

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3411
TEXAS AND PACIFIC RAILWAY COMPANY
IN RE ACCIDENT
NEAR MINGO, TEX., ON
JULY 4, 1951

SUMMARY

Date: July 4, 1951

Railroad: Texas and Pacific

Location: Mingo, Tex.

Kind of accident: Head-end collision

Trains involved: Freight : Passenger

Train numbers: Extra MKT 207 South: 312

Engine numbers: Diesel-electric : 391
units 207A, 207B
and 207C

Consists: 78 cars, caboose : 4 cars

Estimated speeds: Standing : 10 m. p. h.

Operation: Timetable, train orders and
automatic block-signal system

Track: Single; 2° curve; level

Weather: Clear

Time: 6.38 p. m.

Casualties: 10 injured

Cause: Train occupying main track on
time of opposing superior
train without protection

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3411

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

TEXAS AND PACIFIC RAILWAY COMPANY

August 29, 1951

- Accident near Mingo, Tex., on July 4, 1951, caused by a train occupying the main track on the time of an opposing superior train without protection.
-

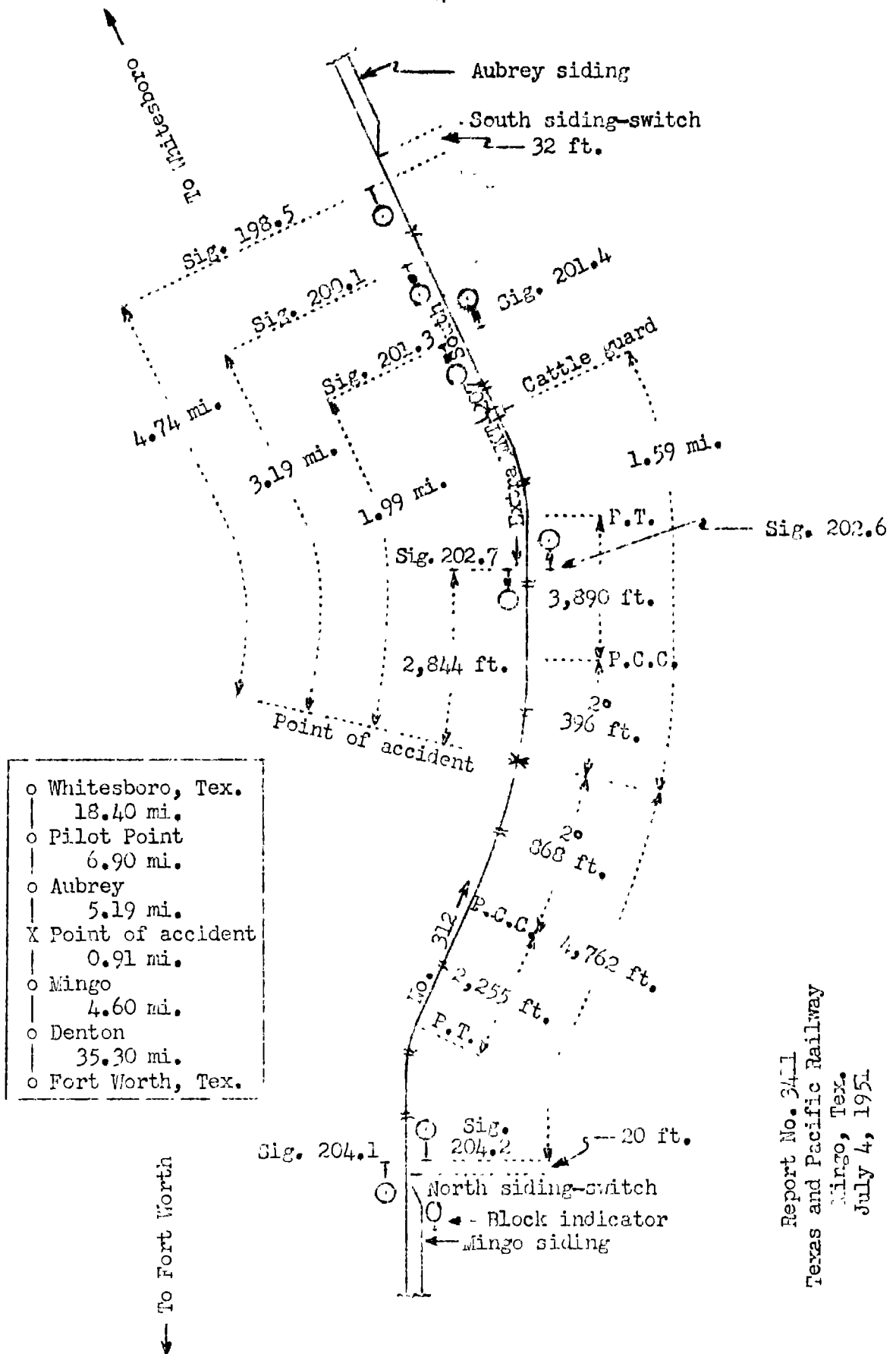
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On July 4, 1951, there was a head-end collision between a freight train and a passenger train on the Texas and Pacific Railway near Mingo, Tex., which resulted in the injury of eight passengers, one dining-car employee and one train-service employee.

