INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS

ST. LOUIS, MO.

MARCH 29, 1940

INVESTIGATION NO. 2421

SUMMARY

Inv-2421

Railroad:	Terminal Railroad Association of St. Louis	
Date:	March 29, 1940	
Location:	St. Louis, Mo.	
Kind of accident:	Head-end collision	
Trains involved:	Passenger	: Light engine
Train number:	M. & O. 3	
Engine numbers:	Gas-electric motor-car 1821	: B. & O. 5209
Consist:	1 car	
Speed:	10-12 m. p. h.	: 1 m. p. h.
Operation:	Interlocking	
Track:	Tangent; level	
Weather:	Clear	
Time:	8:51 a. m.	
Casualties:	10 injured	
Cause:	Failure to operate B. & O. engine 5209 in accordance with interlocking signal indication	

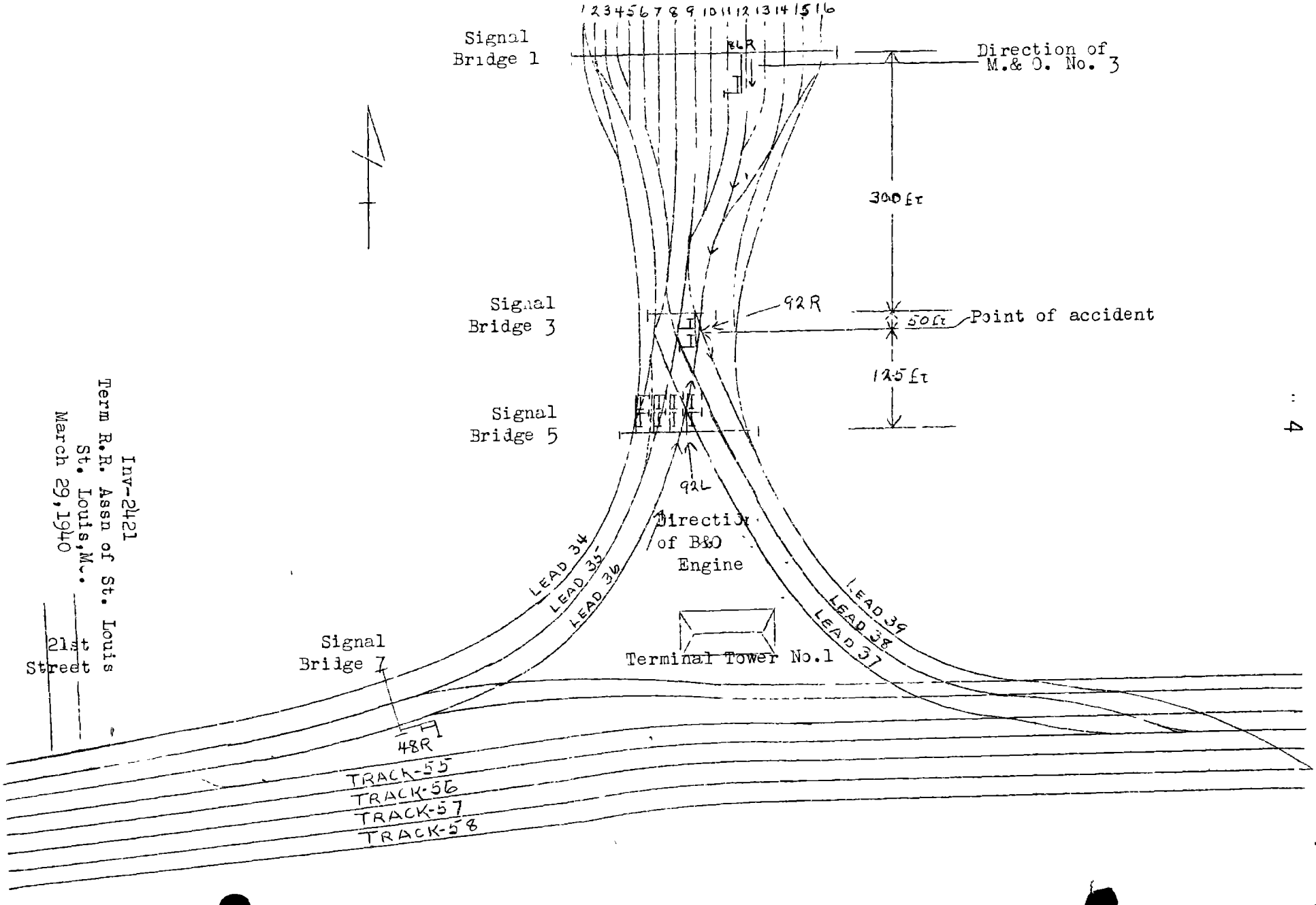
May 17, 1940.

