

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY
CONCERNING INVESTIGATION OF AN ACCIDENT WHICH
OCCURRED AT THE INTERSECTION OF THE TRACKS OF
THE GREAT NORTHERN RAILWAY AND THE CHICAGO,
MILWAUKEE, ST. PAUL & PACIFIC RAILROAD NEAR
WAHPETON, N. D., ON JANUARY 30, 1932.

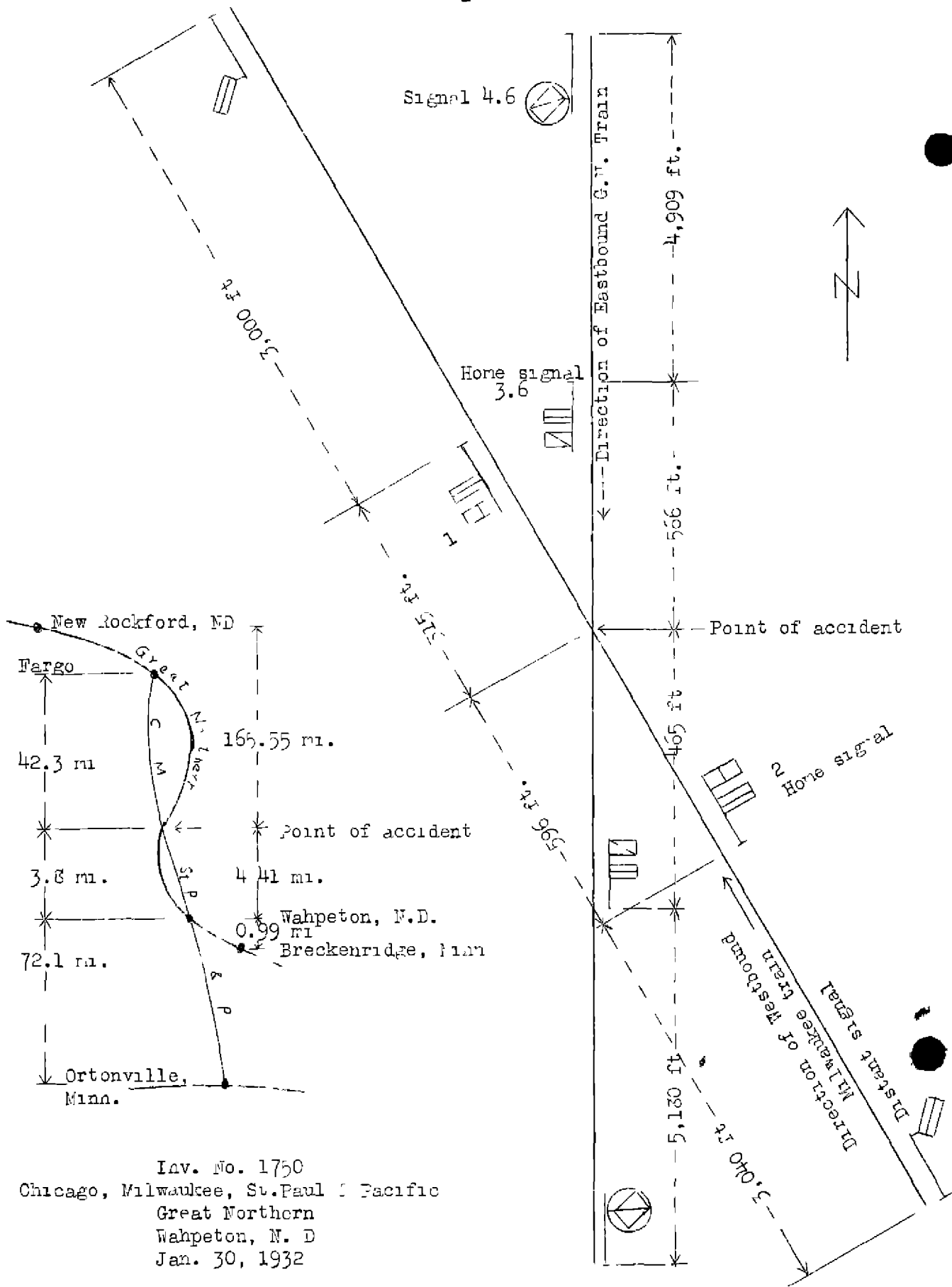
March 29, 1932.

