

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE ERIE RAILROAD AT FREEDOM, OHIO, ON MARCH 4, 1930.

March 26, 1930.

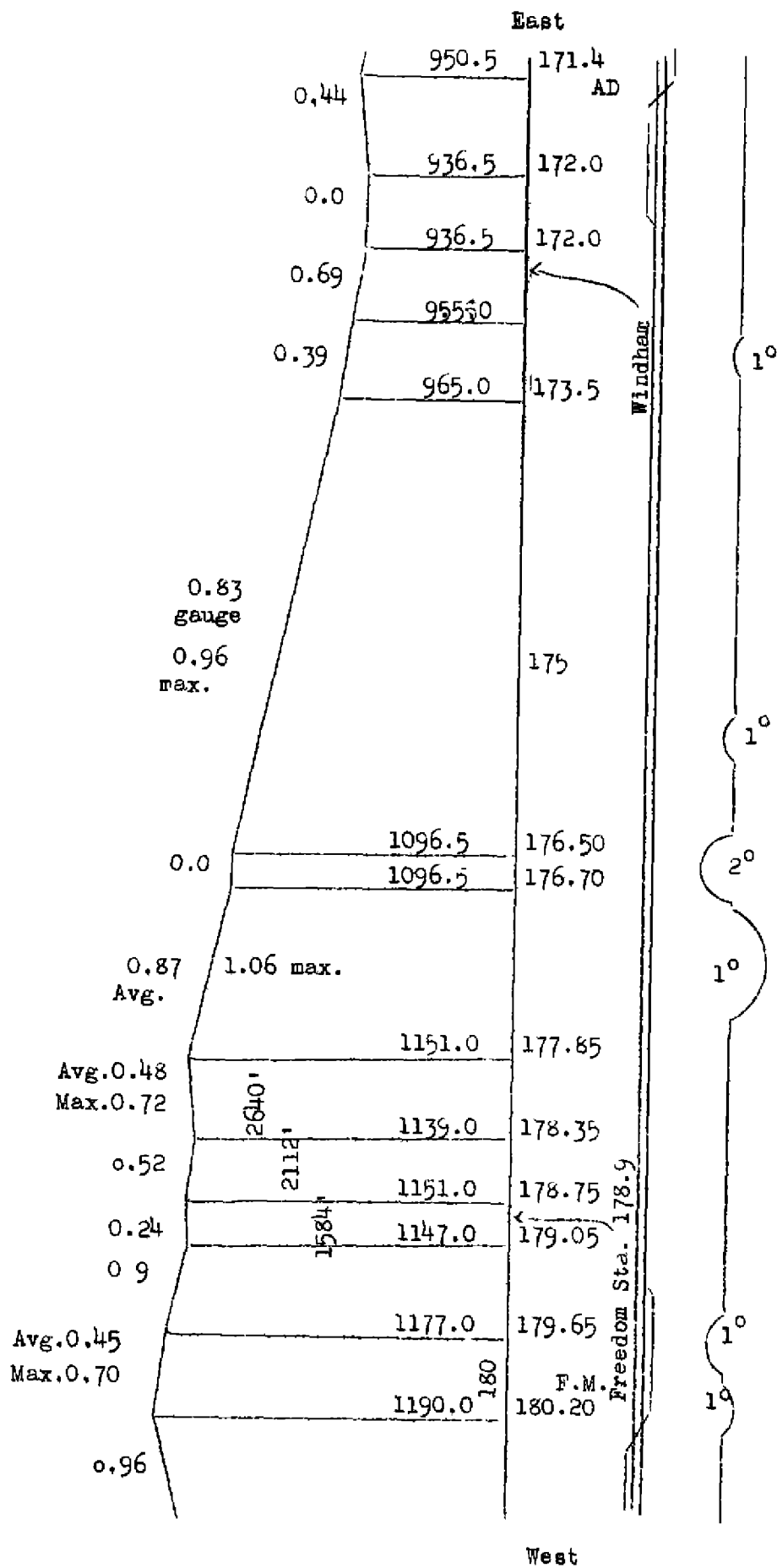
To the Commission:

On March 4, 1930, a freight train on the Erie Railroad broke in two at Freedom, Ohio, and the rear end of the caboose was forced up on the pilot of a helper engine coupled behind the caboose, the accident resulting in the death of one employee and the injury of one employee.

Location and method of operation

This accident occurred on the Second District of the Mahoning Division, extending between Meadville, Pa., and Kent, Ohio, a distance of 89 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. Freedom is located 76 4 miles west of Meadville and the accident occurred in the vicinity of the station at Freedom; approaching from the east, the track is tangent for about 2 miles, the station at Freedom being located on this tangent at a point about 1.4 miles from its eastern end. The grade for west-bound trains is generally ascending for several miles, the maximum gradient being 1.06 per cent; however, there is an occasional stretch of either level or descending grade, the longest of these being 2,640 feet of descending grade with an average gradient of 0.48 per cent and a maximum gradient of 0.72 per cent, west of this point there are 2,112 feet of 0.52 per cent ascending grade and 1,584 feet of 0.24 per cent descending grade, following which the track ascends to the summit of the grade, a distance of 6,072 feet. The station at Freedom is located practically midway of the above-mentioned 0.24 per cent descending grade.

