INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2696

THE CHICAGO, BURLINGTON & QUINCY
RAILROAD COMPANY

REPORT IN RE ACCIDENT

NEAR MONTGOMERY, ILL., ON

APRIL 27, 1943

SUMMARY

Railroad:	Chicago, Burlington & Quincy	
Date:	April 27, 1943	
Location:	Montgomery, Ill.	
Kind of accident:	Head-end collision	
Trains involved:	Passenger	: Work
Train numbers:	122	: Work Extra 4962
Engine numbers:	Gas-electric 9850	: 4962
Consist:	Motor car	: Caboose
Speed:	20 m. p. h.	: 18-20 m. p. h.
Operation:	Timetable and train orders, and manual-block system for following movements only	
Track:	Single; 4°03'30" curve; 0.94 percent descending grade northward	
Weather:	Clear	
Time:	5:30 p. m.	
Casualties:	5 killed; 14 injured	
Cause:	Accident caused by an inferior train occupying the main track on the time of an opposing superior train	
Recommendation:	That the Chicago, Burlington & Quincy Railroad Company establish an adequate block system on the line on which this accident occurred, and convert power units for use of fuel less inflammable than gasoline	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2696

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

THE CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY

June 11, 1943.

Accident near Montgomery, Ill., on April 27, 1943, caused by an inferior train occupying the main track on the time of an opposing superior train.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On April 27, 1943, there was a head-end collision between a passenger train and a work train on the Chicago, Burlington & Quincy Railroad near Montgomery, Ill., which resulted in the death of one passenger, two railway-mail clerks and two train-service employees, and the injury of eight passengers and six train-service employees. This accident was investigated in conjunction with a representative of the Illinois Commerce Commission.

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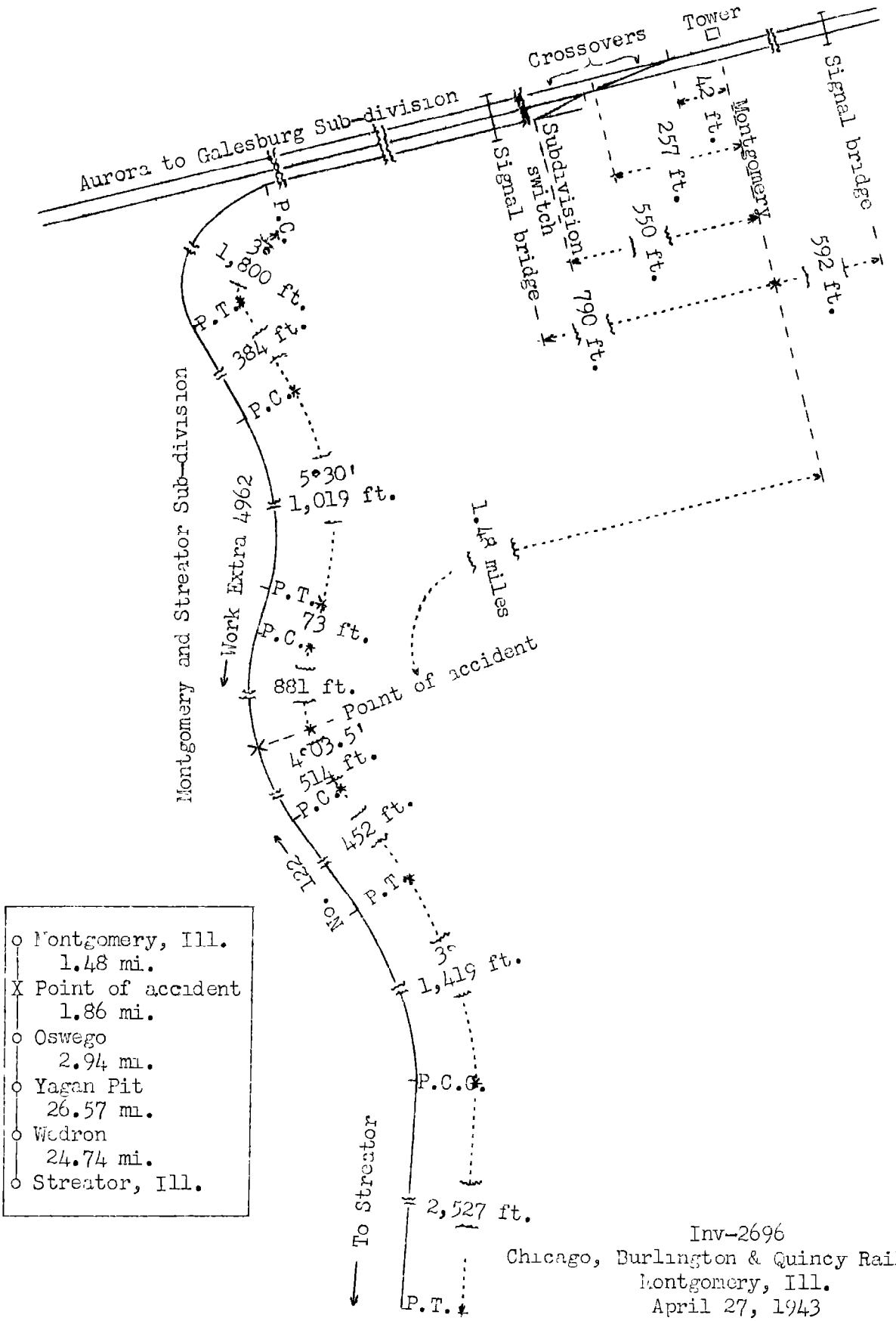
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv-2696
Chicago, Burlington & Quincy Railroad
Montgomery, Ill.
April 27, 1943

