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*Railroad accident investigation
report E.V. 3-3 no. 1451-1500*

U.S. INTERSTATE COMMERCE COMMISSION

Dept. of Transportation
JUL 09 1976
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REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON
THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY AT
CHICAGO, ILL., ON NOVEMBER 3, 1928.

November 26, 1928.

To the Commission:

On November 3, 1928, there was a rear-end collision between a Chicago, Rock Island & Pacific transfer train and a Baltimore & Ohio extra train of passenger equipment, on the South Chicago line of the Chicago, Rock Island & Pacific Railway near Woodlawn Avenue, Chicago, which resulted in the death of two Rock Island employees, and the injury of one B. & O. employee.

Location and method of operation

This accident occurred on the Chicago Terminal Division, Sub-division 1-A, which is known as the South Chicago line, it branches off from the main line of the Rock Island near Gresham and extends eastwardly a distance of approximately 5 miles, serving yards and making connections with a number of other railroads. Both passenger and freight trains of the Baltimore & Ohio Railroad and passenger trains of the Pere Marquette Railroad are operated over this line, and engines of 10 other companies are also operated over portions of this line under trackage agreements or for interchange purposes. This line is entirely within yard limits, and engines and trains are operated over it under yard rules. At the point where this accident occurred it is a double-track line, movements being governed by automatic block-signal indications.

Rule No. 16a of the current time-table provides as follows:

"Within yard limits, the main track may be used, clearing the time of first class trains, as prescribed for inferior trains by the rules. Unless the main track is seen or known to be clear, second and third class and extra trains must move within yard limits under control.

"Whoever obstructs main track must protect by flagman when the obstruction cannot for any reason, be plainly seen from approaching train for a distance of at least seven hundred and fifty (750) feet. In case of collision, responsibility rests with the moving train or engine."

There is no train-sheet record kept of movements over this track and no train orders are issued. The maximum speeds prescribed for passenger trains are 45 miles per hour on tangent track, and 30 miles per hour on curves, for freight trains, 30 miles per hour on tangent and 20 miles per hour on curves. Time-table rule No. 10e provides:

"All South Chicago Line trains must be under control approaching crossovers where engines or trains may be using tracks for switch movements."

In the vicinity of the point of accident the track is located on a fill forming the approaches to bridges across Cottage Grove Avenue and the tracks of the Illinois Central Railroad. Approaching from the west there is an ascending grade of 0.5% approximately 4,000 feet in length, extending to the bridge over the Illinois Central tracks, the grade is then 0.4% descending to the point of accident, a distance of approximately 1,300 feet, the descending grade continuing for some distance eastward. Approaching from the west there is a 1° curve to the right, followed by a tangent of 2,147 feet, then there is a 2° curve to the left beginning approximately 1,200 feet west of the bridge over the Illinois Central, the total length of this curve being 1,736 feet; the track is then tangent for a distance of 756 feet to the point of accident and for a considerable distance eastward.

There are 8 or 10 tracks of other railroad companies located on this fill and paralleling the Rock Island tracks on the north, the first track to the north being the eastbound Chicago & Western Indiana track. East of the Illinois Central bridge two switching or yard tracks branch off to the south from the Rock Island tracks, and numerous tracks of Burnside yard are located north of the Rock Island line. Farther east, track elevation work is in progress and the signals in this vicinity are arranged to display two indications only, yellow light or diagonal arm meaning proceed prepared to stop at next signal, and red light or horizontal arm for stop.

There was one signal involved in this accident, automatic block signal 124, located on the east abutment of the Illinois Central bridge. This is a color-light signal arranged to display a yellow or a red indication. Operating in connection with the red indication there is an additional yellow light with the letter G opposite it, located lower down on the signal mast, known as a grade signal, which permits a tonnage train to pass the red signal without stopping and to proceed at restricted speed not exceeding 8 miles per hour expecting to find the block occupied or obstructed. Signal 124 is controlled by alternating-current circuits, the track circuit being approximately 2,800 feet in length. The track relay is of the ironless, two-position galvanometer type, the circuit for the yellow signal light being carried through a front contact of this relay, and the circuit for the red light and the grade signal light being carried through one back contact of this relay. Chicago & Western Indiana signals were also located in this vicinity, these signals being of the semaphore type, electrically lighted, located on a bracket pole between the Rock Island westbound and the Western Indiana eastbound tracks, approximately 200 feet east of Rock Island signal 124.

The accident occurred at about 2.22 a.m., a drizzling rain was falling but this did not materially obscure the view.

