

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS
RAILWAY

SHELBYVILLE, IND.

JUNE 5, 1939

INVESTIGATION NO. 2362

SUMMARY

Inv-2362

Railroad: Cleveland, Cincinnati, Chicago & St. Louis

Date: June 5, 1939

Location: Shelbyville, Ind.

Kind of accident: Derailment

Train involved: Passenger

Train number: 115

Engine number: 5380

Consist: 13 cars

Speed: 35 m. p. h.

Operation: Timetable, train orders, manual block system, and interlocking signals

Track: Double; tangent; 0.45 percent descending westward

Weather: Clear

Time: 9:36 a. m.

Casualties: 19 injured

Cause: Ran off open derail because of failure to observe and obey interlocking signal indications.

Inv-2362

July 22, 1939.

To the Commission:

On June 5, 1939, there was a derailment of a passenger train on the Cleveland, Cincinnati, Chicago & St. Louis Railway at Shelbyville, Ind., which resulted in the injury of eight passengers, one railway mail clerk, eight dining-car employees, and two railroad employees. The investigation of this accident was made in conjunction with a representative of the Public Service Commission of Indiana.

Location and Method of Operation

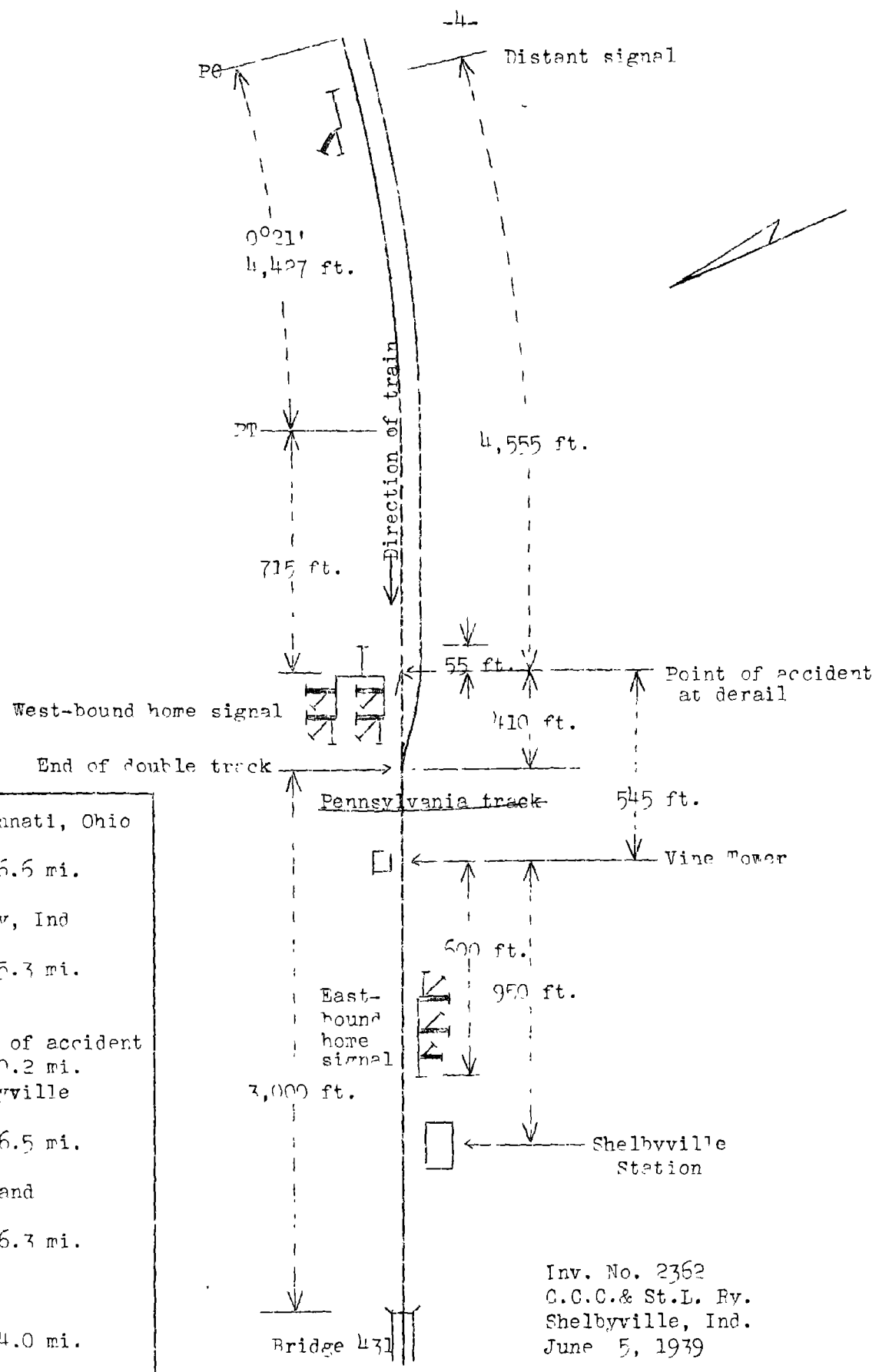
This accident occurred on that part of the Indiana Division which extends between Cincinnati, Ohio, and Indianapolis, Ind., a distance of 108.9 miles. In the immediate vicinity of the point of accident this is a double-track line which extends between Clifty and Vine, a distance of 5.5 miles, and connects with single track at Vine, which extends westward to Dix, a distance of 13 miles. Trains are operated by timetable, train orders, and a manual-block system. Vine interlocking tower is located approximately 250 feet east of the passenger station at Shelbyville. The accident occurred within interlocking limits on the westward main track at a split-point derail about 410 feet east of the end of double track or 545 feet east of Vine tower. Approaching the point of accident from the east there is a tangent for several miles, followed by a 0°20' curve to the right 4,427 feet in length, and then a tangent 715 feet to the point of accident and some distance beyond. The grade for west-bound trains is 0.45 percent descending at the point of accident.