1

Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3411
Texas and Pacific Railway
Mingo, Tex.
July 4, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Eastern Division extending between Whitesboro and Fort Worth, Tex., 71.3 miles. Trains of the Missouri, Kansas and Texas Railway Company of Texas, hereinafter referred to as the M.K.T.T., regularly are operated over this portion of the Texas and Pacific Railway. In the vicinity of the point of accident this is a single-track line, over which trains are operated by timetable, train orders and an automatic block-signal system. Aubrey and Mingo are located, respectively, 25.3 miles and 51.4 miles south of Whitesboro. At each of these stations a siding parallels the main track on the east. The accident occurred on the main track at a point 4,782 feet north of the north siding-switch at Mingo. From the north there are, in succession, a tangent 3,890 feet in length and a compound curve to the right, having a maximum curvature of 2°, 396 feet to the point of accident and 868 feet southward. From the south there are, in succession, a tangent 2,255 feet in length and the curve on which the accident occurred. The grade is level throughout a distance of 5,000 feet immediately north of the point of accident, and it varies between 0.03 percent and 1.75 percent descending northward throughout a distance of 1.03 miles immediately south of the point of accident.

Automatic signals 198.5, 200.1, 201.3 and 202.7, governing south-bound movements, are located, respectively, 4.74 miles, 3.19 miles, 1.99 miles, and 2,844 feet north of the point of accident. Automatic signals 204.2, 202.6 and 201.4, governing north-bound movements, are located, respectively, 4,762 feet south, 2,844 feet north, and 1.99 miles north of the point of accident. Signals 198.5 and 204.2 are absolute signals, and the other signals are permissive signals. These signals are of the searchlight type and are approach lighted. Each signal displays three aspects. The aspects applicable to this investigation and the corresponding indications, names and rule numbers are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>	<u>Rule Number</u>
198.5	Red without number plate	Stop.	STOP	292

200.1	} Red over number plate	Stop, Then Proceed	STOP AND	291
201.3		at Low Speed	PROCEED	
202.7		through the entire block.		
204.2	Yellow without number plate	Proceed, immedi- ately reducing to 30 MPH, or slower if necessary, pre- pared to stop before leading wheels pass the next signal.	APPROACH	285

The control circuits are arranged on the absolute-permissive-block principle. This system is designed to permit following movements between sidings, and to provide siding-to-siding protection for opposing movements. Blocks for following movements extend between consecutive signals which govern movements in the same direction. When a train passes a signal in the direction in which the signal governs, the signal is caused to display its most restrictive aspect. If the blocks to the rear are unoccupied after the train has passed the signal, the signal at the entrance of the first block to the rear will indicate Approach and the signals at the entrance of the other blocks to the rear will indicate Proceed, for a following movement. Blocks for opposing movements extend between opposing absolute signals. When a train enters a block at an absolute signal which displays an aspect to proceed, all opposing permissive signals within the block and the opposing absolute signal are caused to display their most restrictive aspects. However, if a train passes an absolute signal which indicates Stop and enters a block after an opposing train has passed the opposing absolute signal, the signals to the rear of the train first occupying the block are not actuated by the entry of the second train to the block. Under this condition, all signals between the two trains will display their most restrictive aspects, but the signals to the rear of the train first occupying the block will display the same aspects which they would display if the second train had not entered the block.

A block indicator is located at the north end of the siding at Mingo to indicate the condition of the block and to govern movements from the siding to the main track. The aspects and the corresponding indications are as follows:

<u>Aspect</u>	<u>Indication</u>
Green	Block clear.
Red	Block occupied.