Description

The trains involved in this accident were an eastbound Rock Island transfer train, consisting of engine 433 with 27 cars and caboose, with Engineman Hannan and Switch Foreman Fay in charge, and a Baltimore & Ohio extra train consisting of engine 5231, 4 express cars loaded with silk and one coach used as a caboose, with Engineman Shreve and Conductor Pell in charge. The Rock Island transfer train followed another transfer train from Gresham to the point of accident. When it approached signal 124 there were no signal lights burning and a stop was made as required by the rules; this transfer train then proceeded and came to a stop behind the preceding transfer train which had in turn been stopped because of a crossing ahead being blocked. Transfer train 433 had been standing at this point about 15 or 20 minutes, and was about to proceed again, when its rear end was struck by B. & O. extra 5231. The B. & O. train did not stop for signal 124, due apparently to the fireman misreading or mistaking some other light for the indication of that signal and to the failure of the engineman to see the signal or note that the lights were out, this train passed

signal 124 at a speed of about 40 or 45 miles per hour; when the rear end of the Rock Island transfer train came into view around the curve the engineman made an emergency application of the brakes and the speed was somewhat reduced before the collision occurred.

As a result of the collision the caboose of the transfer train was entirely demolished, a flat car with its lading of machinery was considerably damaged, and two box cars loaded with grain were overturned and badly damaged. The B. & O. engine was somewhat damaged and partly derailed. The employees killed were the switch foreman and a switchman of the Rock Island transfer train.

Summary of evidence

Engineman Hannon, of Rock Island engine 433, stated that this transfer train was enroute from Gresham to South Chicago, at Gresham he waited until another transfer train had gone ahead and then he followed, on account of the preceding train, he stopped for the first block signal east of Gresham, the next block signal changed to yellow just as he stopped for it, at the next block signal, located at the Illinois Central crossing, the light was out and he stopped for that. He then pulled ahead and stopped behind the preceding transfer train; he thought he stopped for the signal at the Illinois Central bridge at about 2.05 or 2.07 a.m. and that the accident occurred 15 or 20 minutes later. The force of the collision moved his engine forward a distance of 15 or 20 feet, but because of the descending grade he did not think it would require much force to move his train; at the time the accident occurred he had just released the brakes preparatory to starting forward again. After the accident he went back to the signal with other employees and at that time the signal lights were out. He said he had not reported the signal out prior to the accident as he had not reached a point where he could make such a report but it was his intention to notify the yardmaster.

Fireman Engler and Switchman Hovey, who were on Rock Island engine 433, stated that the lights were out on signal 124 as they approached and stopped for it. Their engine was running backwards and just as the tank passed the signal the lights flashed on, the red block signal and the yellow grade signal being displayed.

Engineman Shreve, of B. & O. engine 5231, stated that on the night of this accident he left Western Avenue, where he received this train, at 1.52 a.m., there were no delays and he arrived at Beverly Junction at about 2.15 a.m. and at Gresham at about 2.16 a.m., and the accident occurred

at about 2.32 or 2.23 a.m. Approaching the point where the accident occurred the second signal to the west displayed a yellow indication. As they approached the curve on which the next signal was located he looked across to the fireman who looked ahead and then called "yellow block." He thought they were then about midway between the two signals. Engineman Shreve said he repeated "yellow block." At about that time he looked at the speed recorder, which he said indicated 32 miles per hour, and he eased up on the throttle a little, as they were rounding the curve he started to put on his injector. He stated that during this time he was looking out the front cab window to see the signal but he did not see any light and evidently missed the signal entirely because they had gotten around the curve to the straight track and he was still looking for the signal when the fireman shouted to him that there was a rear end ahead. He immediately applied the brakes in emergency and closed the throttle. He thought he was 600 or 700 feet from the rear of the transfer train when he applied the brakes and that the speed of his train was reduced to about 12 miles per hour, enough so that there was no danger to the fireman and himself in the cab. After the accident he walked back to the first signal, together with his fireman and the engineman of the Rock Island transfer, and found no lights burning on it. Engineman Shreve stated that he had been in the employ of the Baltimore & Ohio Railroad for 30 years, about 25 of which had been as an engineman. He was last examined on Rock Island rules in November, 1927, and was thoroughly familiar with the rules and operating practices on this line. He stated that he had received a clearance card at his initial starting point and his train was designated as a passenger extra, and he said he was under the impression he was handling a first-class train; however, when he was asked to state what is a first-class train as shown on the time card he replied that it is one with a time card schedule, and he said his train had no schedule. However, he stated that under the provision of rule 93 which reads that "trains carrying passengers must be protected at all times," he thought he was accorded the protection of a passenger train and that whenever he was cleared as a passenger extra he felt that he had the rights of a passenger train, and he operated his train as though he were running a first-class train. He stated that the movement of his train was governed by block signal indications and the yellow indication he had received west of Cottage Grove required him to approach the next signal prepared to stop; but when the fireman called that signal yellow he proceeded, looking for the signal himself but expecting to find the track clear to the next block. He said that had that signal been red, or had it not been called to him as "caution," he could