The Pennsylvania Railroad crosses the single-track line at a point just east of Vine tower. The signals, switches, and derails are controlled by a leverman at the tower. The distant and the home signals governing movements on the westward track are located 4,555 feet and 55 feet, respectively, east of the point of accident. The distant signal is a two-position, upper-quadrant, semaphore signal, the aspects and indications of which are as follows:

Green - Proceed
Yellow - Proceed, approach next signal and intervening switches at Restricted Speed.

Restricted Speed is defined as: "A speed not exceeding that which will enable a train to stop short of train ahead, obstruction, or switch not properly lined, and look out for broken rail."

| | |
|----------------------|----------|
| o Cincinnati, Ohio | |
| | 76.6 mi. |
| o Clifty, Ind | |
| | 5.3 mi. |
| o Vine | |
| x Point of accident | 0.2 mi. |
| o Shelbyville | |
| | 6.5 mi. |
| o Fairland | |
| | 6.3 mi. |
| o Dix | |
| | 14.0 mi. |
| o Indianapolis, Ind. | |



Inv. No. 2362
 C.C.C. & St.L. Ry.
 Shelbyville, Ind.
 June 5, 1939

The distant signal is electrically operated. A time release is provided so that when this signal is cleared and placed again in the normal or caution position, the derails or switches within the limits of the interlocking cannot be changed until three minutes have elapsed.

The home signal, situated north of the westward track, is a two-doll bracket signal with two arms on each doll and governs westward movements; the signals on the north doll govern movements on the westward track with the current of traffic, and the signals on the south doll govern westward movements on the eastward track against the current of traffic. The top arms are of the three-position, upper-quadrant type and are used for main track movements as well as manual-block and train-order signals; and the lower arms are two-position, upper-quadrant, and are used for diverging movements. The home signals, which are mechanically operated, are normally in stop position and cannot be changed to display either an approach or a proceed indication unless the switches or derails in the route over which they govern are in proper position and locked. In addition to the mechanical locking, bolt-locks are used so that the signals cannot be cleared unless the derails for that route are closed. Circuit controllers are used on the home-signal lever, on the home-signal casting, and on the switch which leads from the westward main, between the home and the distant signals, so that the distant signal cannot be cleared unless the home-signal lever, the home-signal casting, and the switch are in proper position.