At the time of the accident the forward portion of the westbound freight train involved in this accident was moving on the 0.24 per cent descending grade, the middle portion of the train was negotiating the 0.52 per cent ascending grade, while the rear portion of the train, including the caboose and helper engine, was on the descending grade with an average gradient of 0.48 per cent



Inv.No.1625
 Erie Railroad
 Freedom, Ohio
 March 4, 1930

Under the provisions contained in the Hand Book of Special Instructions and Condensed Bulletins, Revised July 1, 1922, it is required that:

when it is necessary to couple an N or R class engine on a freight train as pusher on ascending grade, the air brakes will be cut through to the pushing engine. Engineer of which will keep his valve so that air will apply on engine from the rear end, to avoid damage to train.

The helper engine involved was a class "P" engine

It was snowing hard at the time of the accident, which occurred about 2.10 a. m.

Description

Symbol freight train No. 89, extra 3326 west, consisted of 5 loaded and 94 empty freight cars, most of these being refrigerator cars, and a steel under-frame caboose, hauled by engine 3326, and was in charge of Conductor Dunern and Engineer Luce. On account of weather conditions, engine 3326 was handling only 85 per cent of its tonnage rating, or 2,494 tons. Extra 3326 passed Breecville tower, the last open office, 10.4 miles east of Freedom, at 12.24 a. m., but while going up the hill it stalled on a reverse curve at a point about 2.4 miles east of the station at Freedom, on account of the engine booster being partly frozen up. The dispatcher issued instructions to the crew of the following train, symbol freight train No. 62, engine 4214, in charge of Conductor Gilbert and Engineer Dill, to pull the train in on the siding at AD, located 7.5 miles east of Freedom, cut off their engine, proceed up the hill and shove extra 3326 to FM tower, located 1.2 miles west of Freedom, practically at the apex of the hill. Accordingly, engine 4214 was cut off, the engine man, fireman and brake men accompanying it, and on arrival at the rear end of extra 3326 it was coupled behind the caboose, but the air brakes were not cut through to engine 4214. Extra 3326 was then started up the hill and as engine 3326 was approaching the station at Freedom, at which time the train had attained a speed estimated to have been between 20 and 30 miles per hour, and just as engine 4214 was about to be uncoupled from behind the caboose, the train parted between the twenty-fifth and twenty-sixth cars from the head end, apparently due to a defective coupler yoke on the forward end of the twenty-sixth car, MRLX 10703. This caused the air brakes to apply in emergency on extra 3326, but not on engine 4214, as the air brakes had not been cut through to it.

After the accident, the forward portion of the train continued a distance of about 1,000 feet, while the rear portion ran about 200 feet. The coupler on the rear end of the caboosc was broken, and the rear end of the caboosc was lifted off its truck and forced upon the pilot of engine 4214; none of the equipment was derailed. The employee killed was the brakeman of engine 4214, who was crushed between the rear end of the caboosc and the pilot of engine 4214, having taken up a position preparatory to uncoupling engine 4214 from the caboosc; the employee injured was the flagman of extra 3326.

Summary of evidence

Engineman Dill, of engine 4214, stated that as his engine would only be required to help extra 3326 for about 1 mile, the air brakes were not cut through to the engine, it merely being coupled behind the caboosc. When his own engine had tipped over the knoll of the hill and had started down the descending grade on which it was moving at the time of the accident, at a speed of about 30 miles per hour, he sounded the whistle two or three times to attract the attention of his brakeman, Grimes, who was then riding in the caboosc ahead, for the purpose of getting ready to cut off the engine. Brakeman Grimes came out and held up his lantern in acknowledgment of the signal, and Engineman Dill then commenced to ease off on the throttle, but did not have time to ease off to any appreciable extent before the accident occurred, before his engine had reached the point at which he intended to have it cut off. Engineman Dill further stated that he had not eased off to less than half a throttle, and in his opinion, had the accident not occurred, his engine would have reached a point about at the bottom of the hollow before being cut off, at which time the other engine would have been pulling on the entire train, with the result that there would have been no jerk on the rear end of the train. The statements of Fireman Andrews, of engine 4214, added nothing additional of importance.

Conductor Duncan, of extra 3326, said he was aware of the fact that it was required to cut the air brakes through to engine 4214, and the reason it was not done in this case was that it had not been the custom to do so when shoving a train only two or three train-lengths; when a train was shoved from AD tower to FM tower, however, a distance of 8.7 miles, it was customary for the air brakes to be cut through to the helper engine and on reaching FM tower the train would be brought to a stop in order to cut off the helper engine. On this occasion, he said that his train had only been shoved ahead about two and one-half train-lengths, and he estimated its speed to have been be-

tween 20 and 25 miles per hour when Engineer Dan Dill sounded the whistle several times just prior to the accident. Conductor Duncan was inside the caboose when the accident occurred, but it was his opinion that the caboose would have gone up on the pilot of the helper engine even if the air had been cut through to that engine; later on he said he did not know whether the accident would have been averted had the air been cut through. Flagman King stated that it was the rule to cut the air brakes through to the helper engine in regular helper service, at the bottom of the hill, but where a train was stalled it was not customary to do so. Statements of other members of the crew of extra 3326 added nothing additional of importance.