To the Commission:

On March 29, 1940, there was a head-end collision between a Mobile & Ohio Railroad passenger train and a Baltimore & Ohio Railroad light engine on the line of the Terminal Railroad Association of St. Louis at St. Louis, Mo., which resulted in the injury of four passengers, two railway mail clerks, and four employees.

Location and Method of Operation

Trains enter and leave St. Louis Union Station over the tracks of the Terminal Railroad Association of St. Louis. This accident occurred within interlocking limits on the Eads Division which extends between Theresa Avenue, St. Louis, Mo., and Relay Station, East St. Louis, Ill., a distance of 3.27 miles. The union station is located approximately 800 feet north of the main tracks, which extend eastward and westward. There are 42 station tracks extending southward from the station. From west to east, the first 10 of these tracks are designated by letters and the other 32 tracks are numbered consecutively 1 to 32. Entry from the main tracks to station tracks 1 to 16, inclusive, is made through a Y, each leg of which has three parallel tracks; the tracks of the west leg are designated from west to east as lead tracks 34, 35, and 36, and the tracks of the east leg are designated from west to east as lead tracks, 37, 38, and 39. The Y and the station tracks are within the limits of the interlocking controlled from Terminal Tower No. 1, which is located inside the Y. Within these interlocking limits trains are operated by signal indication. The accident occurred at the south end of a double-slip cross-over at the intersection of lead tracks Nos. 36 and 39, which is located approximately 400 feet south of the station. From the station to the point of accident, station track 12 and lead track 39 are practically tangent. Approaching the point of accident from the south on lead track 36 there is a 12° curve to the left 380 feet in length, which is followed by a tangent 100 feet long to the point of accident. The grade in this vicinity is level.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Signal Bridge 1
84R
Direction of M.& O. No. 3
300 ft
Signal Bridge 3
92R
50 ft
Point of accident
125 ft
Signal Bridge 5
92L
Direction of B&O Engine
LEAD 34
LEAD 35
LEAD 36
LEAD 39
LEAD 38
LEAD 37
Terminal Tower No.1
Signal Bridge 7
48R
TRACK-55
TRACK-56
TRACK-57
TRACK-58
21st Street
Inv-2421
Term R.R. Assn of St. Louis
St. Louis, Mo.
March 29, 1940

Two interlocking machines are located in Terminal Tower No. 1; these machines control 96 single switches, 7 movable-point frogs; 120 double-slip switches, 296 signals, and 1 traffic lock. Switches and signals are of the electro-pneumatic type and are electrically and mechanically interlocked. Of the signals involved, those governing out-bound movements starting on track 12 are signals 86R on bridge 1 and 92R on bridge 3, located, respectively, 350 feet and 50 feet north of the point of accident, and those governing in-bound movements on lead track 36 are signals 48R on bridge 7 and 92L on bridge 5, located, respectively, 400 feet and 125 feet south of the point of accident. These signals are of the lower-quadrant semaphore type. Signals 86R and 48R are of the 1-arm type; signals 92R and 92L are of the 2-arm type; all are non-automatic signals except the lower arm of signal 92L which is semi-automatic and indicates track occupancy of station tracks 9 to 16, inclusive, according to the track for which the route is lined. The upper arm of signal 92R governs the route for a westward movement to lead track 36 and the lower arm governs the route for an eastward movement to lead track 39. The signals involved are two-position signals indicating stop or proceed. When the route is lined for an out-bound movement from station track 12 to lead track 39, signals 86R and 92R display proceed indications; under these conditions the most favorable indications that can be displayed for an in-bound movement from lead track 36 to station track 15 are a proceed indication at signal 48R and a stop indication at signal 92L.

Operating rules read in whole or in part as follows:

> 34. The engineman and fireman must, when practicable, communicate to each other by its name the indication of all signals affecting the movement of their train.
>
> 40. Air-whistle signals operated from interlocking stations are for emergency use. When the danger signal -- one blast -- is sounded, trains in the vicinity must stop and not move without authority from the interlocking station, * * *.
>
> 109. A proceed signal, or a train order, does not insure an unobstructed track ahead, except through the tunnel. The tracks of these companies are virtually one continuous yard. Train movements are frequent but often irregular. Movements must be made with trains under control.

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.

608. Signals are located preferably over or upon the right of and adjoining the tracks to which they refer.

The locations of signals placed upon the left are specified on the timetable.

Semaphore arms that govern are displayed to the right of the signal mast as seen from an approaching train, * * *.

626. TRAIN DIRECTORS, LEVERMEN, LEVERMEN - OPERATORS

They must observe all passing trains and note whether they are complete and in order; should there be any indication of conditions endangering the train, or any other train, they must take such measures for the protection of trains as may be practicable.