Location of Accident and Method of Operation

This accident occurred on that part of the Aurora Division designated as the Montgomery and Streator Sub-division, hereinafter referred to as the branch, which extends between Montgomery and Streator, Ill., 57.59 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders, and a manual-block system for following movements only. The accident occurred at a point 1.48 miles south of the tower at Montgomery. Approaching from the south there are, in succession, a tangent 2,527 feet in length, a compound curve to the left 1,419 feet, the maximum curvature of which is 3°, a tangent 452 feet, and a compound curve to the right, the maximum curvature of which is 4°03'30", extending 514 feet to the point of accident and 881 feet beyond. Approaching from the north there are, in succession, a 3° curve to the left 1,800 feet in length, a tangent 384 feet, a 5°30' curve to the right 1,019 feet, a tangent 73 feet, and the curve on which the accident occurred. At the point of accident the grade for north-bound trains is 0.94 percent descending. Between points 175 feet south and 250 feet north of the point where the accident occurred the track is laid in a hillside cut, the east bank of which rises to a maximum height of 6 feet.

At Montgomery a double-track line of the Chicago to Aurora Sub-division, hereinafter referred to as the main line, extends eastward and westward. Movements from the westward main track to the branch are made through a facing-point crossover connecting the westward main track and the eastward main track, and a facing-point crossover connecting the eastward main track and the branch. These movements are governed by an interlocking controlled from a tower located north of the westward main track and 550 feet east of the entrance to the branch. The western limit of the interlocking is 790 feet west of the tower.

DEFINITIONS

TRAIN REGISTER.- A book or form which may be used at designated stations for registering signals displayed, the time of arrival and departure of trains * * *

Operating rules read in part as follows:

S-83. A train must not leave its initial station on any division or sub-division or a junction, or pass from one of two or more tracks to single track, until it has been ascertained whether all trains due which are superior or of the same class have arrived or left.

Stations at which train registers are located may be designated by time-table.

S-87. An inferior train must keep out of the way of opposing superior trains and failing to clear the main track by the time required by rule must be protected as prescribed by Rule 99.

Extra trains must clear the time of opposing regular trains not less than five minutes * * *

99. * * *

The front of the train must be protected * * * when necessary by the brakeman, or in his absence by the fireman.

211. * * *

Enginemen must show train orders to firemen and when practicable to forward trainmen. Conductors must show train orders when practicable to trainmen.

FORMS OF TRAIN ORDERS

* * *

E

Time Orders

(1) No 1 run 50 mins late A to G.

This makes the schedule time of the train named, between the stations mentioned, as much later as stated in the order, and any other train receiving the order is required to run with respect to this later time, as before required to run with respect to the regular schedule time. The time in the order should be such as can be easily added to the schedule time.