have stopped. He was entirely familiar with the rule requiring him to stop in case the signal lights were out, but he got by the signal without seeing it. There was no flagman protecting the rear of the transfer train, but he thought that if a flagman at the rear of that train had given stop signals the fireman from his position on the seatbox on the inside of the curve would probably have seen these signals before it was too late to stop. He stated that had his train consisted of four freight cars and had he been cleared as an extra, he would have operated such a train through yard limits under control at a speed such that he could have stopped in the distance he could see and without expecting other trains to be protected by flag. He said he did not think it likely that the Western Indiana signal could be mistaken for the Rock Island signal at Cottage Grove Avenue because that signal has a smaller light and is higher up in the air.

Fireman Faletta, of B & O. engine 5231, stated that after going over the C. & E. I. crossing at Oakdale he put in a fire and then got up on his seatbox and looked for the next signal, he said that as they came over a hill and around the curve he got a good view of the signal and called to the engineman "caution block." Then as the engine went around the curve east of Cottage Grove Avenue he saw the rear end of the transfer train and called to the engineman, who made an emergency application of the brakes. He estimated the speed at about 30 miles per hour as they passed over the Illinois Central bridge. There was a drizzling rain but it did not interfere with the view of signals. When asked if he thought it possible for him to have mistaken the Western Indiana signal for the Rock Island signal he said he saw them both and they were both displaying yellow indications. He did not think it was the grade signal that he saw. After the accident he went back with others and there were then no lights on signal 124.

Conductor Pell, of extra 5231, stated that he thought the speed of his train approaching the scene of accident was about 40 miles per hour. The first intimation he had of anything wrong was when the brakes were applied in emergency, the shock threw him out of his seat and he had just gotten back when the shock of collision again threw him forward against the next seat. He thought the speed had been reduced to some extent but could not make any estimate of the rate of speed at the time the collision occurred. He stated that he understood his train

was being operated as a passenger extra, and he thought his rights were the same as if his train had been a section of a scheduled train, he had six passengers traveling on passes, and as long as he was carrying passengers he considered that it was a passenger train.

Brakeman Hughes, of extra 5231, estimated the speed of his train approaching the scene of accident at about 35 miles per hour. The first he knew of anything wrong was when the brakes were applied in emergency, and then in a short time the collision occurred. He went back to flag and when he got back to signal 124 all the lights on that signal were out.

Signal Supervisor Zahnen stated that he arrived at the scene of accident at about 3.50 a.m., at which time there were no lights burning on signal 124. He opened the relay case and looked at the front relay contacts and found them open. He then lifted the relay out of the cleats for the purpose of turning it around to look at the back contacts, and as he did so the red block signal indication and the yellow grade signal indication came on. He thought that in moving the relay he had jarred it sufficiently to dislodge any slight obstruction that may have been between the back contacts, and afterwards the lights burned properly. He stated this improper operation of the track relay might have been caused by foreign current which would tend to hold the back contacts open, or by some foreign matter or high resistance between the back contacts. He stated that some trouble had been experienced, although infrequently, with resistance in the back contacts of relays of that type. After the wreck had been cleared up the relay was tested in service, and it was found that only by severely jarring it could the signal lights be extinguished. Late in the afternoon another track relay was installed at this point and the one which had been in service was held for further examination and test. Supervisor Zahnen stated that it would be impossible for the grade signal to be displayed without the red block signal indication being displayed at the same time unless the lamp or socket of the red signal was defective, or the wiring between the relay and the red light was out of order, because current for both of these signal lights must pass through the same relay contact, and such a defective condition did not exist.

Signal Engineer Wyant stated that in his opinion the trouble was due to resistance in the back contact.

Road Foreman of Engines Frazier, of the Baltimore & Ohio, stated that the speed-recorder tape taken from B. & O. engine 5231 indicated a speed of 47 miles per hour approaching the point of accident. A subsequent test of the speed recorder indicated that it was registering 4 miles an hour too high, this would indicate a recorded speed of 43 miles per hour as the B. & O. extra train approached the point of accident.