The control circuit is so arranged that the indicator will display a green aspect if signal 204.2 displays an aspect to proceed and the block to the rear of signal 204.2 is not occupied by a north-bound train.

This carrier's operating rules read in part as follows:

S-71. A train is superior to another train
by right * * *

Right is conferred by train order * * *

* * *

73. Extra trains are inferior to regular trains.

87. Protection When Failure to Clear.--When an inferior train fails to clear a superior train by the time required by rule, it must be protected at that time as prescribed by Rule 99.

* * *

S-89. Clearing Time, Opposing Trains.--An inferior train must clear the time (in timetable or train order) of an opposing superior train not less than 5 minutes before the leaving time of the superior train.

99. Flagging Rule.-- * * *

When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection * * *

* * *

99 (b). When necessary, the front of the train must be protected as prescribed by Rule 99 by the forward trainman or by an engine man.

The engineer will require such protection ahead immediately.

FORMS OF TRAIN ORDERS.

S-U.

Giving Right Over An Opposing Train.

* * *

- (4) Extra 72 South has right over Extra 91 North
A to Z and wait at N until 2 10 p m
P 2 25 p m for Extra
91 North

Under Examples * * * (4), the first-named train must not pass the designated waiting points before the time given, unless the second-named train has arrived. The second-named train must clear the time specified at the designated points or any intermediate station not less than 5 minutes.

* * *

S-E.

Time Orders.

- (1) No 2 Eng 23 wait at F until 9 59 a m for No 61 Eng 99.

No. 2 must not leave F until 9:59 A. M. unless No. 61 has arrived.

If No. 61 goes to H for No. 2, No. 61 must be in the clear at 9:54 A. M., or 5 minutes before the leaving time.

If No. 61 cannot go to H for No. 2 and clear according to rule, then No. 61 must be in the clear at 9:54 A. M. at any station before reaching H, where the schedule time of No. 2 is earlier than 9:59 A. M.

325. What Block * * * Signals Govern.--Block signals govern the use of the blocks * * *, but, unless otherwise provided, do not supersede the superiority of trains or dispense with the use of or the observance of other signals whenever and wherever required * * *

350. Stop Indication Per Rule 292.--When a train or engine is stopped by a Stop-indication and such indication does not change promptly to a more favorable indication:

(1) Communicate with train dispatcher * * * if means of communication is available.

* * *

(3) Train or engine may proceed only under flag protection to the next "Clear," * * * or "Approach" signal * * * upon verbal advice from train dispatcher * * * in words: "Proceed under flag protection." These words must be used when train dispatcher * * * does not know that there is any opposing movement involved.

* * *

Timetable special instructions read in part as follows:

Train Order, Form S-E. The following form is authorized:

No. 2 Eng 900 wait at C until 8:30 A. M. for
Extra 600 West
No. 2 take siding C for Extra 600 West

Special rules governing:

When a superior train is directed by train order form S-E (wait order) to take siding for another train, such instructions * * * are in effect after the time stated in the order has expired and the superior train must approach the designated point at restricted speed prepared to stop, expecting to find the inferior train on the main track between the siding switches without flag protection and must take the siding if the inferior train is at the designated point.

If the superior train arrives at the designated point after the time stated in the order has expired and the expected train has not arrived, and the main track can be seen to be clear to the other end of the siding, the superior train may proceed without entering and using the siding.

* * *

The maximum authorized speeds were 65 miles per hour for passenger trains and 55 miles per hour for freight trains, but in the immediate vicinity of the point of accident passenger trains were restricted to 45 miles per hour and freight trains to 35 miles per hour.

Description of Accident

Extra MKT 207 South, a south-bound M.K.T.T. freight train, consisted of Diesel-electric units 207A, 207B and 207C, coupled in multiple-unit control, 78 cars and a caboose. At Whitesboro the crew received copies of train order No. 68 reading in part as follows:

* * *

Extra KOG 754 North has
right over Extra MKT 207 South
Denton to Whitesboro
No 312 Eng MKT 391 and
Extra KOG 754 North wait at
Mingo until 635 pm for
Extra MKT 207 South
No 312 and Extra KOG 754 North
take siding Mingo for
Extra MKT 207 South

