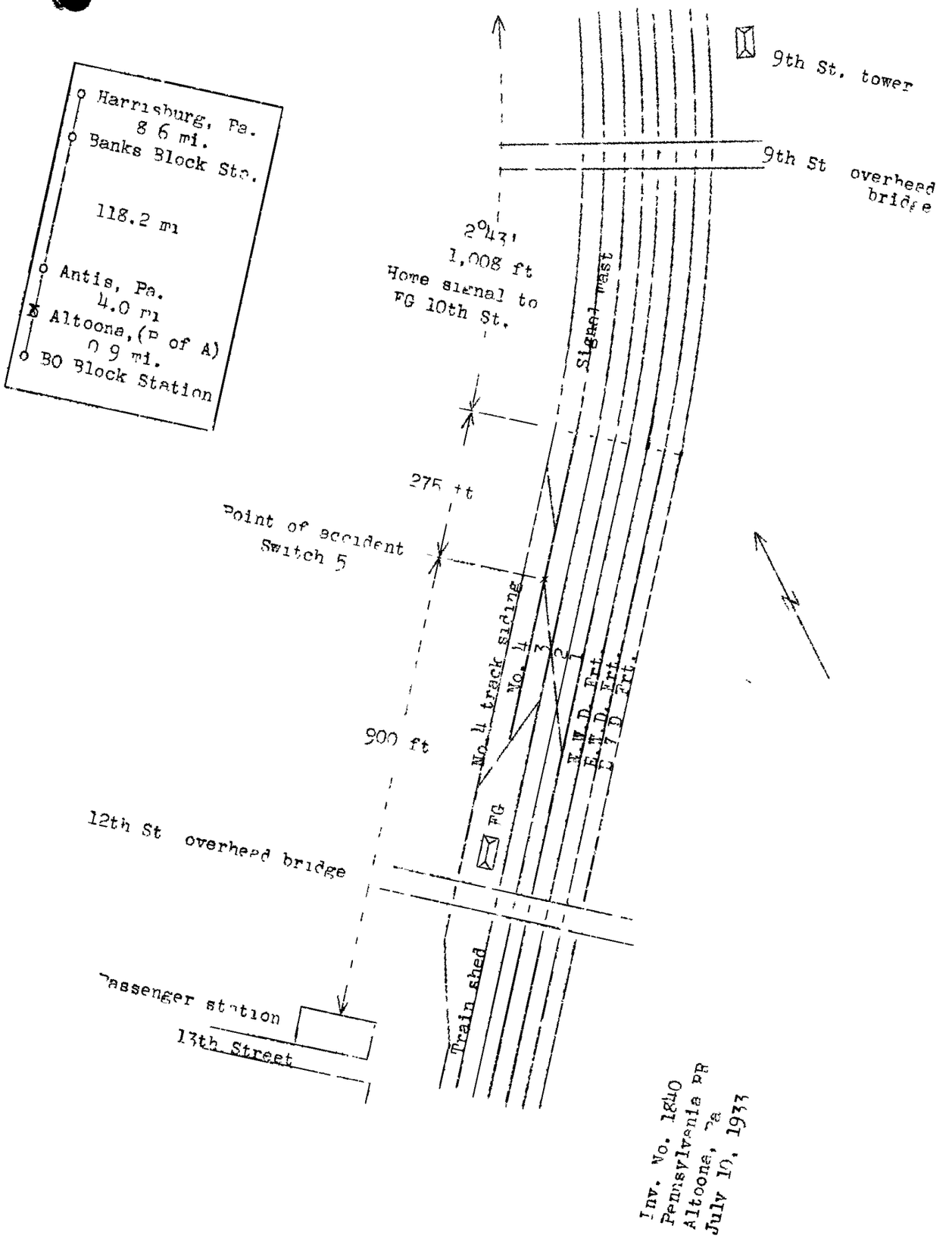
To the Commission:

On July 30, 1933, there was a derailment of a passenger train on the Pennsylvania Railroad at Altoona, Pa., which resulted in the death of 1 employee and the injury of 2 passengers and 3 employees.

