

February 15, 1912.

MEMORANDUM TO COMMISSIONER McCHORD
relative to accident on the Chicago, Milwaukee & St. Paul Ry.,
December 18, 1911.

Draft submitted by the Chief Inspector of Safety Appliances
as a basis for the report of the Commission.

On December 18, 1911, the Chicago, Milwaukee & St. Paul Railway reported by telegraph a rear-end collision occurring that morning at Odessa, Minn., between the first and second sections of east-bound train No. 18. Inspectors Stricklan and Merrill were instructed to make an investigation of this accident, and a synopsis of their report is given below.

Train No. 18 is known as the "Columbian," and runs from Tacoma, Wash., to Chicago, Ill. At the time of the accident the first section of this train consisted of one mail and baggage car, two coaches, one tourist car, dining car No. 4510, and the sleeping car "Beverley," all of steel construction, hauled by engine No. 3022, and in charge of Conductor Gillick and Engineman Eddington. This train is due to pass Odessa at 3:46 A. M., and on the morning of the accident was a few minutes late, reaching Odessa at 3:52 A. M. When approaching the station, the block signal was found to be set at danger, and the train was brought to a stop a short distance beyond the signal, and then was backed up until the rear end was about 300 feet west of the signal. As no one was in the station, the conductor sent the head brakeman to the home of the night operator in order

to have him come to the station and release the train. In the meantime the engineman joined the conductor at the station, leaving his engine in charge of the fireman. When the second section of train No. 18 was heard approaching, the conductor of first No. 18 ran out of the station and toward the engine, calling to the fireman to start the train ahead in the endeavor to avoid the collision. The train had moved about one car length before it was struck by the engine of second No. 18.

Train second No. 18 was in charge of Conductor White and Engineman Sorby, and consisted of five C. M. & P. S. refrigerator cars, one Wells-Fargo express car, and a caboose, hauled by engine No. 3010. This train left Junction Switch, 5.3 miles west of Odessa, at 4:16 A. M., and collided with first No. 18 at about 4:26 A. M. The speed of second No. 18 at the time of the collision was about 25 miles per hour, although before the emergency brakes had been applied the speed had been about 50 miles per hour.

This accident caused the death of eight passengers, the conductor of the sleeping car "Beverley," and a cook in the dining car, while minor injuries were received by ten passengers, the porter of the sleeping car, the engineman, fireman and head brakeman of second No. 18, three firemen who were dead-heading, and one stenographer in the employ of the railway company. The majority of the fatalities occurred in the east end of the sleeping car "Beverley," due to the fact that it was telescoped by the west end of the dining car.

The east half of the superstructure of the sleeping car was destroyed, while the west end of the dining car was

considerably damaged. The engine of second No. 18 penetrated the west end of the sleeping car for a distance of several feet. The engine was not derailed, although the front end of it was considerably damaged. Slight damages were sustained by the first two cars of second No. 18, while the first four cars of first No. 18 escaped with practically no damage.

This division of the C. M. & St. P. Railway is a single track line and trains are operated under the manual block signal system, the office of the dispatcher being located at Aberdeen, N. D., 113.9 miles west of Odessa. Odessa was formerly a day and night office employing three operators, but for economical reasons is now closed from 1:30 A. M. to 8:00 A. M. and from 5:00 to 5:30 P. M., thus doing away with the services of one operator. This arrangement has been in effect since September 30, 1911. At the time of the accident this station was closed and the block section extended from Junction Switch to Appleton, a distance of 20.6 miles. The signal mast at Odessa is directly opposite the station, and is separated from it by the single track main line and a passing track. The station is located on the end of a short one degree curve which extends westerly from the station a distance of approximately 1,000 feet. On the inside of the curve is the house track. At the time of the accident eight box cars were standing on the end of this house track near its junction with the main line. These cars prevented the engineman of the second section from seeing the first section until within a distance of about 700 feet. The passing track switch is 700 feet west of the signal mast and the house track switch is more than 100 feet west of

the passing track switch. Coming into Odessa from Junction Switch there are 2½ miles of straight track before reaching the curve west of the station. This track is practically level, except at one or two points, where there is a very slight descending grade toward the east.