Denton is located 36 miles south of Whitesboro. This train departed from Whitesboro at 5:33 p. m., passed Pilot Point, 18.4 miles south of Whitesboro and the last open office, at 5:58 p. m., and stopped about 6:05 p. m., with the front of the train near a telephone in the vicinity of the north siding-switch at Aubrey. The engineer communicated with the train dispatcher and informed him that signal 198.5 indicated Stop. The train dispatcher instructed the engineer that the train could pass the signal only under flag protection. The train then proceeded southward and stopped at signal 198.5, which indicated Stop. The front brakeman proceeded southward to provide flag protection. The train passed signal 198.5 about 6:16 p. m., overtook the front brakeman at a point about 2,500 feet south of the signal, and continued southward without flag protection. Signals 200.1, 201.3, and 202.7 each indicated Stop and Proceed. The train stopped at each of the first two signals and then immediately proceeded southward. It passed signal 202.7 and stopped with the front of the first Diesel-electric unit 2,844 feet south of this signal and 4,782 feet north of the north siding-switch at Mingo. Immediately afterward it was struck by No. 312.

No. 312, a north-bound first-class M.K.T.T. passenger train, consisted of engine 391, one baggage-mail car, one dining car, one chair car and one sleeping car, in the order named. The first two cars were of conventional all-steel construction, and the other cars were of light-weight steel construction. At Denton, the last open office, the crew received copies of train order No. 68. No. 312 departed from Denton at 6:06 p. m., 6 minutes late, entered the siding at Mingo, and stopped on the siding about 6:17 p. m. It entered the main track at the north siding-switch about 6:36 p. m., passed signal 204.2, which indicated Approach, and while moving at a speed of about 10 miles per hour it struck Extra MKT 207 South.

The force of the impact canted the east rail, and the right wheels of the rear truck of the first Diesel-electric unit of Extra MKT 207 South dropped between the rails. The pilot and the front coupler of this unit were demolished. The front coupler of the engine of No. 312 was demolished, the pilot was bent and torn, and the front bumper beam was bent. The cistern of the tender was shifted forward on the frame. The front coupler of the first car of No. 312 was broken, and the other cars were somewhat damaged.

The fireman of No. 312 was injured.

The weather was clear at the time of the accident, which occurred about 6:38 p. m.

Discussion

The crew of each train held copies of train order No. 68. Under the rules, No. 312 and Extra KOG 754 North were required to enter the siding at Mingo and to wait at Mingo until 6:35 p. m., unless Extra MKT 207 South had arrived at that station. Extra MKT 207 South was required to be clear of the north siding-switch at Mingo not later than 6:30 p. m., or, if it could not reach Mingo by 6:30 p. m., it was required at that time either to be clear of the main track or to be protected as prescribed by Rule No. 99.

As Extra MKT 207 South was approaching Aubrey, the engineer observed that signal 198.5, located 32 feet south of the south siding-switch, indicated Stop. Because he was not certain of the location of the telephone at signal 198.5, he stopped the train at the north siding-switch and communicated with the train dispatcher by telephone from that point. The train dispatcher informed him that No. 312 had departed from Denton and that Extra MKT 207 South could pass signal 198.5 only under flag protection. The engineer did not advise the fireman or the front brakeman as to the information he had received from the train dispatcher. When the train stopped at signal 198.5, the engineer instructed the front brakeman to provide flag protection for the movement of the train through the block. The brakeman told the engineer that if it was necessary to provide flag protection he did not believe that there was sufficient time for their train to proceed to Mingo to meet No. 312 and Extra KOG 754 North. He then proceeded southward ahead of the train. Several minutes later the train departed southward. When the brakeman was overtaken he boarded the first Diesel-electric unit, and again reminded the engineer that he did not believe there was sufficient time for their train to clear the opposing trains at Mingo. The indications of signals 200.1, 201.3 and 202.7 were called by the enginemen and the front brakeman. The train was stopped before it passed the first and the second signals, but it was not stopped before passing the third signal. It passed that signal at a speed of about 25 miles per hour. The engineer said he understood that, under the rules, his train was not permitted to proceed beyond signal 198.5 without flag protection, and also that the train was not permitted to occupy

