INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2573

THE NEW YORK, CHICAGO & ST. LOUIS RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT EDWARDSVILLE, ILL., ON

FEBRUARY 21, 1942

SUMMARY

Railroad:	New York, Chicago & St. Louis
Date:	February 21, 1942
Location:	Edwardsville, Ill.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Second 49
Engine number:	656
Consist:	56 cars and caboose
Estimated speed:	35-40 m. p. h.
Operation:	Timetable, train orders and manual block system for following movements only
Track:	Single; tangent; 0.63 percent descending grade eastward
Weather:	Clear
Time:	About 2:01 p. m.
Casualties:	2 killed; 1 injured
Cause:	Accident caused by failure to operate Second 49 in accordance with interlocking signal indication
Recommendation:	That the New York, Chicago & St. Louis Railroad Company immediately restrict authorized speed of its trains at interlockings involved sufficiently to insure safety of operation pending necessary modifications of plant

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2573

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

THE NEW YORK, CHICAGO & ST. LOUIS RAILROAD COMPANY

April 24, 1942.

Accident at Edwardsville, Ill., on February 21, 1942, caused by failure to operate Second 49 in accordance with interlocking signal indication.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On February 21, 1942, there was a derailment of a freight train on the New York, Chicago & St. Louis Railroad at Edwardsville, Ill., which resulted in the death of two employees and the injury of one employee. This accident was investigated in conjunction with a representative of the Illinois Commerce Commission.

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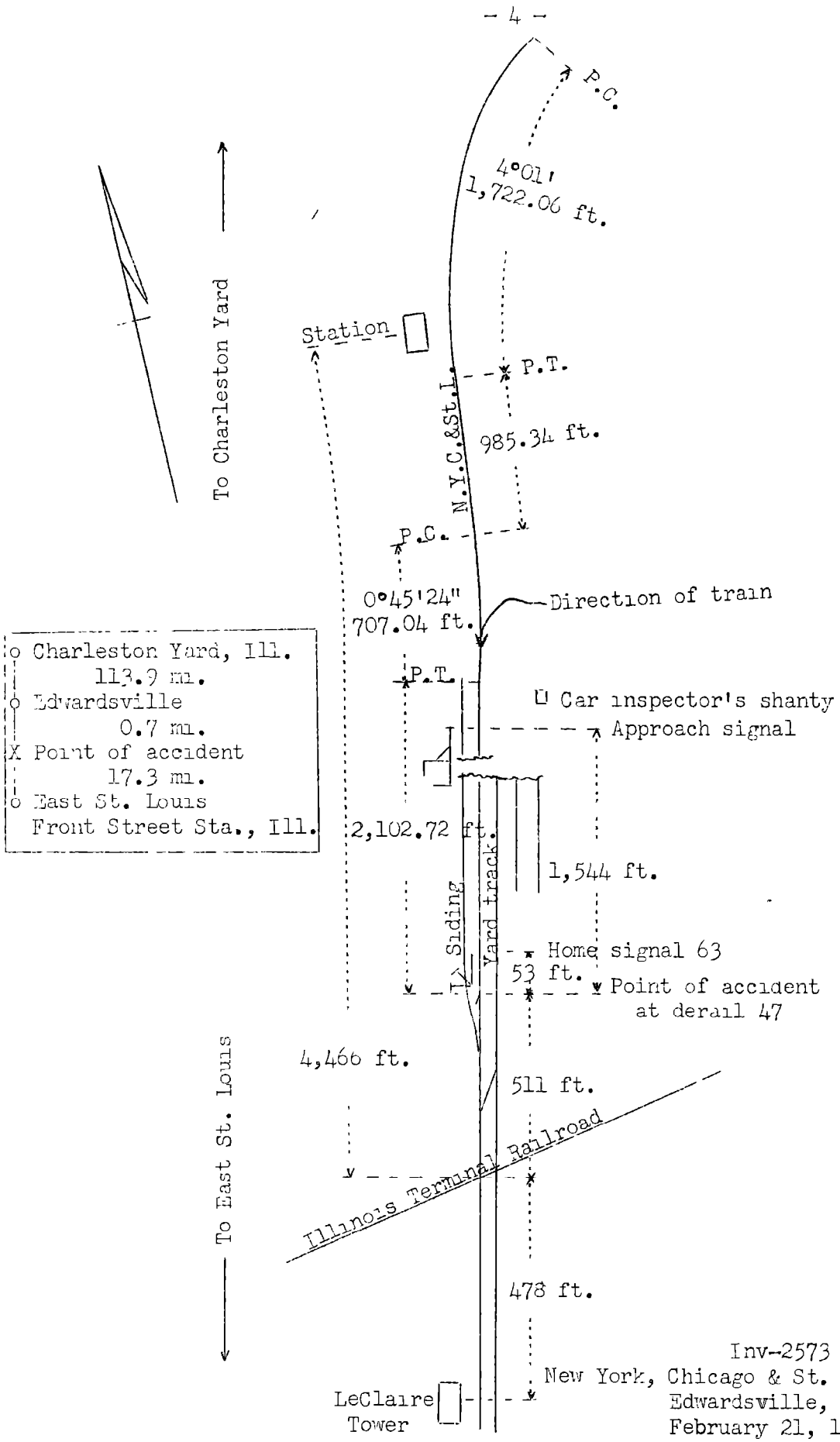
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv-2573
New York, Chicago & St. Louis Railroad
Edwardsville, Ill.
February 21, 1942

