

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 BLACK RUN,
OHIO, ON NOVEMBER 18, 1931

January 30, 1932

To the Commission

On November 18, 1931, there was a derailment of a freight train on the Pennsylvania Railroad near Black Run, Ohio, which resulted in the death of 1 trespasser and the injury of 8 trespassers and 1 person carried under contract.

Location and method of operation

This accident occurred on that part of the Pan-handle Division extending between Heisey, near Newark, Ohio, and Pittsburgh, Pa., a distance of 157.2 miles. In the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system supplemented by an automatic train-control system of the continuous-code type. The accident occurred at a point 3,750 feet east of Black Run Cabin, which in turn is located approximately 670 feet east of Black Run Station, approaching this point from the west, the track is tangent for a distance of about 2 miles, while the grade is descending for about 4 miles varying from 0.11 per cent to 0.51 per cent, it is 0.33 per cent at the point of derailment. Special instructions in the time-table permit a speed of 45 miles per hour for certain symbol freight trains, of which the derailed train was one. The track was in good condition and was not a factor in the cause of the derailment.

The weather was clear at the time of the accident, which occurred about 12.30 or 12.31 p.m.

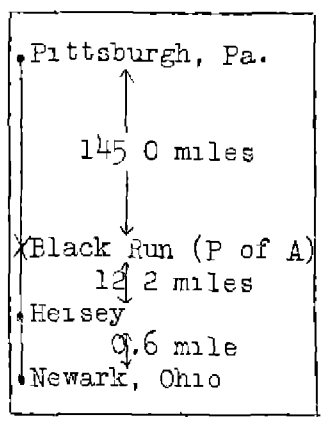
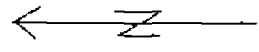
Description

Eastbound freight train VL-8 consisted of 114 loaded cars, 11 empty cars, and caboose, hauled by engines 6730 and 6773, and was in charge of Conductor Farner and Enginemen Vainer and Carver. This train departed from

Point of accident →

3750 feet

Inv. No. 1735
Pennsylvania R.R.,
Black Run, Ohio,
Nov. 18, 1931



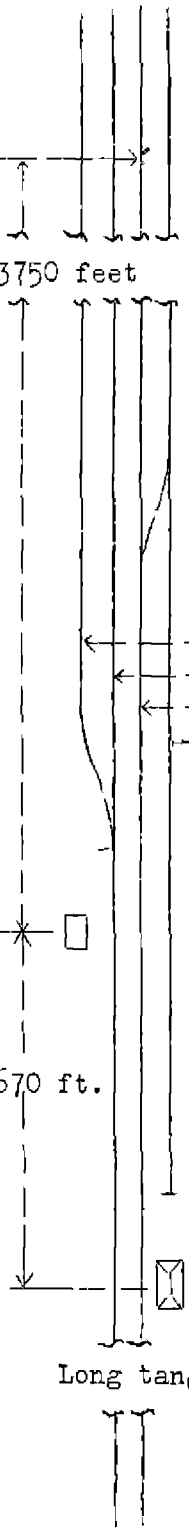
Cabin

670 ft.

Station

Long tangent

← Siding (220-car capacity)
 ← Westbound main track
 ← Eastbound main track
 ← Siding (215-car capacity)



Columbus, Ohio, at 11 a.m., on the Columbus and Newark Division, entered upon the Pannangle Division at Heisey, 33.7 miles east of Columbus and 0.6 mile east of Newark, passed Black Run 12.2 miles east of Heisey, at 12.30 p.m., and immediately afterwards was derailed by a broken wheel on the first car while traveling at a speed estimated to have been between 40 and 45 miles per hour.

The first car in the train, CBRX 140, came to rest south of the eastbound passing track, and was passed by the second to the fortieth cars, the second to the thirty-sixth cars, inclusive, were piled up, blocking both main tracks, the two adjacent side tracks, and extending off the right of way on the south of the tracks. The engines were not derailed and were stopped some distance east of the wreckage.

Summary of evidence

Engineman Varner, of the lead engine, stated that the terminal test of the air brakes at Columbus was entirely satisfactory and he noted that the train line was exceptionally good, with practically no leakage. The only time he made use of the automatic air brakes between Columbus and the point of accident was at Newark, for a stop at the Baltimore & Ohio crossing, this stop consuming about three minutes. He stated that he made proper application and release of the brakes at that point, and was unable to account for any possible failure of the brakes on car CBRX 140 to release unless the triple valve was defective. After passing Hanover, a station located about 5 miles west of the point of accident, he had looked back along the train and everything appeared to be all right but after the accident he examined the broken wheel, as well as other wheels under the same car, and found them warm although not so hot that he could not put his bare hand on them. The wheel that had broken looked as though it had been working on the axle and had been very hot. Fireman Shalosky, of the lead engine of train VL-8, corroborated the statement of Engineman Varner covering use made of the air brakes and stated that he looked back along the train at different points on the line and did not see anything wrong.

