

INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE ATCHISON, TOPEKA & SANTA FE RAILWAY AT EAST FORT MADISON, ILL., ON MAY 29, 1922

JULY 18, 1922

TO THE COMMISSION

On May 29, 1922, there was a head-end collision between two passenger trains on the Atchison, Topeka & Santa Fe Railway at East Fort Madison, Ill., which resulted in the death of 2 employees and the injury of 48 passengers and 3 employees. The investigation of this accident was conducted in conjunction with representatives of the Commerce Commission of Illinois.

LOCATION AND METHOD OF OPERATION

This accident occurred on that part of the Illinois Division extending between Chillicothe, Ill., and Shopton, Iowa, a distance of 104.5 miles. In the vicinity of the point of accident, with the exception of about 6,000 feet of single track over the Mississippi River between East Fort Madison, Ill., and Fort Madison, Iowa, this is a double-track line, over which trains are operated by time-table, train orders, and a manual block-signal system.

Train movements over the single-track section are controlled by interlocking signals operated from two mechanical interlocking towers, one at East Fort Madison and one at the draw of the bridge. These towers are connected by an electric circuit so that a movement can not be made over the single-track section in either direction until one operator has communicated with the other and had the other throw a knife switch, permitting the first operator to clear the signals, and when this has been done the other operator can not change the route or permit an opposing train to proceed until the movement for which the signal has been cleared has been completed, the levers in his tower having been locked in normal position.

NOTE—Delay in issuing this report was occasioned by a delay of approximately one month on the part of the railroad company in furnishing a copy of the evidence taken in this investigation after it had been transcribed.