On account of an embankment on the north side of the tracks, the view of the home signal had by the engineman of a west-bound train was restricted to 2,300 feet; the view had by the fireman was limited to 800 feet.

Rule 98 of the operating rules reads as follows:

Trains must approach the end of two or more tracks, junctions, railroad crossings at grade, and drawbridges, prepared to stop, unless the switches are properly lined, signals indicate proceed, and track is clear. ***

The maximum authorized speed for passenger trains is 80 miles per hour. A special bulletin, dated April 30, 1939, restricts the speed of passenger trains to 65 miles per hour over the mile of track immediately east of Vine. Special time-table instructions restrict the speed of all trains to 20 miles per hour within the corporate limits of Shelbyville, which extends 1,386 feet east of Vine.

On the morning of the accident a gang was laying rails on bridge 413, situated about 3,000 feet west of the end of double track. A flagman of the gang was stationed a short distance east

of the westward distant signal at Vine to flag westward trains; in addition to the flagman there was a reduce-speed board restricting speed to 15 miles per hour approaching a slow-board located at the point to be protected.

The weather was clear at the time of the accident, which occurred about 9:36 a. m.

Description

No. 115, a west-bound passenger train, consisted of one mail car, one baggage car, three coaches, one dining car, one Pullman parlor car, five Pullman sleeping cars, and one coach, in the order named, of steel construction, hauled by engine 5380, of the 4-6-4 type, and was in charge of Conductor Klepper and Engineman Moore. The crew received train order No. 1, Form 19, reading:

Trains must not exceed speed indicated by slow boards between Fairland and Shelbyville. Slow boards will be moved east as work progresses.

This train left Cincinnati, 81.9 miles east of Vine, at 9 a. m., according to the train sheet, on time, passed Clifty, the last open office, 5.3 miles east of Vine, at 9:32 a. m., 5 minutes late, passed the distant signal, displaying an approach indication, passed the home signal, displaying a stop indication, and, while traveling at a speed of 35 miles per hour according to the speed-recorder tape with which the engine was equipped, ran off the open derail.

The engine stopped on its right side practically parallel to the westward track with its front end 260 feet beyond the point of derailment; the tender also stopped on its right side at a slight angle to the track; both the engine and tender were badly damaged. The first and second cars and the front truck of the third car were derailed, but stopped in general line with the track and sustained only slight damage. The home signals were knocked down and demolished.

The employees injured were the engineman and the fireman.

Summary of Evidence

Engineman Moore, of No. 115, stated that an air-brake test was made at Cincinnati, their initial terminal, a running test was made after leaving that point, and the air brakes functioned properly en route. He passed through Clifty at a speed of about 78 miles per hour and then made a running test of the air brakes. Reaching a point about 1 mile east of Vine he reduced the speed to about 65 miles per hour, and seeing the approach indication displayed by the distant signal, which was called by both the fireman and himself, he applied the air brakes. He saw the

reduce-speed board in the vicinity of the distant signal and was flagged by a section man, who gave him a "rail-lifting" signal and a signal to proceed. He acknowledged these signals and also two torpedoes which were exploded by the engine. He thought that he was proceeding under control. When the engine started to become derailed he realized that he had overlooked the home signal. He applied the air brakes in emergency, at which time the speed was 25 or 30 miles per hour. Except that the fireman did not call its indication, he was unable to explain how he missed seeing the home signal. Engineman Moore stated that he had been operating this train for a period of about 10 years and he had been stopped at the home signal many times.

Fireman Hunt, of No. 115, stated that they were within a mile of the distant signal at Vine when the engineman applied the air brakes and reduced the speed to 60 or 65 miles per hour; shortly afterward they both called the yellow aspect of that signal. Before reaching the signal the engineman applied the air brakes a second time and did not release the brakes when he answered the track flagman. He thought the brakes were still applied when rounding the curve. The engineman called the red aspect of the home signal, at which time the fireman thought that they were between 25 and 35 car lengths from the signal, although he could not see it. Fireman Hunt closed the blower almost entirely, and, after attending to the fire, he leaned against the window sill, cut the blower down and glanced out the front window at which time the signal mast was even with the front end of the window. He saw the engineman making a service reduction, and then the engine became derailed. He did not see the indication of the home signal. He stated that on account of the curve, it is almost impossible to see the home signal until the engine is 3 or 4 car lengths from it.