Engineman Carver, of the second engine of train VL-8, stated that he looked back along the train leaving the B&O crossing and also at other points and saw no signs

that would indicate that brakes were sticking. He felt something when east of Black Run and on looking back saw that the engines had parted from the train and that the first car in the train was derailed and was then in the act of turning over to the right. After the accident he found that the footboard on the rear of the tender of his engine had been struck by something on the right side, the damaged part bearing the indication of a flange mark, and later he noticed a wheel which had separated from its axle and it was his opinion that it was the wheel that caused the mark. He did not see any marks on the loose wheel to indicate that it had been knocked off the axle, but was of the opinion that it had worked loose. He felt of a broken wheel found on another axle and while he stated that it was warm, yet it was not so hot as to prevent him from holding his hand on it for a few seconds.

Fireman Caniff, of the second engine of train VL-8, stated that after passing Black Run he felt a surge and on looking back he saw the head car turning over to the right and called to Engineman Carver to get away from the derailing cars. He observed the mark on the footboard mentioned by Engineman Carver and was also of the opinion that it was caused by a wheel flange striking it. After the accident he made an examination of the derailed equipment during which he felt of the wheels of several cars, among which was a detached pair that had a part of one wheel broken off, he felt of this wheel and found it so hot that he could not hold his hand on it for any length of time, it being much warmer than the others. He also stated that he had looked back on the engineman's side of the train going by Black Run, but had not noticed anything wrong.

Conductor Farner stated that all brakes on the train were released before it departed from Columbus. Between that point and point of accident he received signals from several employees at different points on the line, including the signalman at Black Run. He also stated that he looked along his train at three different points en route and apparently everything was all right. After the accident he made an examination to determine the cause of the accident and found a pair of wheels that had a piece broken out of one of them, and also an axle with only one wheel on it, and was of the opinion that one of these conditions had caused the accident. He further

stated that the broken wheel was so hot he could not hold his hand on it, but it did not appear to be any hotter than other wheels that were near the head end of the train.

Head Brakeman Wineman stated that he rode in the brakeman's cabin on the tender of the second engine from Columbus to the point of accident, and that he had been watching back along the train between these points but had not seen anything that would indicate there was anything wrong; he stated however, that from his position it was not possible for him to see the running gear of the head car. The brakes on that car were fully released leaving Columbus, and while he did not get on the ground when the train was stopped at the railroad crossing at Newark, he heard the air brakes release on the head car at that point. The first intimation he had that something was wrong was when he heard a noise just east of Black Run that sounded to him like an engine stripping itself, he then opened the cabin door, looked out, and saw that the head car had dropped down on the right front corner. It appeared to ride along reasonably smooth for a distance he estimated to have been about four or five car-lengths, and then raised off the track and turned over to the right, followed by the second car, which turned over to the left, the balance of the cars on the head end derailing and piling up in a heap. After the accident he examined the wheels of the head car by feeling them and stated that they were not very hot.

Flagman Russell stated that he watched along the train on all curves between Columbus and Black Run and everything was apparently all right, and he exchanged signals with members of the crews of two passing trains and also with three operators en route. He saw the broken wheel after the accident but did not feel of it to ascertain if it was hot; the fracture had the appearance of a new break and he also saw some flat spots on the wheel that appeared to be old ones. He further stated that he saw Brakeman Wineman release the hand brake on car CBRX 140 before leaving Columbus.

Car Inspectors Boick and King stated that they inspected the wheels, brake shoes, etc., of car CBRX 140 at Columbus prior to its being forwarded in train VL-8 and they did not find anything that indicated the wheels had been hot. Car Inspector Martin stated that he inspected the retainer on the car and that it functioned properly.

Air-brake Inspectors Geiser and Noble stated that they made the terminal air-brake test of train VL-8 prior to its departure from Columbus, and the brakes applied and released properly. They also stated that in their inspection of the brakes they observed the wheels of car CBRX 140 and saw nothing about them that would indicate they had been overheated. Inspector Geiser further stated that when the train pulled out of the terminal he watched the wheels of all cars and there were no brakes sticking.