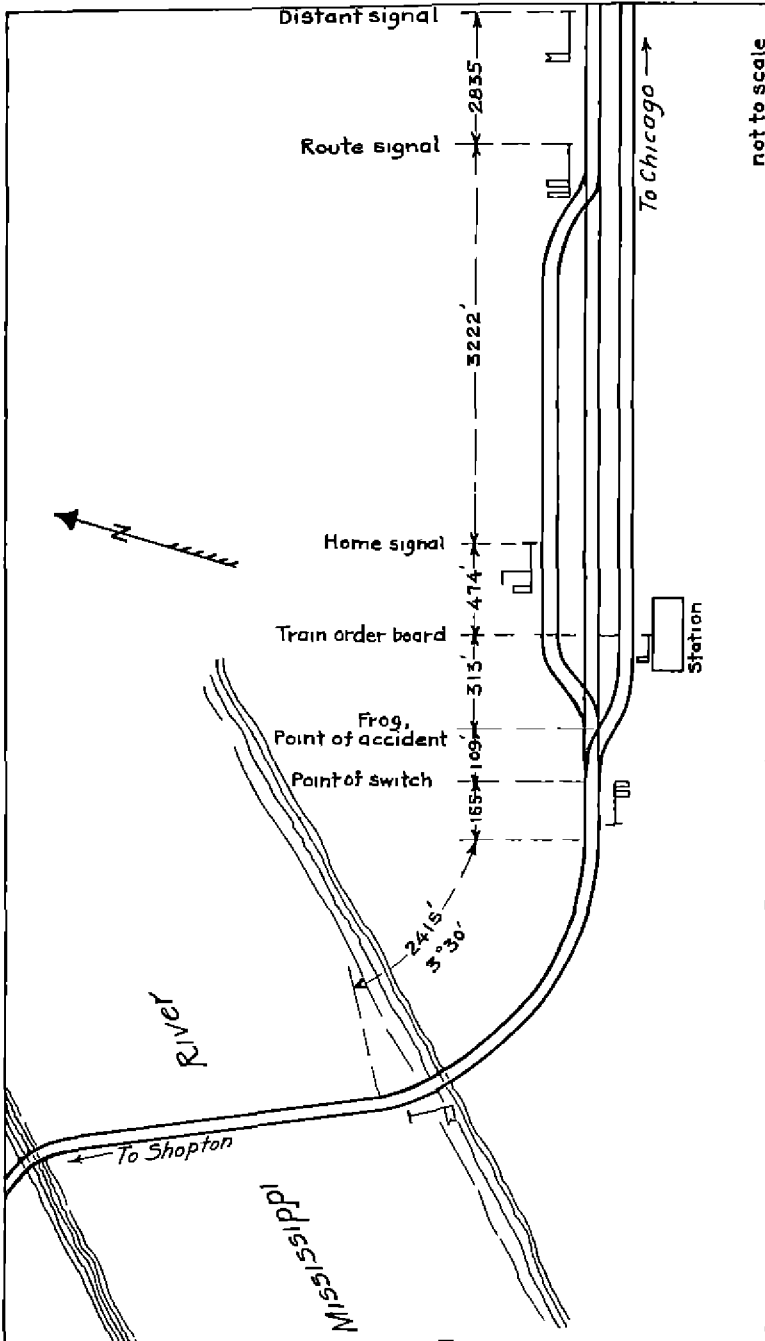


Diagram showing relative location of tracks and signals in vicinity of point of accident

The accident occurred about 15 feet west of the frog of the switch leading from single to double track at the eastern end of the bridge. The movements of westbound trains approaching this point are governed by a one-arm, lower-quadrant, two-position distant signal, displaying yellow or green for caution and proceed, respectively, a two-arm route signal of the lower-quadrant, two-position type, the top arm governing main-line movements and displaying red or green for stop and proceed, respectively, a one-arm, lower-quadrant, two-position home signal displaying red or green for stop and proceed, respectively, and a train-order board, these signals being located 6,844, 4,009, 787, and 313 feet, respectively, east of the point of accident. The eastbound home and distant signals are located approximately 200 and 2,500 feet, respectively, west of the point of accident.

Approaching from the east the track is tangent for several miles and the grade nearly level. Approaching from the west there is a curve of $3^{\circ} 30'$ leading to the left, this curve being about 2,500 feet in length, followed by about 200 feet of tangent to the point of accident, the grade is from 0.365 to 0.596 per cent descending for a distance of about 2,600 feet, followed by about 1,170 feet of level track. The weather was clear at the time of the accident, which occurred at 4:07 a. m.

DESCRIPTION

Eastbound passenger train fourth No. 2 consisted of 1 club car, 1 dining car, and 5 Pullman sleeping cars, hauled by engine 531, and was in charge of Conductor Dunn and Engineman Wallace. It left Shopton at 3:54 a. m., 44 minutes late, crossed the bridge, and had reached the switch leading from single to double track when it collided nearly head-on with train No. 1, while traveling at a speed estimated to have been 18 or 20 miles an hour.

Westbound passenger train No. 1 consisted of 1 baggage car, 1 smoking car, 1 chair car, 3 tourist sleeping cars, and 8 Pullman sleeping cars, hauled by engine 3403, and was in charge of Conductor Wells and Engineman Eaton. It left Dallas City, 6.2 miles from East Fort Madison and the last open office, at 4:00 a. m., 3 minutes late, and collided with train fourth No. 2 at East Fort Madison while traveling at a speed estimated to have been about 30 miles an hour.

Engine 3403 came to rest on its right side, while engine 531 was also derailed to the right and came to rest inclined at an angle of about 45 degrees, both engines were quite badly damaged. The first car of each train was also derailed, and half of the left side of the baggage car of train No. 1 was torn away. The employees killed were the engineman of train No. 1 and the fireman of train fourth No. 2.

SUMMARY OF EVIDENCE

At 4 00 a m , Bridge Engineer Schneider, on duty at the draw-bridge interlocking tower, notified the dispatcher train fourth No 2 was approaching from the west, and inquired if he should allow it to proceed over the bridge before train No 1 crossed, and on receiving an affirmative reply the operator in the interlocking tower at East Fort Madison threw the knife switch at that point which permitted Bridge Engineer Schneider to clear the eastbound signals for train fourth No 2. On account of being on the outside of the curve when approaching the end of the single-track section, Engineman Wallace was unable to see the signal indications, but he said he was told by the fireman they were clear, and he was working steam and increasing the speed when the accident occurred.