Location of Accident and Method of Operation

This accident occurred on that part of the Clover Leaf District designated as the Fourth Subdivision, which extends between Charleston Yard and East St. Louis Front Street Station, Ill., a distance of 131.9 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and a manual block system for following movements only. At a point 4,466 feet west of the station at Edwardsville a single-track line of the Illinois Terminal Railroad, hereinafter referred to as the I. T., crosses the track of the New York, Chicago & St. Louis Railroad, hereinafter referred to as the N. Y. C. & St. L., at an angle of 65°16'. This crossing is protected by an interlocking which is controlled from LeClaire tower located north of the N. Y. C. & St. L. track and 478 feet west of the crossing. The interlocking is maintained and operated by the I. T. The accident occurred within interlocking limits at a derail of the lifting type located 511 feet east of the crossing. As the point of accident is approached from the east there are, in succession, a 4°01' curve to the left 1,722 feet in length, a tangent 985 feet, a 0°45'24" curve to the right 707 feet in length, and a tangent 2,102.7 feet to the point of accident and some distance beyond. At the point of accident the grade for west-bound trains is 0.63 percent descending.

The interlocking machine is of the mechanical type, with 57 working levers in a 64-lever frame. The signals, switches and derails are mechanically operated. Detector bars are provided to the rear of derails.

An approach signal and home signal 63, governing west-bound movements on the N. Y. C. & St. L., are located, respectively, 1,544 and 53 feet east of derail 47. The approach signal is of the 1-arm, semaphore type, and is fixed in horizontal position. The home signal is of the 1-arm, 2-position, lower-quadrant, semaphore type, and is continuously lighted. The day aspects and corresponding indications and names of these signals are as follows:

Signal	Day Aspect	Indication	Name
Approach	Horizontal	Proceed with caution to the Home Signal	Caution Signal
Home	60 degrees	Proceed	Clear Signal
	Horizontal	Stop	Stop Signal

Operating rules read in part as follows:

34(a) The engineman and fireman must see the signals at all interlocking plants, **** and, before reaching them, communicate with each other as to their indication.

98. Trains must approach ****, railroad crossing at grade, ****, with caution. Where required by rule or by law, trains must stop.

* * *

225-8. If necessary to change any route for which the signals have been cleared for an approaching train or engine, switches must not be changed or signals cleared for any conflicting route until the train or engine, for which the signals were first cleared, has stopped.

The maximum authorized speed for freight trains is 45 miles per hour.

Description of Accident

Second 49, a west-bound second-class freight train, consisted of engine 636, 17 loaded and 39 empty cars and a caboose. After a terminal air-brake test was completed this train departed from Charleston Yard, 113.9 miles east of Edwardsville, at 10:56 a. m., according to the dispatcher's record of movement of trains, 3 hours 16 minutes late, passed Edwardsville, 0.7 mile east of the point of accident and the last open office, at 2 p. m., 2 hours 55 minutes late, passed the approach signal, passed home signal 63, which displayed stop, and while moving at an estimated speed of 35 or 40 miles per hour it was derailed at derail 47. The air brakes had controlled the speed of the train on all points where used en route, and there was no condition of the engine that obscured the vision or distracted the attention of the employees on the engine.