Subsequently tests were made of the track relay involved in this case. At the time these tests were made the relay was found to be in normal operating condition, both electrically and mechanically. There was some wear noted in the bearings but not enough to affect its proper operation, and evidence of some arcing on the back contacts, but at the time of this examination no condition was found which might have caused failure of the signal lights which occurred prior to and subsequent to the time of this accident. It is apparent therefore that if this failure was caused by a condition of the back contacts, this condition was altered by the jarring of the relay when it was moved after the accident.

Tests also were made to determine the distance the indications of signal 124 could be seen through the front cab window on the engineman's side of the B. & O. engine involved in this accident, and it was found that this distance was 472 feet, also to determine the distance that the rear end of a train, standing at the point of accident, could be seen, and this distance was found to be approximately 350 feet, from the fireman's side it could be seen a distance of 1,273 feet.

Conclusions.

This accident was caused by the failure of Engineman Shreve, of B. & O. extra 5231, to observe that a signal indication was not displayed for his train by an automatic block signal governing movements over this track and by his failure to stop at that signal as required by the rule, contributing causes were the mistake on the part of Fireman Faletta, of B. & O. engine 5231, in calling the indication of this signal to Engineman Shreve, and the operation by Engineman Shreve of an extra train through yard limits at excessive speed.

Rule 27 provides that "a signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as the most restrictive indication that can be given by that signal..." The evidence clearly establishes the fact that all lights at signal 124 were out at the time B. & O. extra 5231 passed the signal. Under these circumstances, Engineman

Shreve should have stopped for that signal, and then he should have proceeded expecting to find the block occupied or obstructed, switch not properly set, or other similar condition. Engineman Shreve was fully aware of this requirement and the reason he did not comply with it was, according to his own statement, that he missed the signal entirely.

Fireman Faletta called the indication of signal 124 as yellow or caution when it is apparent that no indication whatever was displayed by that signal. The track conditions ahead were such that a red block signal and a yellow grade signal should have been displayed, but these lights were out for the preceding train, merely flashing up as the engine of the preceding train passed, and they were out and remained out for a considerable period of time after the accident occurred, and until the relay controlling them was moved and jarred. It is therefore believed that Fireman Faletta saw another yellow light which he thought was the signal indication displayed for his train. There was another signal near by, on the Chicago & Western Indiana Railway, this is a semaphore signal and the light does not appear as large or as bright as the light of the color signal, but when approaching from the west and looking across the curve toward these signals there is some distance when the fireman would be directly in the focal range of the Western Indiana signal light and out of the direct focal range of the Rock Island signal light and it would then be a very easy matter to mistake the one for the other. Fireman Faletta said he saw both of these lights, but it is believed he was mistaken. Engineman Shreve would no doubt have made a greater effort himself to see the signal indication if the fireman had not called it, and the incorrect information thus given was an important contributing cause of this accident.

Rule 16a provides that unless the main track is seen or known to be clear, second and third class and extra trains must move within yard limits under control. The B. & O. train was being run as an extra and it should have been operated in accordance with the requirements of this rule; however, Engineman Shreve was under the impression that he had all the rights of a first-class passenger train and he operated his train accordingly, expecting inferior trains and switch engines to clear for him. Had he operated his train in accordance with the rules governing the operation of extra trains within yard limits, this accident probably would not have occurred. Engineman Shreve's misunderstanding as to the class and rights of his train was apparently based upon the fact that in the clearance card which he received at his initial starting

point his train was designated as a "passenger extra", and also upon a message received by the conductor in which the train was referred to as "Silk special eng 5231," prescribing a schedule of 3 hours and 10 minutes from Chicago to Garrett, a distance of 150 miles, which is practically the same as the scheduled running time of the fastest first-class trains between those points. Conductor Pell also had the same understanding as to the class and rights of his train. It appears that if the operating officials of the Baltimore & Ohio Railroad intended extra 5231 to be operated through this territory at rates of speed corresponding with passenger train schedules, other arrangements for the operation of this train, as for example running it as a section of a scheduled train, should have been made, and in any event measures should be taken to insure that enginemen and conductors correctly understand and observe the rules which are provided to govern the operation of extra trains.

One of the principal conditions which led to this accident was the failure of the signal lights on signal 124. The cause of this failure was improper operation of the track relay and while the exact nature of this trouble could not be definitely determined because of changed conditions after the accident, it is believed that it was due to dirt or high electrical resistance between the back contacts. This relay was manufactured in 1917, and had been overhauled at the Rock Island Shops at Moline in March, 1926, having been installed at this location subsequent to that date. The trouble which resulted in this failure was only a temporary condition, when the relay was tested after having been removed from service following the accident it was found to be in normal operating condition.

All of the employees involved in this accident were experienced men and none of them was on duty contrary to the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Director.