Train No 1 had been reported as passing Dallas City just as the dispatcher had told the bridge engineer to allow train fourth No 2 to cross the bridge, at which time the double-track switch at East Fort Madison had been lined for the movement of train fourth No 2, and all westbound signals were set against train No 1 as it approached. When Operator Betchi, on duty at East Fort Madison, realized that train No 1 was not going to stop it was too late for him to stop the train by hand signals. He did not see any fire flying from the wheels.

Fireman Van Loo stated that when distant signals were set against his train it was Engineman Eaton's custom to shut off steam at the distant signal and reduce speed, but on this occasion he did not shut off steam at the distant signal, although he sounded the station whistle, the station board is located 272 feet west of the distant signal. The fireman had been working on the fire approaching East Fort Madison, and on getting on his seat box when the engine was about opposite the route signal, the indication of which he did not notice, he saw that the home signal and the train-order board were displaying stop indications. His train was then traveling at a high rate of speed, and he said he called the indication of the signals to Engineman Eaton as soon as he saw them, at which time the engineman had started to apply the air brakes, and he said the engineman acknowledged his call with a wave of his hand, as was his custom, and then made a service application of the air brakes. Soon afterwards he again directed the engineman's attention to the stop signals, but the engineman paid no attention to him and continued to look ahead. The engineman then reached for the throttle with his left hand and for the sand valve with the other, apparently to see that the throttle was closed and the sand valve open, and then made another service application of the air brakes. Shortly afterwards Fireman Van Loo saw the reflection of a headlight on an elevator in the vicinity of the switch,

and called to the engineman to apply the air brakes in emergency, saying that his train was not going to stop, at which time the engineman sounded one blast on the whistle, calling for brakes. Fireman Van Loo started to get off on the left side, and then decided it would be safer to get off on the engineman's side and got



FIG 1—View looking west engine 531 on left

back in the cab and crossed over on the right side of the engine, at the same time again calling to the engineman to apply the air brakes and jump. At this time the engineman was standing in a crouching position, with his hand on the brake valve, and reached for the reverse gear, but he did not know whether or not the engine-

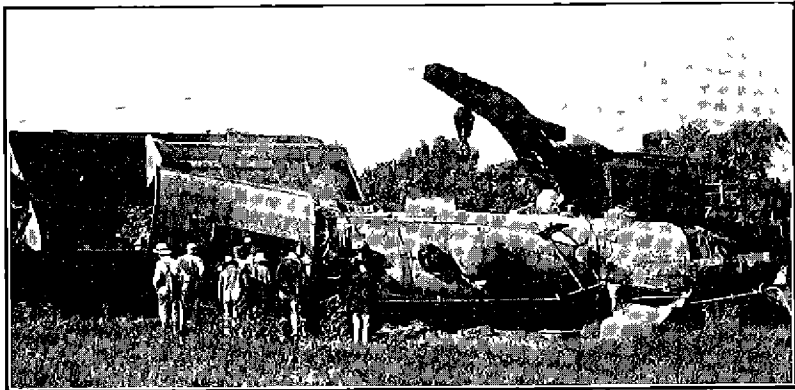


FIG 2—Engine 3403

man succeeded in reversing the engine. At the time he crossed over from the left to the right side before jumping, Fireman Van Loo could hear the air blowing from the brake valve, but so far as he knew the engineman had not applied the air brakes in emergency. Fireman Van Loo did not think the first application of the brakes decreased the speed, and said that after that time he was not

paying much attention to whether or not the speed was reduced. He further stated that he did not take charge of the engine himself because the engineman had his hand on the brake valve and seemed to be conscious of what was going on, and also because there were only a few seconds in which to act, and he was busy trying to get off himself.

Conductor Wells, of train No 1, who was riding in the forward end of the second car, said his first knowledge of anything wrong was when he noticed the train-order board in the stop position, and at the same time the engineman sounded the whistle signal for brakes and the conductor felt the brakes being applied. Neither he nor Flagman Casey noticed any application of the air brakes until probably a few seconds before the collision occurred. On getting off immediately after the accident, the conductor saw the eastbound train-order board displaying a clear indication and the westbound train-order board displaying a stop indication, while the flagman said all signals were set against his train.