* * *

S-H

Work Extra

(1) Eng 292 works extra 6 45 a m until 5 45 p m between D and E.

* * * The time of regular trains must be cleared.

* * *

605. Interlocking signals govern the use of the routes of an interlocking plant, and as to movements within Home Signal limits, their indications supersede the superiority of trains, but do not dispense with the use or the observance of other signals whenever and wherever they may be required.

Special rules read in part as follows:

946. When necessary to avoid stopping trains to check register a train order in the following form will be given:

"All superior trains due at _____at or before 7:15 a m have arrived or left"

This may be modified by adding except _____.

Time-table special instructions read in part as follows:

No train order signal at Montgomery * * *. Conductors and enginemen must have Clearance Form A.

In the immediate vicinity of the point of accident, the maximum authorized speed for all trains is 20 miles per hour.

Description of Accident

No. 122, a north-bound first-class passenger train, consisted of gas-electric motor car 9850. At Streator, 57.59 miles south of Montgomery, the crew received a clearance card and, among others, copies of train order No. 331, Form 19, reading as follows:

No 122 Run 1 hour and 20 mins
late Wedron to Montgomery

No. 122 departed from Streator at 3:40 p. m., according to the dispatcher's record of movement of trains, 1 hour 30 minutes late, departed from Oswego, 3.34 miles south of Montgomery and the last open office, at 5:26 p. m., 1 hour 31 minutes late, and while moving at an estimated speed of 20 miles per hour it collided with Work Extra 4962. The brakes of No. 122 had functioned properly en route.

Extra 4962 West consisted of engine 4962 and a caboose, in the order named. This train departed from Clyde, Ill., 31.51 miles east of Montgomery, at 3:38 p. m., arrived at Montgomery on the westward main track and moved through the crossovers to the branch. At Montgomery the crew received a clearance card and copies of four train orders, Form 19. The orders read as follows:

331.

No 122 one hour and 20 mins late Wedron to Montgomery

334.

Eng 4962 works extra 401 PM until 930 PM between Montgomery and Yagan Pit Not protecting against Extra Trains

335.

No 133 Run 30 Mins late Montgomery to Streator

336.

All superior trains due at Montgomery at or before 445 PM have arrived or left except No 122 Motor 9850

Work Extra 4962 passed Montgomery at 5:23 p. m., according to the station record of train movements, and while moving at an estimated speed of 18 or 20 miles per hour it collided with No. 122 at a point 1.48 miles south of the tower at Montgomery. There was no condition of engine 4962 that distracted the attention of the enginemen or obscured their vision. The brakes of Work Extra 4962 had functioned properly en route.

From an engine moving in either direction, in the vicinity of the point of accident, the view of an engine approaching from the opposite direction is restricted to a distance of 753 feet, because of the cut and track curvature.

The force of the impact moved motor car 9850 backward 95 feet. The rear wheels of the rear truck were derailed. The front end was demolished a distance of 5 feet. The engine and generator were torn from their fastenings and moved backward about 2 feet. The fuel tank was ruptured, gasoline became ignited, and the motor car was destroyed by fire. The engine truck and the No. 1 pair of driving wheels of engine 4962 were derailed. The front deck-casting, the front-end frame, and the smoke-box door were broken. The caboose was slightly damaged.

It was clear at the time of the accident, which occurred about 5:30 p. m.

The train-service employees killed were the engineer and the baggageman of No. 122. The train-service employees injured were the conductor of No. 122, and the engineer, the fireman, the conductor, the front brakeman and the flagman of Work Extra 4962.

During the 30-day period preceding the day of the accident, the average daily movement in the vicinity of the point of accident was 7.7 trains.