To the Commission:

On January 30, 1932, there was a side collision between a passenger train of the Great Northern Railway and a freight train of the Chicago, Milwaukee, St. Paul & Pacific Railroad at the intersection of the two railroads near Wahpeton, N. D., which resulted in the death of 3 employees, and the injury of 7 passengers, 5 employees, and 2 rail clerks.

Location and method of operation

The accident occurred at the intersection of the tracks of the First Subdivision of the Minot Division of the Great Northern Railway, extending between Breckenridge, Minn., and New Rockford, N. D., a distance of 170.95 miles, and that part of the Hastings & Dakota Division of the Chicago, Milwaukee, St. Paul & Pacific Railroad, hereinafter referred to as the Milwaukee, extending between Ortonville, Minn., and Fargo, N. D., a distance of 118.2 miles. Each railroad is a single-track line, trains over the Milwaukee are operated by time-table and train orders, and trains on the Great Northern are operated by time-table, train orders, and an automatic block-signal system. Movements over the crossing are governed by an automatic interlocking system. The crossing is situated 4.41 miles west of Wahpeton via the Great Northern and 3.8 miles via the Milwaukee, these tracks intersect at an angle of $31^{\circ} 31' 30''$. Approaching the crossing from either direction on each railroad, the tracks are tangent for a distance of more than 1 mile, while the grade in the vicinity of the crossing is practically level. It is an open, level, prairie country, and the view is unobstructed from an approaching train on either railroad.



Inv. No. 1750
 Chicago, Milwaukee, St. Paul & Pacific
 Great Northern
 Wahpeton, N. D.
 Jan. 30, 1932

The interlocking system at this crossing, installed in 1923, consists of signals and electric circuits which function automatically upon the approach of trains, there are no switches or derails. On each line there are two home signals, of the semaphore type, governing movements over the crossing, approach indications for these home signals are given by distant signals, also of the semaphore type, on the Milwaukee, and by the automatic block signals, of the color-light type, on the Great Northern. The home signals are normally at stop, and approach lighting is used for all signals, on the Great Northern the colors used are red for stop, yellow for caution, and green for clear, and on the Milwaukee red for stop, green for caution, and white for clear. Trains approaching on the Milwaukee from the east are governed by a fixed distant signal, displaying caution, located 3636 feet east of the crossing, and by home signal 2, a two-position, two-arm, upper-quadrant signal, displaying either stop or proceed on the upper arm while the bottom arm is fixed in horizontal position, this signal is located 696 feet east of the crossing. Trains approaching on the Great Northern from the west are governed by signal 4.6, located 5475 feet west of the crossing, and by home signal 3.6, of the two-position two-arm, upper-quadrant type, with the bottom arm fixed in horizontal position, this signal is located 566 feet west of the crossing. Both of these signals display either stop or approach indications. The automatic interlocking is so arranged that the train which first arrives on its approach circuit selects the route and operates the signals to permit its movement over the crossing, all other operative signals being held at stop. The approach circuit on the Milwaukee extends 2065 feet east of the distant signal or 6601 feet from the crossing, on the Great Northern, signal 4.6 is lighted when a train approaches within approximately 3000 feet of it, and the circuits controlling the lighting and operation of signal 3.6 extend to signal 4.6, a distance of 5475 feet from the crossing.

The weather was clear, the temperature was about 10 or 12 degrees below zero, and it was about dusk at the time of the accident, which occurred about 5.50 or 5.52 p.m.