The weather was clear at the time of the accident, which occurred at 8:51 a. m.

Description

No. 3, an out-bound Mobile & Ohio Railroad passenger train, with Conductor Johnson and Engineman Pentecost in charge, consisted of gas-electric motor-car 1821 and one coach. This train departed from station track 12 at 8:50 a. m., on time, passed signal 86R displaying a proceed indication, passed signal 92R displaying a proceed indication for the route to lead track 39 and, while moving over the double-slip switch connection to lead track 36 at a speed of 10 or 12 miles per hour, collided with Baltimore & Ohio Railroad light engine 5209.

Engine 5209, an in-bound engine, with Engineman Tucker in charge, was en route from the engine house at Venice, Ill., to the union station to haul out-bound B. & O. passenger train No.2. This engine, in backward motion, entered lead track 36 en route to track 15; it passed signal 48R displaying a proceed indication, passed signal 92L displaying a stop indication, and, while moving at a speed of about 1 mile per hour, collided with M.& O. train No. 3.

The front end of the motor-car and the rear end of the tender of the light engine were slightly damaged but none of the equipment was derailed.

The employees injured were the engineman, the conductor, the baggageman-flagman, and an electrician of M. & O. No. 3.

Summary of Evidence

Engineman Pentecost, of M. & O. No. 3, stated that the air brakes were tested at St. Louis station and the inspector reported that they were functioning properly. His train departed from St. Louis at 8:50 a. m. and when his motor-car reached a point near signal bridge 1 he observed that signal 86R and the lower arm of signal 92R were displaying proceed indications. His train proceeded through the interlocking at a speed of about 15 miles per hour. He saw the B. & O. engine but thought it was stopped at signal bridge 5. He was depending on the clear signals displayed for his train since there were numerous train movements at this point and it was impossible to distinguish the route over which another engine or train was being moved. His train was within about 20 feet of the intersection involved when he realized that the B. & O. engine was fouling the route over which his train was moving; he shut off the motor and made a brake-pipe reduction but it was too late to avert the collision. The speed of his train was reduced to 10 or 12 miles per hour at the time of the collision. He had operated trains into the union station for the past 6 or 7 years and was last examined on the rules in May, 1939.

Conductor Johnson, of M. & O. No. 3, stated that his train left St. Louis at 8:50 a. m. He was walking through the train toward the front end when the collision occurred. He did not feel the brakes apply prior to the accident and thought the speed of his train was from 7 to 10 miles per hour.

Baggageman-Flagman Hill, of M. & O. No. 3, corroborated the statement of his conductor.

Engineman Tucker, of B. & O. engine 5209, stated that his engine, in backward motion, entered lead track 36. Signal 48R was displaying a proceed indication. His engine passed this signal at a speed of 4 or 5 miles per hour; he took extra precaution as he was an extra passenger engineman and did not operate into the union station very often. There was a Pennsylvania Railroad engine backing toward the station on lead track 35 and when it passed signal bridge 5 the signal for that track was restored to stop position; all four signals on that signal bridge

were then in stop position. His engine had practically stopped when a signal on signal bridge 5 was cleared, and he thought it was the signal for lead track 36; then he permitted the engine to drift. Just after passing this signal his fireman called a warning to stop; his own view of the track directly to the rear of his engine was obscured because of the curvature of the track. He immediately applied the brakes and, just before stopping, his engine collided with the M. & O. train. He stated that after the accident occurred he was uncertain whether the clear signal on bridge 5 was for lead track 36 or for lead track 35; he decided that he must have mistaken the signal governing lead track 35 for signal 92L. He did not hear the tower emergency whistle sounded until after the accident occurred; after hearing an emergency signal sounded he would have been able to stop his engine in a distance of about 50 feet. He was last examined on the rules on May 18, 1939, and had made a student trip in and out of the terminal several months prior to the day of the accident when he was qualifying over the new municipal bridge route, and he felt that he was familiar with the territory involved; however, during the last 5 years he had made only 21 trips, prior to the trip involved, into union station.

Fireman McRoberts, of B. & O. engine 5209, stated that his engine was being backed toward the union station on lead track 36 at a speed of 4 or 5 miles per hour. Signal 48R was displaying a proceed indication; the engineman called the indication displayed by signal 92L as clear. He stated that because of track curvature he could not see signal 92L until the engine tender was under it, and when his engine was at that point the signal was in stop position but he thought that it had been restored to stop position when the tender started under it, as this was a common occurrence. He then saw the M. & O. train leaving the station and, realizing that the switches were not lined for separate movements, he called to his engineman to stop but it was then too late to avoid fouling the route of the M. & O. train. He stated that he was last examined on the rules on May 15, 1939, and that he was familiar with the territory involved, as he had operated into the union station intermittently since 1936.