The rules require that the manual block signals be kept at danger at all times except when placed at clear for the purpose of allowing a train to proceed or except during the hours when the station is closed. If an operator has orders for an approaching train, the signal is kept at danger until copies of all orders have been received by the conductor of the train. The operator then issues a clearance card stating that there are no further orders, the block is cleared, and the train is allowed to proceed, if its time table rights or special orders permit it to do so. If, however, the clearance card states that the signal is at danger for the train holding the clearance card, a permissive card must also be issued before it can proceed. Permissive cards are used when trains are permitted to pass a block signal set at danger and enter a block section under notice that the preceding train has not cleared the same section. These cards are used only by direction of the train dispatcher.

Conductor Gillick of first No. 18 stated that after his train stopped at Odessa, he sent the head brakeman to the house of the operator, after which he went back through the train to the last car and told Flagman Law to set the switch for the passing track and then to go back still further and stop second No. 18. While waiting for the operator to reach-

the station the conductor stood on the station platform. On account of the curve west of the station, he could see back a distance of less than a thousand feet, and at no time when he looked in that direction could he see the flagman, the latter being out of sight around the curve. He further stated that after reaching the station, the operator tried the block signal several times and then left it in the clear position, giving him a clearance card. The operator then asked the dispatcher if he wanted to change an order providing that first No. 18 and No. 17, a west-bound train, should meet at Appleton. The dispatcher at once asked if first No. 18 was protected by a flag and the conductor told the operator to say that it was. He then told the head brakeman to go back and find out if the flagman had thrown the switch, as directed, and also to find out if he was back far enough. Upon hearing second No. 18 approaching, the conductor ran out of the station and toward the engine, telling the fireman to start the train at once.

Head Brakeman Miles stated that when the operator told the conductor that second No. 18 had left Junction Switch the conductor told him to go out and make sure that the train was properly protected by flag. As he left the station he saw Flagman Law standing at the end of the train and called to him. He stated that the only warning of the approach of second No. 18 was the regular station whistle, and that when close to the station the engineman of second No. 18 sounded one long and one short whistle, which is the answer to a stop signal.

Flagman Law stated that after the train stopped at the station platform, the conductor came back through the train and told him that if he heard second No. 18 coming to run back

and throw the passing track switch and then flag them. After securing his overcoat, he went back a short distance and walked back and forth in the vicinity of the house and passing track switches, about 500 feet from the rear of his train. When asked why he went back at all, if his statement of the conductor's flagging instructions was correct, he stated that he heard a whistle in the distance and did not know whether it was second No. 18 or a freight train which his train had passed at a previous station. He further stated that it was the practice while standing at stations to depend upon the block to hold following trains, and he thought that the train would be amply protected if he should go back as far as the outside switches or yard limit. On account of the straight track beyond the slight curve at Odessa, he was sure that he would be able to stop any approaching train without difficulty or else let it in on the passing track, as from actual experience he knew that when standing at Odessa he could see the electric headlight of an engine when it was leaving Junction Switch, a distance of more than five miles. When the block was placed in the clear position, after the operator had reached the station, Flagman Law thought that the conductor had his orders and was ready to proceed, and he therefore came in and stood near the rear end of his train. He also thought that the operator was in touch with the dispatcher and that the operator knew that no other train was in the block. The first he knew of the approach of second No. 18 was when the head brakeman called to him from the station that the train was coming. He then started back for the switch, and at the same time heard the engine whistle for the highway crossing about a quarter of a mile west

of the house track switch. He was unable to reach the switch in time to throw it or to flag the train in time to prevent the collision.

Engineman Eddington, of first No. 18, stated that he saw the flagman get off with a red lantern and start back, and that after he had gone back he saw nothing of him. He also stated that after the operator said that second No. 18 had left Junction Switch the conductor told the head brakeman to see if the flagman was back flagging. The operator then tried the levers controlling the signal and gave the conductor a clearance card, after which the dispatcher asked the operator if first No. 18 was protected by a flag. The dispatcher then started to give the operator an order, and while this was being done second No. 18 was heard approaching. Engineman Eddington then ran out of the station and called to the fireman to start the train. After he had reached the platform of the station, he heard the engineman of second No. 18 sound the answer to a stop signal.