Description

Westbound Milwaukee third-class freight train No. 463 consisted of five loaded and six empty cars and a caboose, hauled by engine 2368, and was in charge of Conductor Brown and Engineman Ostrander. This train departed from Ortonville, Minn., 72.1 miles east of Wahpeton, at 10.30 a.m., according to the train sheet, two hours late, departed from Wahpeton, the last telegraph office, at 5.30 p.m., 3 hours and 20 minutes late, and was struck by

Great Northern train No. 2 while starting over the crossing at a speed estimated to have been about 18 miles per hour.

Eastbound Great Northern passenger train No. 2 consisted of 1 mail car, 1 baggage car, 1 smoking car, 1 coach, 1 tourist sleeping car, 1 dining car, 4 Pullman sleeping cars, and 1 club car, hauled by engine 2577, and was in charge of Conductor Saver and Engineman English. This train departed from Fargo, N. D., 41.26 miles west of the crossing, at 5.01 p.m., according to train sheet, 46 minutes late, passed Kent, the last open telegraph office, 8.83 miles west of the crossing, at 5.41 p.m. according to the train sheet, 36 minutes late, and collided with Milwaukee train No. 463 while traveling at a speed estimated to have been between 35 and 45 miles per hour.

The Great Northern engine struck the Milwaukee engine near the cab and finally stopped on its right side about 35 feet to the right of the Great Northern track, with its head end 126 feet beyond the crossing, it was badly damaged. The first three cars of the Great Northern train were derailed and stopped in various positions east of the crossing, while the fourth car stopped just west of the crossing with only its front truck derailed. The Milwaukee engine stopped on its left side with its head end to the left of the track and the rear end about 35 or 40 feet from the crossing, being practically demolished. The first car in the Milwaukee train was destroyed, while the second car stopped on its right side to the right of the crossing, and the front truck of the third car was derailed. The employees killed were the engineman and fireman of the Milwaukee train and the fireman of the Great Northern; those injured were the engineman, train porter, news agent and a waiter of the Great Northern train and a brakeman of the Milwaukee train.

Summary of evidence

Engineman English, of Great Northern train No. 2, stated that the air brakes on his train were tested at Fargo and were functioning properly, after leaving Moorhead Junction, 39.39 miles from the crossing, where the accident occurred, the speed of his train was from 55 to 60 miles per hour. He made an application of the air brakes at about the time he reached signal 46, which was displaying a yellow indication, and shortly after passing that signal he saw the light on home signal 3.6 go from red to yellow and the arm move up to the 45° position, while the fireman, who had been sitting on his seat box,

called "clear board" and then stowed down on the deck and began to work on the stoker. The engineman said he started to release the air brakes when the train was about one-half mile from the crossing, at which time the speed had been reduced to about 35 miles per hour, and he thought it gained very little speed between that point and the crossing. Engineman English stated that he had his head out of the window approaching the crossing, and although it was practically daylight the headlight on his engine was burning, the weather was clear, visibility was good, there was a little wind but no smoke trailing his engine, and there was nothing to obscure his vision, his first knowledge of anything wrong was when the accident occurred. He stated that from his position in the cab he did not think he could have seen a Milwaukee train approaching from the east at any time, but that it could no doubt have been seen from the left side of his engine. However, in the operation of his train over this crossing, he is governed entirely by signal indications, in this case he was positive in his statement that the home signal arm moved toward to the 45 position and a yellow light was displayed just after his train passed signal 4.6, and that the home signal continued to display this indication as his train approached it, and as it moved to this position he could have stopped his train. He had been on this run for about two and a half months and only once during that period had he been required to reduce speed on account of the crossing being occupied by a Milwaukee train. He thought the speed restriction for his train through this and other interlocking plants was 40 miles per hour, and that in this case his speed was within that limit.