According to data furnished by the railroad, gas-electric motor car 9850 was built in 1928. It was of conventional, all-steel, plate, girder, post and sill construction, and was designed for a buffing strength in conformity with Post Office Department specifications. The side-sheets, the end body-sheets and the vestibule sheets were of copper-bearing steel 1/8 inch thick. The end-sills were of channel-shape construction and of 5/16-inch steel. The side-sills were of steel-angle construction 5 inches by 3 inches by 3/8 inch thick and of steel Z-shape construction 3/16 inch thick. The center-sills were two 10-inch channel-shape members, the steel of which weighed 15.3 pounds per foot. The end posts consisted of 8-inch steel channels, the steel of which weighed 11.5 pounds per foot. The side posts were 1/8 inch by 5/32-inch copper bearing steel. The cross members were of steel. The car was 77 feet 6-7/8 inches in length, weighed 115,200 pounds, and was divided into an engine compartment, a mail compartment, a baggage compartment and a passenger compartment. It had seating capacity for 32 persons. The floors of the mail, baggage and passenger compartments consisted of two courses of wood totaling 1-1/2 inches in thickness. The floor of the engine compartment consisted of wood 2-1/2 inches thick. The car was powered by a 275-horsepower gasoline motor and an electric generator, the base of which was fastened by sixteen 7/8-inch steel bolts having resistance to shear of 16,000 pounds per square inch. Fuel was supplied from a 250-gallon tank located on the left side about 14 feet to the rear of the front end. The car was provided with schedule AML brake equipment having a safety-control feature. The control station was on the right side of the engine compartment.

Discussion

The rules governing operation on the line involved require an inferior train to keep out of the way of opposing superior trains, and extra trains must clear the time of opposing regular trains not less than 5 minutes or provide flag protection. In addition, trains must not depart from a junction, or leave a station where a train register is located, until it has been ascertained whether all trains which are superior have arrived or departed.

According to the timetable, No. 122, a north-bound first-class schedule, was due to leave Oswego, 3.34 miles south of Montgomery, at 3:55 p. m., and due to arrive at Montgomery at 4:03 p. m. No. 122 was directed by train order to run 1 hour 20 minutes late from Wedron to Montgomery, and therefore, it was due to leave Oswego at 5:15 p. m., and due to arrive at Montgomery at 5:23 p. m. Work Extra 4962 was required to be into clear at Oswego not later than 5:10 p. m. if it proceeded to that point for No. 122, or to provide flag protection.

Oswego was the first point south of Montgomery where Work Extra 4962 could clear for No. 122. If Work Extra 4962 entered the branch after 5:10 p. m. flag protection was required. Extra 4962 West arrived at Montgomery on the westward main track, entered the interlocking under a restricted-speed indication, received a clearance card and copies of four train orders. Order No. 331 specified that No. 122 was 1 hour 20 minutes late, order No. 334 created Work Extra 4962, order No. 335 specified that No. 133 would run 30 minutes late, and order No. 336 was a register check and bore information that all trains had arrived at Montgomery except No. 122. Without stopping, Extra 4962 proceeded through the crossovers, entered the branch, departed from Montgomery as Work Extra 4962 at 5:25 p. m., 10 minutes after No. 122 was due to leave Oswego, and collided with No. 122 about 5:30 p. m. at a point 1.48 miles south of Montgomery.

No. 122 departed from Oswego at 5:26 p. m. This train was authorized to depart from Oswego as early as 5:15 p. m. The crew consisted of a conductor, who was at the rear of the passenger compartment, a baggageman, who was in the baggage compartment, and an engineer, who was alone in the control compartment. As this train was approaching the point where the accident occurred the speed was about 20 miles per hour. The conductor said that the first he was aware of anything being wrong was when the collision occurred. He did not feel the brake applied prior to the collision. Since the engineer was killed in the accident, it could not be determined when he first saw the approaching train. The brake had functioned properly en route.

As Work Extra 4962 was approaching the point where the accident occurred the speed was about 20 miles per hour. The engineer had just completed reading the orders received at Montgomery and had turned to hand them to the fireman, who stepped across to receive them. At the same time, the engineer closed the throttle because the copy of train order No. 331, which provided that No. 122 would run 1 hour 20 minutes late, was improperly worded. At that moment the collision occurred. Neither the engineer nor the fireman saw No. 122 prior to the collision. The engineer said that his train passed the tower at Montgomery at a speed of about 10 miles per hour and that the fireman caught the orders, which were attached to a cord, and then handed them to the engineer. Because of difficulty in detaching the orders from the string, his train had passed beyond the south limit of the interlocking before the clearance card and train orders were unfolded, then it was necessary to sound the whistle signal for a highway grade crossing. He checked the numbers of the orders with the numbers on the clearance card, then began to read the orders. During the reading of the orders, it was necessary to sound the engine whistle for three curves. Because the orders were folded in reverse order to the numbers shown on the clearance he did not read the run-late order until last. The conductor used about the same amount

of time in reading his orders, and, realizing that his train was occupying the main track on the time of an opposing superior train, he started toward the emergency valve, but before he could take action the accident occurred.