The members of the crew of first No. 18 testified that the electric headlight on the engine of second No. 18 was not burning, and the engineman of that train stated that at no time had it been burning as well as it should. This had nothing to do with the collision, although if it had been burning in proper condition it is barely possible that the flagman of first No. 18 would have noticed its reflection in time to have prevented the collision, even though he was standing at the rear end of his train when second No. 18 was approaching.

Conductor White of second No. 18 stated that after

reaching Junction Switch he asked the operator at that point about first No. 18, and was told that the train was not yet out of the block. Soon afterwards the operator gave the conductor a clearance card, at the same time saying, "They are coming close." Conductor White stated that when he received the clearance card the operator told him nothing about being directed by the dispatcher to give it to him. When asked as to his interpretation of "coming close", Conductor White stated that he inferred that the operator at Appleton could see first No. 18 coming. The words did not imply that the block was clear, however, and when asked if he knew of a train having been given a clear block under like conditions he said that he did not, unless a permissive card was furnished. After receiving the clearance card from the operator at Junction Switch, Conductor White started his train on its way, knowing that first No. 18 had not as yet cleared the block.

Engineman Sorby of second No. 18 stated that when approaching Odessa the signal was set at clear. After whistling for the road crossing coming into Odessa, he sounded one long whistle for the station. Soon afterwards he saw the outside marker on the rear end of first No. 18, as his train rounded the curve, and started to apply the air brakes. In an instant he saw both markers and at once made an emergency application of the brakes. After all this had been done he saw Flagman Law a few car lengths from the rear end of first No. 18 and answered the stop signal given by the latter. Engineman Sorby stated that if the flagman had been back as far as a cattleguard about 100 feet west of the house track switch, he would have seen him in time to stop his train without any difficulty.

Operator Adams, stationed at Odessa, stated positively that when he went off duty at 1:30 A. M. the signals were set at clear, as required by the rules when an office is closed at night. When he reached the station after having been summoned by Head Brakeman Milles, he at once gave the conductor a clearance card stating that the lever must have slipped out of the socket. The conductor then asked him to call the dispatcher and see if the latter wanted to change the meet order between trains first No. 18 and No. 17. Operator Adams then cut in on the wire and told the dispatcher that in some unknown manner his block was showing red and that first No. 18 was standing at the station. The dispatcher at once asked him if first No. 18 was protected by flag and when assured that it was, the dispatcher called the operator at Appleton. After getting both operators on the wire the dispatcher started to send an order for first No. 18 and No. 17 to meet at Correll instead of at Appleton. After giving this order Operator Adams stated that the dispatcher said that second No. 18 had left Junction Switch. He at once told the conductor of this fact. It was further stated by Operator Adams that he asked the operator who had formerly worked at Odessa if the levers of the block had ever slipped with him, and he replied that they had.

Train Dispatcher Noonan, located at Aberdeen, stated that first No. 18 passed Junction Switch at 3:49 A. M., and that at about 4:07 A. M. the operator at Junction Switch called him and asked him to card second No. 18, meaning that it should be given a clearance card, and the dispatcher refused to do so, telling the operator to hold the train. His testimony then goes on as follows:

- Q. Did Junction Switch notify you about five minutes after that that the train was there?
- A. Yes, he broke in on the circuit and notified me that the train was still there and that he was holding them.
- Q. What did you do then?
- A. I called Appleton and asked him if first 18 was by there; they should have been there. That was 4:14 and the operator says, "Coming right close."
- Q. What did you do then?
- A. I said to Junction Switch, "O. K. clear" and I went on about my other work.
- Q. What was your object in doing that when the first section of No. 18 had not passed Appleton?
- A. Second No. 18 had a meet with No. 17 at Correll and I felt absolutely sure that the block was clear between Junction Switch and Correll.