Conductor Siver, of Great Northern train No. 2, stated that between Fargo and Lurgan, a station 1.35 miles west of the crossing, the speed of their train was about 55 or 56 miles per hour; he noticed a reduction in speed approaching Red River bridge located west of Lurgan, and again in the vicinity of the east switch at Lurgan, the speed being reduced to about 40 or 45 miles per hour, which speed was maintained until the time of the accident. Approaching the crossing he was riding in the third car and his first indication of anything wrong was when he felt the air brakes applied in emergency, about 30 seconds before the collision. He looked at his watch as he went back through the coach after the accident and it was then 7.52 p. m.; on getting off the train on the right side he observed that the home signal was displaying a stop indication. Conductor Siver further stated that the air brakes were tested and reported to be working properly before their departure from Fargo. He knew nothing of a speed limit through this interlocking plant of 35 miles per hour.

Head Brakeman Murray, of Great Northern train No. 2, stated that he noticed a reduction in speed at Red River Bridge and again after passing Lurgen and the next thing he noticed was the air brakes being applied in emergency and the occurrence of the collision. When he got off the train the home signal on the Great Northern was in stop position. The statements of Baggage-man Long indicated that there might have been an application of the brakes a few seconds before the accident occurred. As he left his car he met Engineman English, and he quoted the engineman as saying, "I had a clear block, and I can't see what they were doing out there."

Flasman Bentz, of Great Northern train No. 2, stated that the train was traveling at its usual speed, he noticed an application of the air brakes for the curve at Red River Bridge and again as they approached signal 4.6. He had started to put on his overshoes when the brakes were applied in emergency and the crash came, he got up immediately put on his coat, picked up his lantern and looked at his watch, which showed the time as 5:03 p.m. He then got off the train, looked toward the head end, and saw the home signal displaying a stop indication.

Conductor Brown, of Milwaukee train No. 465, stated that he was riding in the lower part of the caboose approaching the crossing, with the train traveling at a speed of 15 or 20 miles per hour, and he knew of nothing wrong until the accident occurred, immediately after the accident he looked at his watch and it showed the time as 5:50 p.m. He did not notice the indication of the home signal on the Milwaukee after the accident. Conductor Brown stated that five cars had been dropped off at Ottertail Spur, 2.4 miles east of the crossing, consuming about three or four minutes, and he looked at his watch as they were departing, at the time the brakeman caught the caboose, and it was 5:42 p.m., this was their last stop. No test of the brakes was made after the five cars had been set out, but the caboose gauge showed 70 pounds brake-pipe pressure when leaving there. Conductor Brown further stated that he had known Engineman Ostrander for 25 years, and that he considered him to be a careful engineman.

Head Brakeman Arnold and Rear Brakeman Fifield, of Milwaukee train No. 465, who were riding in the caboose approaching the point of accident, estimated the speed of their train at the time of the accident to have been 18 or 20 miles per hour, neither of them noticed any application of the brakes prior to the accident. Brakeman Fifield said it was 5:50 p.m., when he picked himself up after the accident, and on going outside he observed the home signal on the Milwaukee to be in stop position, while

Brakeman Arnold stated that the home signals on both lines were in stop position. Their statements further indicated that when the train stopped at Ottertail Spur the brakes were set, the five cars dropped in on the spur, the angle cocks opened when the engine was recoupled to the train, that the brakes on the train were heard to release after this coupling had been made, and that the caboose gauge showed 70 pounds pressure on departing from that point. Brakeman Arnold said the headlight was burning at that time, and both of them said they considered Engineman Ostrander to be a careful man, who observed the rules, and had a very good reputation.