General Train Director Canda, of Terminal Tower No. 1, stated that he was on duty at the time of the accident, which occurred at 8:51 a. m. At 8:50 a. m. the route from station track 12 to lead track 39 was lined for M. & O. No. 3. At the same time routes were lined for Pennsylvania Railroad engines from lead track 35 to station track 8 and for B. & O. engine 5209 from main track 57 to lead track 36 as far as signal bridge 5. These movements are regular and are made at practically the

same time each day. He saw the B. & O. engine backing in and observed that at signal bridge 7 and also at signal bridge 5 it was just about stopped. Shortly afterward the leverman called a warning that the B. & O. engine was colliding with the M. & O. train but it was too late to avert the accident by sounding the emergency whistle. He stated that the towermen observe all movements closely and sound the emergency whistle if in their judgment a movement is being made at excessive speed or if there is any possibility of a train overrunning a stop signal, but in this instance the fact that the engine was moving so slowly when approaching bridge 5 led them to believe it would stop; however, the engine drifted by the signal at a very low rate of speed and fouled the route of the M. & O. train at a point only an engine length after passing the signal. When lever 92 is placed to the right it controls signal 92R on bridge 3 and when placed to the left it controls signal 92L on bridge 5; therefore, it is impossible to clear both signals at the same time. The weather was clear at the time of the accident.

Towerman Pauley, on duty at Terminal Tower No. 1 at the time of the accident, corroborated the statement of the general train director.

Signal Engineer Hix stated that subsequent to the accident a test was made of the signals involved and they were found to be functioning as intended. He stated that a clear signal is not an approach indication for the next signal in advance but is only a signal to proceed, and that train movements are governed by Rule 109.

Records of the company disclosed that Engineman Tucker had made fourteen trips out of the union station since July, 1936, and that the last trip prior to the accident was on July 22, 1939.

Discussion

According to the evidence, routes were lined simultaneously for out-bound M. & O. No. 3 from station track 12 to lead track 39 and for in-bound P. R. R. engines from lead track 35 to station track 8 and for in-bound B. & O. engine 5209 from main track 57 to lead track 36 as far as signal bridge 5. B. & O. engine 5209 was destined to station track 15 and since that route conflicted with the route for M. & O. No. 3 it was necessary to hold engine 5209 at signal 92L on bridge 5 until out-bound M. & O. No. 3 was clear of signal bridge 5. However, the B. & O. engine drifted by signal 92L and, while moving at a speed of about 1 mile per hour, collided with M. & O. No. 3.

The engineman of the B. & O. engine was an extra passenger engineman and his last trip into the union station prior to the day of the accident was on July 22, 1939. For this reason he said he was taking extra precaution and was moving at a low rate of speed approaching bridge 5. After a Pennsylvania Railroad engine on lead track 35 passed signal bridge 5 all signals on that bridge displayed stop indications and then a signal which he thought at the time was the signal governing the route for his engine was cleared. He called the signal as clear to his fireman and permitted the engine to drift by signal bridge 5 until the fireman observed the M. & O. train approaching and called a warning to stop. The fireman's view of signal 92L was obscured because of track curvature until the tender was directly under the signal; the fireman then observed that the signal was in stop position but since the engine tender was under the signal he concluded that it had been restored to stop position. Subsequent to the accident the engineman of engine 5209 was of the opinion that he mistook a clear signal displayed on lead track 35 at signal bridge 5 for the signal governing movements on lead track 36 and that he had passed the signal for lead track 36 when it was in stop position. Approaching signal bridge 5 from the south there are three tracks to a point approximately 75 feet south of the signal bridge and from this point there are four tracks and signal bridge 5 has four signals. Because of track curvature and because the four signals on bridge 5 could be seen from the vicinity where there were only three tracks, an engineman of an engine moving northward on lead track 36 might mistake the third signal from the left end of the signal bridge as the signal governing movements on lead track 36, whereas the fourth signal governs lead track 36.

The engineman of M. & O. No. 3 observed the approach of the B. & O. engine but because of the clear signals displayed for his train and the fact that it is difficult to ascertain over what routes other movements are being made through an intricate layout of switches, such as the one involved, he did not realize until it was too late to avert the accident that the B. & O. engine would foul the route lined for his train.

The towermen were watching the movement of the B. & O. engine but were led to believe that it was stopping when it approached bridge 5 at a very low rate of speed, and when they saw it drift by the signal and foul the route of the M. & O. train, it was then too late to give warning by sounding the emergency signal.

Conclusion

This accident was caused by failure to operate B. & O. engine 5209 in accordance with interlocking signal indication.

Respectfully submitted,

S. N. MILLS,

Director.