Location and method of operation

This accident occurred on that part of the Middle Division extending between Banks Block Station (Harrisburg, Pa.) and BO Block Station (Altoona, Pa.), a distance of 123.1 miles; in the vicinity of the point of accident this is a four-track line over which trains are operated by time table, train orders, and an automatic block-signal system, supplemented by a cab-signal system. The tracks are numbered from north to south as follows: 4, 3, 2, and 1. The accident occurred within the limits of FG interlocking, at the frog of cross-over switch 5, located almost midway between the 9th Street and 12th Street overhead bridges, or about 900 feet east of the passenger station at Altoona; cross-over switch 5 is a facing-point switch for west-bound trains and leads off track 4 through a No. 8 turnout to the left to track 3; other cross-overs connect track 3 with track 2 and track 2 with track 1. Approaching cross-over switch 5 from the east, there is a compound curve to the right 1,008 feet in length, with maximum curvature of 2°43', followed by about 275 feet of tangent to cross-over switch 5, this tangent extending to the train shed. The grade at the point of accident is 0.44 percent ascending for west-bound trains.

FC Tower is located between tracks 4 and 3, just east of the 12th Street bridge. The home signal governing the movement of west-bound trains through FG interlocking is located on a signal mast on the north side of track 4, at 10th Street, about 850 feet east of FG tower; it is a position-light signal giving three indications, stop, stop and proceed expecting to find the block occupied, and proceed; the indications of this signal do not give an approaching train information as to which of the station tracks it is to occupy. The switches in this vicinity are controlled and operated electro-pneumatically from FG Tower, and train movements are required to be made under control and at a speed not exceeding 12 miles per hour. At the time of the accident the route was lined for a movement from track 4 through cross-over switch 5 and then through two double-slip switches across tracks 3 and 2 to track 1 and thence


Harrisburg, Pa.
8 6 mi.
Banks Block Sta.
118.2 mi
Antis, Pa.
4.0 mi
Altoona, (P of A)
0 9 mi.
BO Block Station
9th St. tower
9th St overhead bridge
2°43'
1,008 ft
Home signal to FG 10th St.
Signal mast
275 ft
Point of accident
Switch 5
No. 4 track siding
No. 4
No. 3
No. 2
No. 1
F.W.D. Frt.
F.W.D. Frt.
900 ft
FG
12th St overhead bridge
Train shed
Passenger station
13th Street
Inv. No. 1640
Pennsylvania RR
Altoona, Pa
July 10, 1933

to the station.

The tracks are laid with 130-pound rails upon treated ties, heavy duty tie plates being used, with three rail-holding spikes and two tieplate-holding spikes, and are ballasted with stone to a depth of about 15 inches. All of the various switches involved were maintained in excellent condition.

The weather was clear at the time of the accident, which occurred about 9:47 p. m.

Description

West-bound passenger train No. 59 consisted of 1 combination passenger and baggage car, 2 coaches, 3 sleeping cars, 1 dining car and 4 sleeping cars, in the order named, hauled by engine 5699, and was in charge of Conductor Rhinesmith and Engineman Buck. This train passed Antis, the last open office, 4 miles east of FG tower at 9:42 p. m., on time, and was derailed at the frog of cross-over switch 5 while moving at a speed variously estimated to have been from 12 to 35 miles per hour.

Engine 5699, its tender, the first four cars and the forward truck of the fifth car were derailed. The engine stopped on its right side diagonally across tracks 3, 2, and 1, opposite FG tower, turned nearly around end for end; the appurtenances were stripped from the right side of the engine as it slid along the tracks, but otherwise it was not materially damaged. The engine truck was torn loose and stopped bottom up between track 1 and the adjacent westward freight track on the south, and was about 10 feet east of the front end of the engine. The tender was north of and alongside the engine and against the remains of the interlocking tower. The derailed cars remained upright and in line with the cross-over route as lined for the intended movement. The interlocking tower was practically demolished. The employee killed was the engineman; the employees injured were the fireman, and the block operator in FG tower, as well as a signal maintainer who was also in the tower.

Summary of evidence

Fireman Linsenbeck stated that after passing Antis the speed was about 50 miles per hour and that the engineman reduced speed to about 25 or 30 miles per hour at RO interlocking, located 0.6 mile east of FG interlocking; the fireman was not certain whether this application was released. The brakes were applied again at 7th Street, and this application was released at the time the engineman called the indication displayed by the FG westward home signal as "caution-slow-speed", the speed then being about 10 or 12 miles per hour; another application was made at 9th Street and the train was drifting when it entered switch 5 on track 4 for the intended cross-over

movement to track 1. The usual lurch occurred as the engine entered upon the turnout, after which he felt the engine bump and on looking out he saw fire flying, the engine overturned shortly afterwards. Fireman Linsenbach was not positive whether any air-brake application was made from the time the engine passed the home signal until the accident occurred, but he thought the brakes were applied in emergency when the engine was derailed. The brakes had worked properly en route, and the engine had been riding well.