Only the engine-truck wheels were derailed at the derail. The No. 1 pair of driving wheels bent the derail switch point and riser rail in such manner that no further derailment occurred at that point, but when the engine-truck wheels encountered the frog of a trailing-point switch 430 feet farther west, the general derailment occurred.

The engine was derailed to the north and stopped, badly damaged, on its left side and at an angle of 45 degrees to the track. The tender was torn loose from the engine and stopped on its left side, south of the track at a point about 200 feet west of the engine. The first three cars were derailed but remained upright and in line with the track. The front truck of the fourth car was derailed.

The home signal involved can be seen from the left side of a west-bound engine between points, respectively, 4,076 feet and 3,879 feet east of the signal, then is obscured until the engine reaches a point 2,397 feet east of the signal. From the right side of a west-bound engine, the home signal can be seen between points 3,900 feet and 3,850 feet east of the signal, then the view is entirely obscured throughout the next 168 feet, intermittently obscured throughout a distance of 953 feet, and unrestricted throughout the remaining 2,781 feet to the signal.

It was clear at the time of the accident, which occurred about 2:01 p. m.

The employees killed were the engineer and the front brakeman, and the employee injured was the fireman.

In tests made after the accident the interlocking functioned as intended. It required 12 seconds to place the N. Y. C. & St. L. home signal at stop and to open the derail, and about 40 seconds additional, or a total of 52 seconds, to line the route for movement on the I. T., with the exception that the I. T. home signal was not changed to display proceed. Ten levers were manipulated to complete this operation.

In a test after the accident the air-brake equipment of engine 636 and 53 undamaged cars functioned properly.

During the 30-day period preceding the day of the accident there was an average daily movement of 17.4 N. Y. C. & St. L. trains over the crossing involved.

Discussion

The rules governing operation on the line involved provide that enginemen must observe interlocking signals and communicate their indications to each other. Trains must approach railroad crossings at grade with caution. After a route has been lined for an approaching train, the switches must not be changed or the signals cleared for a conflicting route until the train for which the signals were first cleared has stopped. All surviving employees involved understood these requirements.

According to the statement of the operator-leverman at LeClaire tower, the audible approach-indicator gave information of the approach of a north-bound passenger train on the I. T. about 1:51 p. m. The schedule of the I. T. train provided 9 minutes running time between the outer limit of the approach circuit and the tower. At that time no route was lined for movement through the interlocking. He lined the interlocking for movement on the I. T. through the interlocking, but did not clear the home signal which governs north-bound movements because he could line the route for a conflicting movement during the interval of 9 minutes without delay to the I. T. train. About 7 minutes later he observed Second 49 approaching on the N. Y. C. & St. L. at a distance of 1/4 mile. He started to clear the home signal on the I. T. but, becoming alarmed that Second 49 would not stop short of its home signal, he delayed clearing the I. T. home signal. Soon afterward Second 49 was derailed. The operator-leverman said that passenger trains are given priority over freight trains with regard to movement through the interlocking. He has no advance knowledge of the approach of trains on the N. Y. C. & St. L. except when the dispatcher informs him, but on the I. T. audible approach indicators give information of the approach of trains on that line. He said that N. Y. C. & St. L. freight trains usually proceed through the interlocking at maximum authorized speed.

According to the statements of the motorman and the conductor of a north-bound I. T. passenger train which had stopped at the northward home signal on the I. T. shortly before Second 49 was derailed, they were stationed at the front end of their train, but neither observed any movement of the interlocking plant such as would exist if the operator was engaged in lining or changing a route through the interlocking.