Signal Maintainer Sheridan, of the Great Northern Railway, who has charge of the automatic interlocking plant at the crossing involved, stated that he tested the interlocking plant on the morning of January 28, and again on the morning of January 30, the day of the accident, and found the plant functioned as intended. He arrived at the scene of the accident about three and one-half hours after its occurrence, and found the center relay box, located near the crossing, tipped over and part of a box car on top of it, the apparatus being practically demolished. He shunted the circuits on both lines controlling the approach-lighting of the home signals and in each case red lights were properly displayed. Later on he made similar tests of the circuits controlling approach-lighting of the distant indications and found them also to be functioning properly. He further stated that on the day of the accident he did not have any failures or relays not working properly due to frost conditions and he had noticed no evidence of frost on relay contacts. There had been no recent failures of any kind at the automatic interlocking plant involved in this accident.

Assistant Signal Engineer Alexander, of the Milwaukee, stated that a westbound Milwaukee train traveling at a speed of 20 miles per hour would consume a period of 3 minutes and 45 seconds from the time it entered the circuit controlling the home signal until it reached the crossing, a distance of 6601 feet, while an eastbound Great Northern train traveling at a speed of 45 miles per hour would consume a period of one minute and 22 seconds from the time it entered the circuit controlling home signal 3.6 until it reached the crossing, a distance of 5475 feet. He stated that in view of these figures the Milwaukee train was on the control circuit first.

Superintendent of Signals Dunham, of the Great Northern, stated that the operation of the automatic interlocking plant is such that it is impossible to set up conflicting routes, as any one of the home signals governing a train movement over that crossing can indicate

proceed only when the other three home signals are in stop position. In this case the evidence indicated that the Milwaukee train was on the approach circuit first, and if the interlocking signal apparatus functioned properly the Milwaukee train would have had a proceed signal and the Great Northern train a stop signal, however, he was accepting the testimony of the Great Northern engineman and this, together with the fact that Engineman English proceeded to the crossing at approximately normal speed, was, in his opinion, conclusive evidence that he had the signal, he said it then must follow that the Milwaukee train did not operate the relays controlling the interlocking signals and that Milwaukee home signal 2 must have been at stop. He stated that it would be possible for the contacts on the track relays on the Milwaukee to become frosted and fail to set up the circuits as intended when a Milwaukee train entered upon the approach circuits, and in that event the Milwaukee signals would remain in normal position and a Great Northern train subsequently entering its own approach circuit would receive proceed signals. He further stated that a sudden change in temperature could result in the relays becoming frosted but that it would take several hours after the change began before the relays would be sufficiently frosted to prevent normal operation. In this connection, however, it is noted that the train sheet indicates there was no sudden change in temperature on the day of the accident, it gradually decreased from 16° below zero at 12.01 a.m., January 30, to 10° below zero at 6 p.m. While Mr. Dunham also stated that he had no knowledge of any frosted relays on the date in question within the signal maintainer's territory which includes this particular interlocking plant, he stated that there had been many cases of frosted relay contacts within a period of a few months, and he was assuming that in this case the relay was frosted. Mr. Dunham stated that the Great Northern maintains the signals governing movement over this crossing on both railroads.

Mr. Dunham's attention was called to a contract between the Great Northern and the Milwaukee made in November, 1923, in which it was agreed that the speed of all trains approaching the home signals and passing over this crossing should not exceed 15 miles per hour, and subsequent correspondence changing this speed restriction to 25 miles per hour for passenger trains and 18 miles per hour for freight trains. Mr. Dunham said he thought instructions had been issued by the Great Northern to conform with these agreements, but it appeared that the current rules governing speed of trains on the Great Northern through home signal zones of interlocking plants prescribe a maximum

speed of 45 miles per hour for passenger trains holding the main line route. Speed restrictions in conformity with the agreement were in effect on the Milwaukee.

Assistant Superintendent Hills, of the Milwaukee, stated that the watch taken from the body of Engineman Ostrander of the Milwaukee train stopped at 5.50.27, the case was badly crushed and the crystal broken but the hands were intact and he thought the time shown by the watch fixed the time of the accident. The latest inspection card covering this watch showed an inspection on January 4, 1932, when the watch was 30 seconds fast, and another inspection on January 19, at which time the watch was correct. Assistant Superintendent Hills stated that Engineman Ostrander had been in the employ of the Milwaukee since 1895, and had been promoted to engineman on January 30, 1903; the discipline records of both Engineman Ostrander and Fireman O'Connor were clear.