Soon after the dispatcher told the operator at Junction Switch to release second No. 18, Operator Adams at Odessa called the dispatcher and told him that first No. 18 was at that point. Dispatcher Noonan claims that he told the operator to ask if they had a flagman out as second No. 18 had left Junction Switch, and that the operator answered in the affirmative. He then sent the order changing the meet between trains first No. 18 and No. 17 from Appleton to Correll. Dispatcher Noonan further stated that if the office at Odessa had been a continuously operated day and night office this accident would probably not have occurred.

Operator Kaiser, located at Appleton, stated that the operator at Junction Switch asked him twice if first No. 18 was coming, and that both times he replied, "Not coming." Operator Kaiser stated positively that he did not say anything either to the dispatcher or the operator at Junction Switch that first No. 18 was coming and that the dispatcher made no inquiry of him relative to first No. 18. He reported to the dispatcher, however, at 4:15 A. M. that the train was not

coming. Operator Kaiser states that just after the operator at Junction Switch called him the first time, the conductor of train No. 17, which was to meet first No. 18 at Appleton, came into the office, and Operator Kaiser asked him if he could see anything of first No. 18. He further stated that frequently the dispatcher calls an operator and tells him to report when a train is coming. When the operator sees the train he reports to the dispatcher that it is coming and if the dispatcher has no orders for the train, he clears it, and if the block is clear and the operator has no orders, he gives the train a clear signal and allows it to proceed.

Conductor Eastman, of train No. 17, stated that when his train reached Appleton he went into the telegraph office and the operator asked him if he had seen first No. 18, saying that he thought he had seen it coming and that it left Junction Switch at a certain time. Conductor Eastman told the operator that he had not seen it.

Operator Montiel, located at Junction Switch, stated that when first No. 18 passed his station, he reported it to the dispatcher and to the operator at Appleton and cleared the block west of Junction Switch. Second No. 18 arrived at Junction Switch at 4:08 A. M., before which time Operator Montiel had asked the operator at Appleton if first No. 18 had arrived, to which question he claims the reply was that it was "coming". After a few minutes' delay he inquired again and the operator at Appleton said that it was coming close. Operator Montiel was very confident that he could recognize the sending of the operator at Appleton, and that no one else said the train

was coming close. After making the first inquiry of the operator at Appleton concerning first No. 18, Operator Montiel called the dispatcher and asked him to card second No. 18, which had nearly reached Junction Switch, and the dispatcher said, "No." Soon afterwards he called the dispatcher again and told him that second No. 18 was being held at his station, and after a delay of a minute or two the dispatcher told him to clear second No. 18. Operator Montiel further stated that if a train was in a block and another train should approach, he would allow the second train to enter the block, even though it was already occupied, if ordered to do so by the dispatcher. When asked under what circumstances he would ask the dispatcher to clear a train, he stated that it would be when he could not get in touch with the block station at the other end of the block, although no explanation appears as to why in this case he asked the dispatcher to clear the block for second No. 18 when he had been able to communicate with the operator at Appleton only a few minutes previous to that time. Operator Montiel admitted that when he gave Conductor White a clearance card he knew that the block was not clear. His statements then go on as follows:

Q. In this case you knew that the block section between Junction Switch and Appleton was not clear of first 18?

A. I did.

Q. Why did you not question the dispatcher for a report of first 18 when you gave second 18 a clearance on your block?

A. I asked him for a card and he would not give it to me.

Q. But why should you then issue a clearance card clearing them on the block signal when you knew that the preceding train had not cleared the section?

A. I knew it had been done before.

Q. Do you know under what circumstances it has been done before?

A. I do not remember the time, but know it has been done.

- Q. Where?
A. Several times at Milbank.
Q. Did you ever work at Milbank?
A. Only one night.
Q. How do you know it has been done several times at Milbank?
A. In working at Junction Switch I have been instructed to clear trains when they were coming into Milbank; before they were clear but they were coming.
Q. Why should you clear trains under such circumstances without a permissive card or a train order to do so?
A. We have to take the chance. If the train dispatcher tells you to clear trains and you do not do so, you are liable to get discharged.