Conductor Rhinesmith, who was riding in the first car, looked out of the window to ascertain his location as the train was passing the overhead bridge at 9th Street. Being concerned about the speed, in view of the crossover switches, he made two attempts to pull the conductor's emergency cord but failed to reach it the first time and while he was making the second attempt the accident occurred. Conductor Rhinesmith said that his apprehension for the safety of the train was caused by two things; first, he did not feel the usual air-brake application made at this point, and secondly, there lacked the comfortable feeling experienced when traveling at a speed of 12 to 15 miles per hour in this vicinity. He could not estimate the speed, but said that in his opinion it was in excess of 12 to 15 miles per hour. Conductor Rhinesmith did not feel an air-brake application at any time. He conversed with Engineman Buck before leaving Harrisburg and the engineman appeared normal in every respect, and the train made a smooth run over the division.

Baggageman Youtzey also was riding in the first car; his first intimation of anything wrong was on feeling a hard jolt and then the car bumped along the track until it stopped. He did not notice any air-brake application before or after the accident, and he could not give any estimate of the speed of the train. Flagman Gerrill was riding in the rear car and his first knowledge of anything wrong was on feeling several surges, starting somewhere between 7th and 9th Streets, the train stopping with the rear car near 10th Street; he immediately went back to flag. He said that a normal, smooth run was made, and that there was nothing out of the ordinary to attract attention prior to the accident; he did not feel any air-brake application before or while the surges were taking place, but on getting off the train to flag he noticed that the brakes were applied. Flagman Gerrill could not estimate the speed of the train when the surges occurred.

Operator-Leverman Miller, at FG tower, stated that when train No. 59 was reported from Antis he entered the report on the block sheet and then lined the route from track 4 via the cross-overs to track 1 and displayed a proceed indication on the home signal; this took place about 5 minutes prior to the occurrence of the accident and he did not again manipulate the levers. He was talk-

ing over the telephone when train No. 59 approached, and the last time he saw its headlight was when the engine was about at the east end of cross-over switch 5; on hearing the crash he jumped up and saw fire flying from underneath the entire length of the engine, which was then upright, but rocking. He immediately looked at the interlocking machine to see that everything was all right and shortly afterwards the tower was struck and knocked down. Operator-Leverman Miller could not estimate the speed of the train, and said it appeared to him that the engine was stopping, but that the cars in the train were pushing the rear end of the engine around.

Assistant Station Master Bell, Yard Brakeman Lykens and Signal Maintainer Hoover also were in PG tower as train No. 59 approached, and their statements as to what transpired were similar to those of Operator-Leverman Miller. The maintainer added that it was his duty to inspect the track, roadbed and switches in this locality, and that he had been over the ground and made such an inspection less than 1 hour before the accident occurred and found everything to be in good condition; he felt positive that track conditions had no bearing on the accident.

Yard Fireman Powell, who was handling switch engine 4046, stated that his engine was in the vicinity of 10th Street; he could not give a close estimate but thought the speed of train No. 59 was about 30 to 35 miles per hour as it passed him and he did not notice any indication of the air-brakes being applied; the train stopped with the rear car opposite his engine. Engineman Dickson, who was standing on the apron of engine 4046 talking with the fireman, only glanced around as the head end of train No. 59 passed and while he could not estimate its speed, it did not occur to him that it was anything unusual.

Extra Yard Conductor Hilins, who was just west of 12th Street, said that about the time the engine turned off from track 4 he saw fire flying around the front end of the engine and it looked as though the engine was raised in front; he ran for safety and did not see what followed. Conductor Hilins also said that at first the fire did not appear to result from the brakes having been applied, but later it appeared to be flying from all around the wheels as though the brakes were applied.

Signalman Lynn, who was off duty, was near 10th Street and saw train No. 59 as it approached; it immediately attracted his attention because it was traveling so fast at that location; he did not form any definite estimate, however, as to its speed.