Conductor Klepper stated that when near the distant signal he felt an application of the air brakes and the speed was reduced to about 65 miles per hour. After passing the signal he felt a further reduction and the speed was between 20 and 25 miles per hour at which time he thought they were about one-half mile from the point of accident.

Flagman Martin was on the rear platform of the rear car when passing the distant signal, at which time he felt an application of the air brakes and the speed was reduced about one-half. He felt the brakes become applied again, but it did not seem like an emergency application and then the accident occurred.

Baggageman Vetter stated that when approaching the distant signal he felt a heavy application of the air brakes and the speed was reduced to about 25 miles per hour; he did not feel a further reduction prior to the accident.

Brakeman Wise, who was deadheading on No. 115, stated that he felt an application of the air brakes when between 2,000 and 3,000 feet east of the distant signal, and the speed was reduced considerably. He was in the vestibule between the third and fourth cars and did not feel a further application. It was his opinion that the train was being operated at a speed to make the station stop at Shelbyville.

Engineer Exon, of the Real Estate and Tax Department, who was deadheading on No. 115, stated that he noticed only one application of the air brakes approaching Vine and the brakes were held applied a short distance before being released. After the accident he observed the home signals in stop position.

Section Flagman Wilhoit stated that on the morning of the accident he was flagging for the rail gang. He complied with instructions to proceed 6,000 feet from the point where the rail gang was working and placed two torpedoes, then proceeded another 2,000 feet and placed two more torpedoes. He then returned and picked up the first two torpedoes. He placed a slow-board about 200 feet east of the distant signal and stationed himself about 150 or 200 feet east of the slow-board. No. 115 approached at a speed of from 67 to 70 miles per hour. The engineman acknowledged the two torpedoes when the engine struck them and also acknowledged his signals. The brakes were applied when the train passed him and it seemed that the speed was being reduced considerably. He had flagged this train every day for the past 15 days.

Operator Roberts, at Vine, stated that after an eastbound passenger train passed through the interlocking at 8:31 a. m. he left the switches lined for an eastward movement but changed the home signal to its normal, or stop, position until after that train had cleared the block at Clifty. He then cleared the eastward home signal for No. 90, an eastbound freight train, as it had entered the block at Fairland, 6.7 miles west of Vine. The westward home signal displayed a stop indication. He saw No. 115 approaching about one-half mile distant at a high rate of speed, a speed that a train would be traveling if the home signal displayed a proceed indication and the engineman expected to make the usual station stop at Shelbyville.

Agent Walner stated that he was on the station platform at Shelbyville as No. 115 approached and he witnessed the derailment. The eastward home signal displayed a proceed indication and the westward home signal displayed a stop indication.

Signal Maintainer Myers stated that the switches and the signals functioned properly prior to the derailment. He was about seven squares west of Vine and saw the engine turn over and observed the eastward home signal displaying a proceed indication, but he was unable to see the westward home signal. He said

that it is impossible for both signals to be clear simultaneously. After the accident he observed that the derail on the westward track was open and an inspection of the levers in the tower disclosed that the route was lined for an eastward movement.

Master Mechanic Mellen arrived at the scene of accident about 10:35 a. m. and inspecting the engine cab he found the throttle was half open, both brake valves were in emergency position, and the cut-out cock was open. Later he removed the speed recorder tape, which indicated that the speed had been 78 miles per hour a distance of 6 miles to a point from 2 to $1\frac{1}{2}$ miles east of the point of accident where it then showed a reduction to 68 miles per hour. When the engine was from $\frac{3}{4}$ to $1\frac{1}{2}$ mile east of the point of accident there was a steady decline from 68 miles per hour to a final speed of 35 miles per hour when the tape ceased to register, indicating that the train was traveling at that speed when the engine became derailed. Examination of the engine wheels did not reveal any flat spots.

Assistant General Car Foreman Geiscl stated that after the accident the rear 11 cars were pulled back by another engine, equipped with the same type of air brakes as that involved in the accident, and an air-brake test was made. The brakes on all the cars were found to be operating properly. The cars were taken to Indianapolis and the brakes functioned properly en route. Several days later the two derailed cars were given the single-car test at Shelby Street coach yard and the air brakes functioned properly. Examination of the wheels of all the cars in No. 115 disclosed that there were no flat spots.