Operator Montiel stated that if the dispatcher had not ordered him to do so, he would not have cleared second No. 18, knowing that first No. 18 was still in the block. When asked if he had a copy of the clearance issued to the conductor of second No. 18, he stated that he had not. He knew the rules required that copies be kept on file, but stated that the operators had never done so at that station. He also stated that none of the officials have ever inquired as to whether or not copies were kept on file as required by the rules.

G. W. Hailing, employed in the office of the dispatcher as a copy operator, stated that he heard the dispatcher communicating with Operator Kaiser at Appleton on two different occasions, and that the first time Kaiser said that first No. 18 was coming close, while the second time he said that it was not in sight.

The signal at Odessa was equipped with a spring lock, and several days after the accident Signal Repairman Larson examined the signal, found that it could be thrown to danger from the outside and repaired it so that this could not be done. Signal Foreman Thomas stated that on the 983 miles of railroad under his supervision there are 13 block signals operated by the same arrangement as that in use at Odessa. The testimony of Signal

Foreman Thomas in part is as follows:

- Q. Now, do you consider a signal apparatus that can be operated from the outside to be a suitable and proper apparatus to employ in blocking trains?
- A. No, I would not think it would be.
- Q. Do you think that any signal apparatus that can be changed from the outside is a safe apparatus to use in blocking trains?
- A. No, it would not be.
- Q. And you have 13 or more of such contrivances in your district on the St. Paul road?
- A. Yes, sir.
- Q. Unsafe signals?
- A. Yes, sir.

All of the employees involved, except Operator Kaiser and Flagman Law, had had several years' experience in their respective positions. Operator Kaiser had been working for the C. M. & St. P. Railway about 3 months. He had had several years' previous experience. Flagman Law had had about 18 months' experience, the last three of which had been as flagman.

The statements made by the various employees involved are conflicting. It appears that in some unknown manner the signal at Odessa indicated danger when train first No. 18 reached that point, and that Flagman Law went back a distance of about 500 feet for the purpose of protecting the train. When the operator reached the station he dropped the signal into the clear position, and the flagman, seeing this, thought the train was about to proceed and returned to his train. When Operator Adams cut in on the wire for the purpose of getting orders for this train standing at the station, he should not have set his signal at clear until first No. 18 had departed and had reached the end of the block at Appleton. Whether or not the operator at Appleton told the dispatcher, or the operator at Junction Switch, that first No. 18 was "coming close" is

a matter the determining of which in no way relieves the train dispatcher of responsibility. Even if the operator did do so, which he emphatically denies, this in itself clearly indicated to the dispatcher that the block was not clear and with this knowledge he had no authority to have the operator at Junction Switch clear the block for second No. 18. The operator at Junction Switch knew that the block was not clear when he gave a clearance card to the conductor of second No. 18, while the conductor knew that the block was not clear, as the operator had told him that first No. 18 was "coming close", meaning that the train was in sight at Appleton. The words "coming close" do not by any means indicate that a block is clear, for the cars of a train might be derailed and the engine be sent to the next station to bring assistance, or the engine might break down just as it comes in sight at the end of a block and be unable to get out of the block before being overtaken by a following train.

This accident was caused by the failure of Flagman Law to properly protect his train. A contributing cause was Train Dispatcher Noonan's directing the operator at Junction Switch to clear second No. 18 when he knew that first No. 18 was not clear of the block. Three other persons are also at fault: Conductor White (1) for permitting his train to enter a block, known by him to be occupied, without a permissive card; Operator Montiel (2) for allowing second No. 18 to enter a block, known by him to be occupied, without a permissive card; and Operator Adams (3) for leaving his signal in the clear position while taking an order from the dispatcher and before first No. 18 was ready to proceed.

A few weeks prior to this accident the Commission investigated another accident occurring on one of the other divisions of this railway, and in both of these investigations it is clearly shown that the rules of the company are not properly understood by the employees, not enforced by the officials. Steps should be taken at once to see that the employees have a working knowledge of the rules and that they obey them.

Attention is also called to the length of the block between Junction Switch and Appleton. In the operation of such a block great temptation is given to employees to take chances in order to expedite the movement of trains.