According to the statement of the fireman of Second 49, as his train was approaching the point where the accident occurred the speed was about 45 or 50 miles per hour, the throttle was in drifting position and the engineer, the front brakeman and he were maintaining a lookout ahead. At a point about 3,900 feet east of the home signal involved, the fireman observed that it displayed proceed. He called this indication to the engineer, who sounded the engine whistle in acknowledgment. At that time the speed was about 40 or 45 miles per hour and the engineer opened the throttle. When the engine was about 1,100 feet east of the home signal, the fireman again observed that the signal displayed proceed, and then became occupied with other duties. When the engine was about ten car lengths or approximately 450 feet east of the signal the enginemen moved the brake valve to emergency position, and the fireman again observed the home signal. It then displayed stop and the derail was in derailing position. The distance was not sufficient to stop the train short of the derail from the speed of 40 or 45 miles per hour at which it was moving. He jumped off just before the engine reached the derail and at that time the speed was about 35 or 40 miles per hour. The engineer and the front brakeman were killed in the accident. The conductor and the flagman were not aware of the derailment until after their train stopped.

According to the statement of a car inspector employed by the N. Y. C. & St. L., when Second 49 was approaching the point where the accident occurred he was stationed about 35 feet south of the main track, 6 or 8 feet east of his shanty, and about 1,600 feet east of home signal 63. Looking westward, he observed that the home signal displayed proceed. He then became engaged in observing the cars in the train of Second 49. After 35 or 40 cars had passed him the speed of the train was reduced and at that time he observed the home signal displaying stop. He said that it was customary for him to observe the indication displayed by this home signal.

The fireman said that although the approach signal involved is fixed to display an indication which requires trains to approach the home signal with caution, if the home signal displays proceed, that indication governs. According to the statement of the trainmaster, at points

where the approach signal is fixed to display caution, if a crew can see that the home signal displays proceed, that indication governs.

Soon after the accident occurred, examination of the interlocking disclosed it to be lined for movement on the I. T. and it was necessary to disconnect various parts before other movements could be routed through the interlocking. The derailed equipment had damaged the derail and pipe line and, if the route had not previously been lined, it would have been impossible to complete the lining of the route on the I. T. after the derailment occurred. The condition of the interlocking as found after the accident is in conformity with the statement of the operator-leverman that the route for the I. T. was lined, except that the home signal was not cleared before the engine of Second 49 was derailed. If home signal 63 displayed proceed as Second 49 was approaching it, as stated by the fireman and the car inspector, in order to set up the condition found to exist after the accident it would have been necessary for the operator-leverman to take the route away from the N. Y. C. & St. L. and line it for the I. T. between the time the signal was last reported seen at proceed and the time of derailment. During this time interval the train moved an estimated distance of 1,600 feet. According to the statement of the operator-leverman, the route which had been lined up was not changed, and tests after the accident indicated that this time interval would be sufficient for the operator-leverman to display the home signal at stop and to open the derail, but would not be sufficient to line the route for the I. T. Since the route was found to be lined for the I. T. after the accident occurred, and since it could not have been so lined after the accident, it follows that the N. Y. C. & St. L. fireman and the car inspector must have misread the indication of the home signal. Why the engineer failed to observe that the signal displayed stop and to apply the brakes in sufficient time to stop short of the derail could not be determined.

At the time of the accident the interlocking at this point did not conform with several sections of the rules, standards and instructions which were prescribed by the Commission's order of April 13, 1939. Acting upon an application filed by the N. Y. C. & St. L., the Commission extended the effective date of its order of April 13, 1939, to January 1, 1943, insofar as sections 304, 305, 309 and 321 apply to the interlocking at this point. These sections

relate respectively to spacing of signals, track circuits, approach or time locking and mechanical connections to switches and signals. On June 23, 1941, the I. T. applied for approval of certain proposed modifications to conform with the order, and received approval upon condition that such modifications be completed by July 29, 1942.

The investigation of this accident disclosed that adequate provision had not been made for safeguarding operation at this point pending the completion of modifications which are necessary to bring this interlocking into conformity with current requirements.

Cause

It is found that this accident was caused by failure to operate Second 49 in accordance with an interlocking signal indication.

Recommendation

It is recommended that the New York, Chicago & St. Louis Railroad Company immediately restrict authorized speed of its trains at the interlocking involved sufficiently to insure safety of operation pending necessary modifications of the interlocking.

Dated at Washington, D. C., this twenty-fourth day of April, 1942.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.