Superintendent Gaetz, of the Great Northern Railway, stated that he had had supervision over the Minot Division since October 1, 1931, that their speed limit over the crossing involved was 45 miles per hour and to his knowledge there was no other special instructions issued relative thereto. He also stated that at the time of the installation of the automatic interlocking plant in 1923 the book of rules on their road provided for a speed of 25 miles per hour for passenger trains through interlocking plants, but in 1929 a new book of rules was issued and increased the speed to 45 miles per hour for through movements through interlocking plants at railway crossings.

General Manager Gavin of the Great Northern Railway and General Superintendent Christoffer of the Milwaukee Railroad made a joint statement to the effect that the speed-recorder tape taken from Great Northern engine 3577 showed that the train had traveled at an approximate average speed of 52 miles per hour from a point 5 miles east of Moorhead Junction to a point in the vicinity of the point of accident, where the line was not discernible, the tape having been saturated with oil from the speedometer case and the record obliterated, the distance from Moorhead Junction to the point of accident is 39.39 miles.

The interlocking plant at this crossing is maintained by the Great Northern, the monthly report for January covering this plant disclosed no defects, and the general condition of the plant was good at the time of an inspection by Assistant Signal Supervisor Gataman on January 28, 1932. The interlocking was restored to service five days after the accident, and thorough tests made at that time by representatives of the two roads involved showed the apparatus to be functioning in all respects as intended.

Conclusions

From the record in this investigation the reason for the occurrence of this accident could not be definitely determined.

It is clearly established by the record that the Milwaukee train first entered upon the control circuit of the automatic interlocking plant, under normal operation signal indications should have been displayed to permit the movement of this train over the crossing, and the crossing signals on the Great Northern should have been held at stop. Both the engineman and the fireman of the Milwaukee train were killed in the accident and there was no direct evidence as to the signal indications which were displayed for that train, but the fact that the Milwaukee train entered the controlling circuit first and continued to approach the crossing in the normal manner and at the usual speed strongly indicates that the proper proceed indications were displayed for that train. On the other hand, Engineman English of the Great Northern was very definite and positive in his statements that signal indications were displayed which permitted the movement of his own train over the crossing, and the fact is apparent that he operated his train to the crossing in the manner normally followed when signal indications authorizing a Great Northern movement over the crossing are displayed. The records of inspection and operation of this automatic interlocking plant prior to the accident, and subsequent inspection of those parts which were not damaged as a result of the accident, did not disclose any condition which might have caused a failure of the apparatus to operate as intended. The proper functioning of this apparatus was called into question by Mr. Dunham's contention that relay contacts on the Milwaukee must have been frosted, this view is apparently predicated entirely upon Engineman English's statement that an approach indication was received by him at signal 3.6 and the fact that he operated his train in conformity with such an indication. There is no evidence that the frosted relay condition, admittedly assumed by Mr. Dunham, actually existed.

Both enginemen approached the crossing as though proceed indications were displayed for their trains. Aside from the statements of Engineman English there is no direct evidence as to what signal indications were actually displayed for these trains, and subsequent inspection and tests could not determine their condition before the accident occurred.

Since the occurrence of this accident the following order, No. 661, was issued by Division Superintendent Gaetz of the Great Northern Railway, dated February 5, 1932.

"Passenger trains will not exceed speed of 25 miles per hour and freight trains 18 miles per hour over Milwaukee Railway crossing four and nineteen hundredths miles west of Wahpeton Junction."

The Great Northern Railway has also authorized the installation of smash boards at the home signals on both railroads and the replacement of Great Northern semaphore signals 3.5 and 3.6 by color-light signals.

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,

T. P. BORLAND,

Director.