Operator-Leverman Robeson, on duty at 9th Street tower, stated that trains usually pass his tower at a speed of about 20 miles per hour when entering Altoona passenger station. On this occasion train No. 59 was

running in excess of its usual speed; he estimated the speed to have been about 35 miles per hour and said that he had never before seen a train entering the station at such high speed.

Car Inspector Gearhart stated that about 30 minutes after the accident he inspected the air-brakes on the last six cars and found that the brakes were applied.

Superintendent Phelan arrived at the scene of the accident about 20 minutes after its occurrence. His examination of the track disclosed a heavy score-mark on the frog of cross-over switch 5, the mark starting at the point of frog and continuing on the gauge side for a distance of about 9 inches, lessening in severity until it disappeared into the gauge line. There was also a mark on the head of the guard rail opposite the frog, starting at a point 5-5/8 inches east of the frog point and continuing westward parallel to the gauge line of the guard rail, and then turning toward the gauge line for 2-3/4 inches and disappearing into the gauge. There was another mark on the right hand running surface of the frog starting at a point 35-1/2 inches west of the frog point and continuing until it disappeared off the end of the heel block and then it appeared on the ties; this was clearly a flange mark and apparently was made by a wheel not carrying a very heavy load. A short distance west of the frog a corresponding flange mark appeared on the opposite side of the track, it appearing as though one pair of the engine-truck wheels had been derailed. These marks continued through the first double slip switch and upon reaching the second double slip switch they disappeared and then reappeared again a short distance beyond, accompanied by two additional flange marks, indicating that two pairs of wheels were then derailed. Just beyond the second double slip switch, tracks 2 and 1 were torn up for a distance of 142 feet, the driving wheels apparently having been derailed at this location, and then the engine overturned and slid along on its right side on tracks 3, 2, and 1, stopping at a point 147 feet beyond the section of destroyed track. Superintendent Phelan also stated there were other marks east of cross-over switch 5, but that he had been unable to attach any significance to them.

After the engine had been moved to the East Altoona engine house and the engine truck placed in position, the Commission's inspectors made a thorough examination of it in company with officials of the railroad. The running gear and the motion work below the boiler, including the wheels, springs, hangers and equalizers, power-brake appurtenances, brake heads, brake levers, brake beams, etc., were checked for worn, broken or missing parts, but nothing was found that would have contributed to the derailment. The engine truck was the most seriously

damaged and bore evidence of having been subjected to terrific pounding against hard metal; there were many deep indentations and scratches on the flanges and the rims, both axles were bent, all journal boxes were broken, the right pedestal binder brace torn loose from the front journal box and the binder bent upward, the cross brace from which the brake rigging was secured was bent or buckled, and the brake rigging seriously damaged. The truck did not appear to be set squarely in place under the engine, it appearing as if the main center casting was faulty. Subsequently the truck was dismantled and among the defects noted was a broken spring hanger pin in the left front spring hanger, about 70 percent of which was an old fracture, while the balance of the fracture evidently had been completed prior to the derailment as the broken parts showed that they had been rubbing against each other; in addition, the hanger pins were bent and worn and the holes in which they worked showed much wear, the two large cradle pins were bent and badly worn, and the two long bottom leaves of the right truck spring were broken. All of these were old defects.

Conclusions

The cause of this accident was not definitely determined.

Apparently one pair of engine-truck wheels became derailed at the frog of cross-over switch 5 when making the turnout movement from track 4, the truck becoming entirely derailed after passing through the double slip switch on track 2 and resulting in the derailment of the driving wheels, which occurred west of the switch on track 1; the derailed engine then tore up tracks 2 and 1 for a distance of 142 feet before overturning on its right side and being pushed along on tracks 3, 2, and 1 for a distance of 147 feet, the engineman apparently not having had any opportunity to apply the brakes after the derailment began; in fact, it is doubtful if there was any application at this point until the train line was broken after the engine overturned. The track at the initial point of derailment was in excellent condition and could have had no bearing on the cause of the accident, neither is it believed that the speed was high enough to have caused the accident. It appeared, however, that the engine truck was not in the best of condition, there being several parts which were worn or broken prior to the accident, and it is thought that failure of some part of this engine truck initiated the derailment.

Respectfully submitted,

W. P. BORLAND,

Director.