Master Mechanic Huston stated that he arrived at the scene of the accident about 3 p.m. and made an inspection of the track and damaged equipment. He found car CBRX 140 on the right-of-way to the right of the tracks with the trucks gone from under it and in that vicinity he located four pairs of wheels that he identified as belonging to it. One pair had a wheel gone off the axle, and markings on the axle indicated that the wheel had been pushed off as a result of the accident, another pair had a crack extending down through the wheel beyond the core hole; the third pair had no particular defects other than some rough spots in the tread that he concluded were due to the wheels having slid, the fourth pair he examined were lying west of car CBRX 140 and it was a broken wheel on this pair that, in his opinion, was responsible for the derailment. About one-third of the wheel had been broken off, and the part that remained on the axle showed a discoloration about 1 inch deep and $1\frac{1}{2}$ inches wide at the center of the tread, near one end of the fracture which he said indicated overheating and the opening up of a thermal crack. During his inspection he felt of all of the wheels belonging to the car and found them warm, estimating the degree of heat at about 110° , the temperature of the air being about 65° . He also located the brake shoes and some of their broken parts and stated that they were all rust-red to their full depth, which convinced him that the brakes had been sticking for some time, and he also found a distinctive mark on the south rail which he concluded was caused by the broken wheel striking it.

Statements of Signalmen Austin and Walcutt, Crossing Watchman McBride, Track Foreman McGinnis, and Yard Brake-man Richardson, employees on duty at various points between Newark and the point of accident, were to the effect that they watched the passing of train VL-8 and did not see anything wrong.

Examination of the track and equipment made by the Commission's inspectors subsequent to the accident disclosed that the first mark leading to the derailment was 17 feet 2 inches from the receiving end of a rail on the south or right side of the track approximately 785 feet west of the point of derailment, at points 48 and 69 feet east of this mark the ballast had been gouged out at distances of 2 and 6 feet, respectively, from the rail, and the broken-out portion of the wheel came to rest 52 feet farther east and 21 feet from the rail. At the point of derailment there were flange marks on the ends of the ties on the south side of the south rail and a distinctive mark on the ball of the rail showing where it had been struck by the broken wheel. On the opposite side, the west end of a rail joint had been sheared off when the north wheel struck it, and 90 feet east of this point the track was entirely torn out. The damaged condition of the triple valve of car CBRX 140 was such that it could not be applied to a testing device, but other tests developed that the valves, piston and piston rings were in good condition. Stencil marks found on the reservoir indicated that all parts of the air-brake apparatus had been cleaned and oiled on June 8, 1931.

Car CBRX 140 was a refrigerator car, with a capacity of 41,000 pounds, and carried a loading of 20,000 pounds at the time of the accident. All of the wheels of this car were examined, as were also the brake shoes and brake-shoe parts that could be identified as belonging to the car, and all of this equipment bore markings that indicated an overheated condition, while none of the shoes bore evidence of having been used subsequent to cooling. The wheel which broke was the right lead wheel of the forward truck, and the piece which was broken out was $31\frac{1}{2}$ inches in length and measured $34\frac{3}{4}$ inches around the tread, which was badly brake-burned and cracked and still had bits of brake-shoe metal adhering to it, this also was the case with the wheel on the opposite end of the axle. The trailing pair of wheels of the forward truck was badly brake-burned and the treads also showed numerous small cracks, it was the left wheel of this pair that had been pushed off the end of the axle, as a result of the accident. In the case of one pair of wheels from the rear truck, it not being determined which was the lead pair, one wheel showed considerable tread wear and moderate flange wear, the opposite wheel was not worn as much, but had three large cracks in it, one of which extended in each direction from a core hole to within $3\frac{1}{2}$

inches of the tread; these wheels were badly brake-burned, as was also the case with the remaining pair of wheels. The condition of the treads of all the wheels under this car indicated that they had traveled little if any distance after having been heated to a high temperature.

Conclusions

This accident was caused by a broken wheel, apparently due to the sticking of the air brakes.

The statements of the employees of train VL-8, who felt of the wheels of car CBRX 140 after the accident, agreed that these wheels were warm, but their opinions as to the degree of heat varied to some extent, however, the fact that they still carried a degree of heat estimated at 110° by Master Mechanic Huston, when he arrived at the scene of the accident two and one-half hours after it occurred, together with the evidence of rust-red brake shoes, particles of which were found sticking in cracks and checks across the treads of the wheels by the Commission's inspectors, and the further fact that the wheels had traveled little or no distance after having been overheated, indicates that friction caused by the brakes sticking had produced a heat of sufficient intensity to result in the breaking of the right lead wheel and the subsequent derailment of the train. Several employees located at different points between Newark and the point of accident had watched the train for defects as it passed them, but it is obvious that these inspections were more or less cursory, as the examination of the damaged parts clearly indicated that the brakes on CBRX 140 had been sticking for some time, and it is believed they had not released subsequent to the stopping of the train at Newark. Owing to the damaged condition of the air-brake equipment, however, it could not be determined in what respect this equipment failed to operate properly.

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.