the main track north of Mingo after 6:30 p. m. without flag protection. He said that when his train departed from Aubrey he considered that there was sufficient time for the train to proceed to Mingo to clear the opposing trains. When he found that signals 200.1 and 201.3 each indicated Stop and Proceed, he was aware that his train could not reach Mingo before 6:35 p. m. However, he assumed that after his train passed signal 198.5, opposing absolute signal 204.2 would indicate Stop for the opposing trains. Because he thought that the opposing trains could not pass signal 204.2 without flag protection, he considered that his train could safely pass signal 202.7 and proceed to Mingo. The conductor and the flagman were unable to see the aspects of the signals before the front of the train passed them, and they did not know the reason for the stops at Aubrey and south of Aubrey. They said that when the train continued to proceed after 6:30 p. m., the time at which flag protection against the opposing trains was required, they thought that possibly the engineer had arranged at Aubrey for protection of the movement from Aubrey to Mingo. They also thought that, even though the engineer had not arranged for protection, signal 204.2 would indicate Stop for the opposing trains, and they took no action to stop their train. As Extra MKT 207 South was approaching the point where the accident occurred the enginemen and the front brakeman were maintaining a lookout ahead from the control compartment of the first Diesel-electric unit, and the conductor and the flagman were in the caboose. The speed was 23 miles per hour. The brakes of the train had been tested and had functioned properly when used en route. Because of curvature of the track, No. 312 was not visible to the employees on the Diesel-electric unit until the trains were about 1,400 feet apart. The engineer made an emergency application of the brakes immediately after No. 312 came within his range of vision. The train stopped several seconds before it was struck by No. 312.

As No. 312 entered the siding at Mingo, the crew observed that signal 204.2 indicated Approach. At 6:35 p. m., the signal continued to indicate Approach and the block indicator at the north end of the siding indicated Block Clear. The north siding-switch was opened at 6:35 p. m., and No. 312 entered the main track and departed from Mingo about 6:36 p. m. As this train was approaching the point where the accident occurred the enginemen were maintaining a lookout ahead from their respective positions in the cab of the engine, and the conductor and the flagman were in the third car. The brakes of the train had been tested and had functioned properly when used en route. The speed was 43 miles per hour. In the vicinity of the point of accident the engineer's view of the track ahead was obstructed by the front

of the engine, and he did not see the opposing train before the accident occurred. He said that the fireman called a warning when the engine was about 1,050 feet south of the point of accident, and he immediately made an emergency application of the brakes. The speed of the train was reduced to about 10 miles per hour when the collision occurred. The fireman was so seriously injured that he could not be questioned during this investigation.

Extra KOG 754 North, a north-bound freight train, followed No. 312 from Denton and entered the siding at Mingo behind No. 312. It remained on the siding at Mingo until after the accident occurred.

After the accident occurred and before the rear end of the train of Extra MKT 207 South was removed from the block of signal 202.6, the directional stick relay for this signal was found energized. Ordinarily this stick relay is energized only while the block of the signal is occupied by a north-bound train, but it will remain energized during the time that the signal, for any reason, continues to display its most restrictive aspect after a north-bound train has passed through the block. No other unusual condition was found at this time. None of the signal equipment was damaged as a result of the accident. After the two trains were removed, all signals indicated Proceed. The signal system then was tested and it functioned properly. However, the investigation disclosed that a metallic cattle guard, located in the block of signal 202.6, was in contact with one of the track rails and close enough to the other track rail so that a slight pressure would cause it to shunt the track circuit. Also, a loose connection in the control circuit of signal 202.6 was found on a relay at signal 201.4. The last train to move between Mingo and Aubrey prior to the time of the accident was a north-bound freight train, which passed Mingo about 3 hours 30 minutes before the accident occurred. Evidently after this train cleared the block of signal 202.6 the signal continued to display its most restrictive aspect and the stick relay remained energized, either because the cattle guard was in contact with both track rails and kept the track circuit shunted or because the control circuit was open at the loose relay connection at signal 201.4. With respect to the signal system, this condition was identical to that which would be obtained if the block of signal 202.6 were occupied by a north-bound train. As a result, signals 198.5, 200.1, 201.3 and 202.7 continued to display their most restrictive aspects, and when Extra MKT 207 South passed signal 198.5, only the northward signals north of signal 202.6 were actuated and signal 204.2 continued to indicate Approach.

Under the rules, Extra MKT 207 South was not permitted to occupy the main track after 6:30 p. m. without flag protection against the opposing superior trains, and, in addition, this train was not permitted to proceed beyond signal 198.5 without flag protection. The members of the crew understood these requirements, but, because the engineer and the conductor assumed that signal 204.2 indicated Stop after their train passed signal 198.5, flag protection was not provided.

Cause

It is found that this accident was caused by a train occupying the main track on the time of an opposing superior train without protection.

Dated at Washington, D. C., this twenty-ninth day of August, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.