Under the rules, before Work Extra 4962 departed from Montgomery the crew was required to check the register to ascertain if all superior trains had arrived or departed. In order to avoid stopping trains, the rules provide for a train-order register check. The chief rules examiner said that when a train receives train orders including a train-order register check, such orders must be read immediately, and, if proper authority to proceed has not been granted, the train must be stopped immediately. He said that all employees have been instructed accordingly. However, all members of the crew of Work Extra 4962 said they had never been instructed how far a train could proceed beyond a junction point or how much time could elapse before train orders must be read. None had ever been a member of the crew of any train that was stopped before it left a junction point so that the crew could read and understand the orders. If Work Extra 4962 had stopped and the crew had read the train orders before the train departed from the interlocking, the crew would have known that their train was not authorized to proceed against No. 124, and this accident would have been prevented.

The operator at Montgomery is under the jurisdiction of two dispatchers, one of whom has authority over movements on the main line and the other on the branch. The dispatcher on the branch made the run-late order complete at 3:45 p. m., and the register-check order complete at 4:46 p. m. Because of congested traffic, the operator at Montgomery asked the dispatcher on the main line for instructions as to which train he should route first through the interlocking. The dispatcher on the main line asked the operator if necessary orders and clearance were ready for Work Extra 4962, and, upon being informed that all orders necessary were ready, he instructed the operator to line the route for Work Extra 4962 to cross over to the branch. The dispatcher on the branch had issued orders for Work Extra 4962 on the basis that this train would leave Montgomery soon after 4:46 p. m., and the first he was aware that the train had been delayed en route was when the operator reported its departure from Montgomery. Within a distance of 6.56 miles east of Montgomery on the main line there are three continuously-operated telegraph offices. If facilities had been provided for the dispatcher on the branch to issue orders to one of these stations and addressed to trains which are to operate over the branch, crews would have ample time in which to read their orders before their trains depart from Montgomery.

In the territory involved, trains are operated by time-table and train orders, and a manual-block system for following movements only. This system permits two opposing trains to

occupy a block simultaneously. Two dispatchers, two operators and the crew of Work Extra 4962 said that, if a block system which provides that a train must not be admitted to a block occupied by an opposing train had been in effect, this accident would not have occurred. In its book of operating rules the carrier has a manual-block system rule that prohibits two opposing trains in a block. If this rule had been in effect on this branch, Work Extra 4962 would not have been admitted to the same block with No. 122, and the accident would have been averted.

The investigation disclosed that about 150 gallons of gasoline remained in the fuel tank of motor car 9850 at the time of the accident. In previous reports, the Commission has directed attention to the hazard to passengers and employees when there is a quantity of gasoline on a car carrying passengers, and the disastrous consequences when gasoline becomes ignited as a result of an accident of this character. In four such accidents during the 3 years prior to this accident 49 persons were killed and 93 injured, and most of these casualties were caused by burning gasoline. According to the report of the coroner's jury in the present case, 3 of the 5 deaths resulted from burns. One injured passenger sustained second-degree burns. At present this carrier has 33 units powered by gasoline engines. In view of the hazards involved in the use of gasoline on equipment of this character, conversion to a type of equipment using other fuel should be promptly effected.

Cause

It is found that this accident was caused by an inferior train occupying the main track on the time of an opposing superior train.

Recommendation

It is recommended that the Chicago, Burlington & Quincy Railroad Company establish an adequate block system on the line on which this accident occurred, and convert power units for use of fuel less inflammable than gasoline.

Dated at Washington, D. C., this eleventh day of June, 1943.

By the Commission, Commissioner Patterson.

W. P. BARTEL,

(SEAL)

Secretary.