General Foreman Cullom found the brake valve of engine 3403 in the emergency position and the reverse gear two or three notches back of center. The driving-wheel brake shoes were burned blue. He examined the track for a distance of several hundred feet but did not find any evidence of sand having been used.

All the evidence is to the effect that engine 3403 was in good working order and that the air brakes had worked properly at all times, no difficulty having been experienced in stopping the train at various points en route. The air brakes had been thoroughly inspected before departing from Chicago, while a running test had been made before leaving Chillicothe, 100.9 miles from East Fort Madison. Stops were made at Edelstein and Galesburg, 92.9 and 53.5 miles, respectively, from East Fort Madison. The speed was also materially reduced in accordance with municipal regulations while passing through Stronghurst, 22.1 miles from East Fort Madison. It was also stated by employees who handled the undamaged equipment after the accident that the air brakes were in good working order. The investigation also failed to bring out anything to indicate that Engineman Eaton had not been in good physical condition up to the time the train approached the point of accident.

CONCLUSIONS

This accident was caused by the failure of Engineman Eaton of train No 1, properly to observe signal indications.

While there is no evidence to indicate whether or not Engineman Eaton saw the indication of the distant signal, the statements of Fireman Van Loo indicate that he saw the home signal and the train-

order board in the stop position, but for some unknown reason he took no effective measures toward bringing his train to a stop. His actions in this particular suggest that in some way he may have been so incapacitated as to be unable to take proper steps. Under circumstances of this character, the conduct of the fireman is governed by rule 494 of the Rules and Regulations of the Operating Department, which rule reads as follows:

"They must watch the engineman, and in case he should fail to promptly obey signals, see that he is not disabled. If the engineman becomes suddenly disabled or can not be kept awake, stop the train and report to the conductor."

When Fireman Van Loo first directed the engineman's attention to the signal indications there was still time for the engineman to have stopped the train, but in view of the fact that the engineman seemed to be alert, acknowledged the indication of the signals to the fireman, and had his hand on the brake valve apparently making an application of the brakes, the fireman said he had no reason to suppose it would be necessary for him to take charge of the engine, and when he finally realized that there was danger of an accident he was engaged in preparing to jump.

The circumstances surrounding this accident raised a question as to the condition of the air-brake system, but aside from the apparent physical inability of the engineman to operate the brakes, and the one blast of the whistle sounded by him just before the accident occurred, there is nothing to support this theory, while there is abundant evidence of a positive character that the brakes were in good condition.

This accident again forcibly directs attention to the necessity for automatic train-stop or train-control devices which will intervene to stop a train in case an engineman, for any reason, neglects or fails properly to control it when approaching a point of danger. In this case adequate signals were provided, the distant, home, and train-order signals were all displayed against train No. 1, and the fireman, who was fully alive to the situation, called a warning to the engineman, which was apparently understood and acknowledged. But due possibly to sudden or momentary mental lapse or physical incapacity or other unexplained reason, the engineman failed to control or stop his train, and it proceeded unchecked until it collided with the opposing passenger train. Under these conditions, it was merely extreme good fortune that there was not a greater number of fatalities. The failure of an experienced engineman, in charge of an important passenger train, properly to control his train and to stop before passing a danger point is a matter of grave concern, particularly as in this case, when there were apparently no circumstances

of an extenuating character but the operating conditions were such as are commonly and frequently encountered in railroad service. Had a suitable train-control device been in use at this point this accident would undoubtedly have been prevented and the introduction and use of such devices is necessary to guard against the occurrence of similar accidents in the future.

The employees involved were experienced men. The crew of train No. 1 had been on duty a little more than 6 hours, after 24 hours or more off duty. The crew of train No. 2 had been on duty less than an hour, after 9 hours or more off duty.

Respectfully submitted

W P BORLAND,
Chief, Bureau of Safety