Wreckmaster Fulton arrived at the scene of the accident about 3½ hours after its occurrence. Examination disclosed the coupler and draft rods to be pulled out of refrigerator car MRLX 10703, but the draft rigging was still in the car, the coupler yoke had broken and then pulled out of the draft rigging. The car was of steel-underframe construction, although he did not ascertain its approximate age or whether the steel underframe had been applied at the time of building or at some later period, he did not examine the coupler thoroughly and could not tell whether the lock lift was jammed in the coupler and prevented it from releasing at the time the yoke broke, nor whether the original break in the yoke was at the top or the bottom. In his opinion, had the air brakes been cut through to engine 4211, it would have helped toward preventing the accident.

Extra 3326 had been given the usual inspection upon arrival at Meadville yard, no exception was taken to the condition of refrigerator car MRLX 10703, but the car inspectors stated in effect that it would have been necessary to get underneath a car in order to detect a defective coupler yoke, and that it was not the practice to get underneath cars during the course of ordinary inspection.

Examination of the defective coupler yoke subsequent to the accident showed it to be a 1½" x 5" wrought-iron yoke, it had been completely broken at the bottom in the bend at the lock end of the yoke, and bent, as well as about 80 per cent broken in two, at the corresponding location at the top of the yoke. Starting from the outer edge of the bend at the bottom of the yoke, an old fracture extended entirely across the 5 inches of metal, to a depth of approximately one-third of the 1½ inches of the strap. There was also a service crack about 1/16 inch in length, extending across the width of the strap at the inside of the bend, the balance of the metal at this location showed a new or fresh break. There were two seams ½ inch to 3/4 inch in width at one side, and one seam about 3/4 inch in width at the opposite side, all three being in that por-

tion of the metal showing the old defect. On the top part of the yoke, just ahead of the bend, there was a separation of the metal $3/4$ inch in width, rusted, and extending entirely across the 5-inch width of the strap, about $1/4$ inch from the top of the yoke. The metal was broken new from the inside edge of the strap to this separation, and then the strap was bent back to an angle of about 25° past a straight line with the top of the strap. The old defects in this yoke were in such locations that they would not have been readily discernible during the course of ordinary inspection, but might have been seen by careful inspection at car-repair tracks and shops.

Conclusions

This accident was caused by extra 3326 breaking in two between the twenty-fifth and twenty-sixth cars, due to a defective coupler yoke.

Extra 3326 consisted in its entirety of 99 cars, a caboose, and two engines, lead engine 3326 and helper engine 4214, the helper engine being coupled behind the caboose without the air brakes having been cut through. This train, including both engines, was approximately 4,400 feet in length; according to these figures it was estimated that about 290 feet of the forward portion of the train was moving on the 0.24 per cent descending grade, the next portion of the train was on the 2,112 feet of 0.52 per cent ascending grade, while the rear portion of about 2,000 feet was moving on the average 0.48 per cent descending grade. The indications are that on account of the train being on these varying grades, with the lead engine working a heavy throttle and starting down grade, and the helper engine having been eased off preparatory to cutting off from the caboose, extra strain was exerted on the defective coupler yoke, finally resulting in its failure. When the train parted, the air brakes not being cut through to the helper engine, the resulting shock was sufficient to force the caboose on to the engine pilot and cause the death of one employee and the injury of another.

Engineman Dill and Conductor Duncan were fully aware of the fact that the air brakes had not been cut through from the caboose to the helper engine, and the conductor said it was not customary to cut the air brakes through when a road engine helped a train stalled on the hill, but that in regular helper service, however, it was customary for the air brakes to be cut through when a train was to be shoved from AD tower to FM tower, a distance of 8.7 miles, and that on reaching FM tower, located practically at the top of the hill, the train would be brought to a stop and the helper engine then cut off. The rules, however, make no such exception, they require the brakes to be cut

through to a class R helper engine, and the engineer on that engine to lap his brake valve, so that the air will apply on the helper from the head end, in order to avoid damage to the train. This covers the matter exactly, but the rule was not observed, and the result was that damage to the train did result and an employee was killed thereby. In this connection, attention is called to the report of this Bureau covering its investigation of an accident which occurred on the Southern Railway near Flippen, Ga., on February 15, 1928. In that accident, a freight train, No. 55, was unable to start on an ascending grade, after having made temporary repairs necessitated by a break-in-two, and a following passenger train, No. 7, closed up against the caboose, without coupling to it and without having the air cut through. The movement then was started, the freight train broken in two again, and the passenger engine went through the caboose, killing the conductor of the freight train. In the conclusions of that report, the following statement was made.

"Had the engine of No. 7's train coupled into the rear of train No. 55 and cut the air through both trains, as safe operating practice should have dictated, the serious damage and loss of life caused by the break-in-two of train No. 55 would have been prevented."

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. FORLAND,

Director.