Car Inspectors Wilson and Dodd, who made the air-brake test of the equipment of No. 115 prior to its departure from Cincinnati, stated that the brakes functioned properly.

Trainmaster Wiegele stated that each year he held book-of-rules classes which had been attended by the members of the crew of No. 115. Recently he had stressed the subject of speed restrictions and signal indications as there had been three or four cases in which trains had passed signals and were derailed. He had tested Engineman Moore, had ridden with him, and considered him a safe engineman; in fact, instead of being inclined to exceed speed restrictions, he was inclined to be a little slow. The special instructions restricting the speed of passenger trains to 65 miles per hour east of Vine were because of the spacing of the signals, which was insufficient for the speed of 80 miles per hour.

Acting Track Supervisor Clark, in charge of the work of laying the rail on bridge 413 west of Vine, stated that it was necessary to stop No. 90 and hold it until the work on the

bridge had been completed, which was about 9:30 or 9:32 a. m. Flag protection and slow-boards had been placed on each side of the bridge.

Engineman Ehlers, of No. 90, stated that he realized that they were on the time of No. 115; he had just received a signal to proceed over the bridge and had started the train when he was stopped and informed of the occurrence of the accident.

Observations of Commission's Inspectors

The first mark of derailment was a flange mark on the ties on the north side of the south rail 12 feet west of the split point of derail. At a point 14 feet west of where these marks were found the track was torn up to the point where the engine stopped.

Discussion

The evidence indicates that the speed of No. 115 was reduced approaching the distant signal and a further reduction was made after passing that signal. The statements of the members of the crew indicated that the speed had been reduced to between 20 and 30 miles per hour before reaching the home signal. The speed recorder tape, however, showed that the speed had been reduced from 78 miles per hour to 68 miles per hour approaching the distant signal, or approximately 2 or $1\frac{1}{2}$ miles east of the point of accident, and that approaching the home signal, or between $\frac{3}{4}$ and $1\frac{1}{2}$ mile east of the point of accident, there was a steady decline from 68 miles per hour to a final speed of 35 miles per hour when the tape ceased to register, indicating that the train was traveling at that speed when the engine became derailed. The air brakes were tested before and after the accident and were found to be in good operative condition.

The approach indication of the distant signal was called by both the engineman and the fireman. The torpedoes placed east of that signal and the signals given by the flagman of the gang working on the bridge were acknowledged. The statements of the engineman and the fireman relative to the home signal are at variance. The engineman stated that he overlooked the home signal and that he was operating his train under control, so he thought, with the intention of making the station stop at Shelbyville. The fireman stated that the engineman called the red indication of the home signal and he thought the engineman had the train under control. After he heard the engineman call the "red board" he shoveled just enough coal to hold the fire and then stood beside his seatbox with his left hand on the window sill, but he did not see the indication of the home signal as his view

was obscured by the curve. The fireman's view of the home signal was limited to about 800 feet but the engineman could see the home signal a distance of 2,300 feet.

The approach indication displayed by the distant signal required the engineman to approach the home signal at restricted speed, a speed not exceeding that which would enable a train to stop short of train ahead, obstruction or switch not properly lined. It is obvious that the engineman did not bring his train under control in compliance with the restrictive signal indications. He failed to comply not only with the signal indications but also with the provisions of rule 98 which required that trains must approach the end of two or more tracks prepared to stop unless the switches were properly lined and signals indicated proceed; in addition he failed to comply with the timetable speed restriction of 20 miles per hour for all trains within the corporate limits of Shelbyville.

The reason that the interlocking signals displayed their most restrictive indications for this passenger train was that rail was being laid at a bridge approximately 3,000 feet west of the end of double track, and No. 90, an eastbound freight train, had been delayed at the bridge because the work had not been completed and was unable to reach the double track to clear No. 115.

Conclusion

This accident was caused by the train running off an open derail because of failure to observe and obey interlocking signal indications.

Respectfully submitted,

W. J. PATTERSON,

Director.