The more extensive use of steel cars has been recommended at various times as a means of preventing great loss of life in railroad accidents. In this accident the cars in which all the casualties occurred were steel cars. In view of the number of casualties it is apparent that a brief description should be given of the steel cars composing the equipment of this train, and that the reason for their failure should be clearly shown.

The sleeping car "Eberley" was constructed by the Pullman Company about a year ago, is 72' 6" long and 10' 1" wide, and weighs about 76 tons. The steel underframe is of the built up type with cast steel end construction, the heavy center sills acting as the main carrying members. These sills are of the box girder type, made up of two girders placed 18" apart with a top cover plate $\frac{1}{2}$ " x 30", riveted to both flange angles of each girder. There are two needle beams located 9' 6" from the transverse center of the car. Each one of these needle beams

is built up of three steel castings, one of them being used as a filler to the center sills, and one extending on each side from the center sills to the side sills. The floor beams are $\frac{1}{2}$ " steel plate, riveted to the side and center sills.

The cast steel end construction consists of a heavy single steel casting at each end of the car, extending from side sill to side sill. These castings form the underframe of the car at the ends for a length of approximately 10' 4". The body bolster and platform are cast integral with the underframe and the whole is secured to the center sills by a riveted splice, forming a substantial underframe. The side sills are made up of a 6" x 4" x $\frac{3}{8}$ " steel angle extending the full length of the car body. The side framing is made up of twenty-three 3" x 2" x $\frac{5}{16}$ " steel angle posts, riveted at the bottom to the side sills and at the top to 3" x 3" x $\frac{1}{4}$ " steel angles that run full length of car, 10 short steel angle posts extending from the side sills to the window sills. The sheathing is $\frac{1}{2}$ " steel plate extending from the bottom of the side sills to the windows, and secured to the side sills at the bottom with a double row of rivets and at the top end to a dropper bar 4" x 1- $\frac{3}{8}$ " x $\frac{7}{16}$ ". This sheathing is also riveted to all the angle posts. Between the sections the sheathing runs from the window sill to the letter board. At the angle post at each section is secured a 1 $\frac{3}{4}$ " hard wood post, to which the window slides are attached, while between the double windows are 2 $\frac{1}{4}$ " hard wood posts in halves.

The vestibules are of the standard type. The corner posts, both body and vestibule, are of the built up type, and all corner posts consist of 2 Z-bars with pressed steel outside-

covers, while the vestibule corner posts consist of steel channels with pressed steel covers.

The roof framing is made up of 2" x 2" x 3/16" steel angles, bent to shape, and riveted to the top angle of the side framing and to a 2" x 2" x 3/16" angle at the top of the deck. The deck is covered with No. 16 sheet steel and the roof with No. 14 sheet steel, .065" and .083" thick respectively.

The construction is good and forms a heavy, substantial car. The roof does not possess any too much strength. Aside from this feature, however, the car is of unquestioned strength. The substantial construction of the underframe is evidenced by the fact that it was not materially damaged, and by the additional fact that the locomotive of second No. 18 only entered the car for a very short distance. This is clearly shown by illustration No. 1. Attention is also called to the fact that after being separated from each other, the two cars were hauled on their own wheels from the point of the wreck to the company's shops at Milwaukee, Wis., a distance of more than 500 miles, for the purpose of repair. It is not to be expected that the construction of cars can be made such as to resist any kind of a shock, for it is obvious that any kind of a car can be destroyed, depending entirely upon the nature of the accident.

Illustration No. 2 shows how the sleeping car was telescoped by the dining car, due to the fact that the engine of the second section raised the rear end of the sleeping car, with an accompanying depression of the front end, thus permitting it to slide under the end of the dining car. The sleeping car was then pushed forward until it was telescoped nearly half

its length by the solid steel underframing of the dining car, which cut into the superstructure of the sleeping car.

Illustration No. 3 clearly brings out the plow-like shape into which the end of the dining car was forced when it telescoped the sleeping car.

Illustrations Nos. 4 and 5 show the interior and exterior of the sleeping car after the dining car had been withdrawn, these views being taken at the shops of the company at Minneapolis.

Respectfully submitted,

Chief Inspector of
Safety Appliances.

