INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3122

THE PENNSYLVANIA RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT PHILADELPHIA, PA., ON

AUGUST 14, 1947

SUMMARY

Railroad:	Pennsylvania	
Date:	August 14, 1947	
Location:	Philadelphia, Pa.	
Kind of accident:	Head-end collision	
Equipment involved:	Passenger	: Engine
Train number:	671	:
Engine numbers:	MU-1551	: 5704
Consist:	4 cars	:
Estimated speeds:	Standing	: 8 m. p. h.
Operation:	Interlocking	
Track:	Four; 4°30' curve; 1.27 percent ascending grade westward	
Weather:	Clear	
Time:	3:49 p. m.	
Casualties:	1 killed; 51 injured	
Cause:	Failure to operate engine 5704 in accordance with interlocking signal indication	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3122

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

THE PENNSYLVANIA RAILROAD COMPANY

October 13, 1947

Accident at Philadelphia, Pa., on August 14, 1947, caused by failure to operate engine 5704 in accordance with an interlocking signal indication.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On August 14, 1947, there was a head-end collision between a passenger train and an engine on the Pennsylvania Railroad at Philadelphia, Pa., which resulted in the death of 1 train-service employee, and the injury of 49 passengers and 2 train-service employees. This accident was investigated in conjunction with a representative of the Pennsylvania Public Utility Commission.

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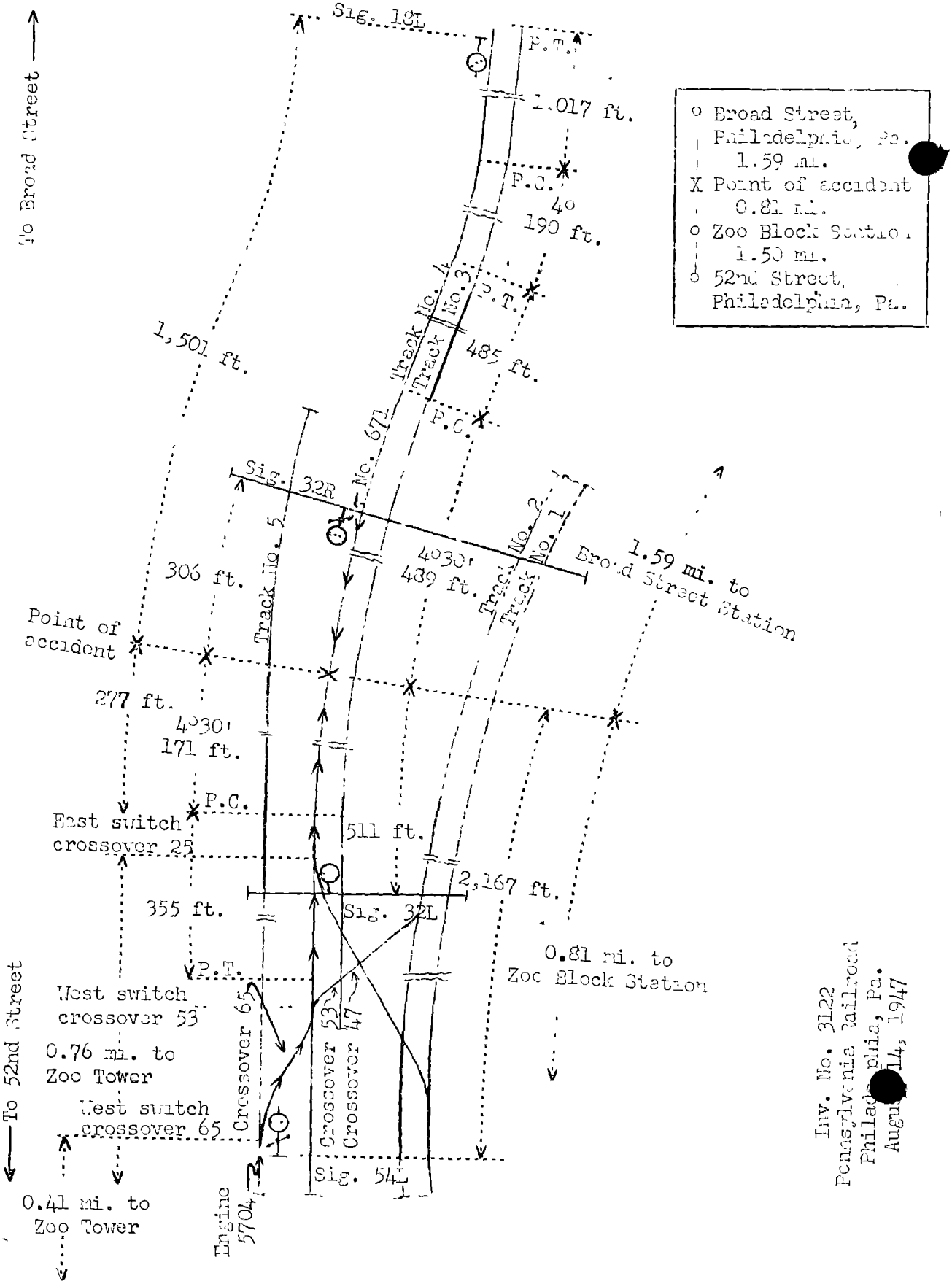
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 3122
Pennsylvania Railroad
Philadelphia, Pa.
August 14, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Philadelphia Terminal Division extending between Broad Street Station and 52nd Street, Philadelphia, Pa., 3.9 miles. In the immediate vicinity of the point of accident this is a four-track line over which trains are operated by signal indications. The main tracks from south to north are designated as tracks No. 1, No. 2, No. 3 and No. 4. Tracks Nos. 1 and 2 are some distance to the south of tracks Nos. 3 and 4. A secondary track designated as track No. 5 parallels track No. 4 on the north. The main tracks and other tracks in this vicinity are equipped with an overhead catenary system for the electric propulsion of trains. The accident occurred within interlocking limits on track No. 4, at a point 1.59 miles west of Broad Street Station and 0.91 mile east of the tower at Zoo Block Station. From the east on track No. 4 there are, in succession, a tangent 1,017 feet in length, a 4° curve to the right 190 feet, a tangent 485 feet and a 4°30' curve to the left 489 feet to the point of accident and 171 feet westward. From the west on track No. 4 there is a tangent 355 feet in length, and then the curve on which the accident occurred. The grade is 1.27 percent ascending westward.

Within interlocking limits at Zoo Block Station, westbound movements from main track No. 4 to main track No. 1 may be made through crossovers 25, 27, 33, 35 and 39. The east switch of crossover 25 is 0.76 mile east of the tower. Eastward movements from secondary track No. 5 to main track No. 2 may be made through crossovers 65, 53, and 47. The west switch of crossover 65 is 0.41 mile east of the tower.

Semi-automatic signals 18L and 32R, governing westbound movements on track No. 4, are, respectively, 1,501 feet and 306 feet east of the point of accident. Semi-automatic signals 54L and 32L, governing the movement of the engine involved, are, respectively, 2,167 feet and 511 feet west of the point of accident. Signals 32R and 32L are mounted on signal bridges, and signals 18L and 54L are mounted on masts. These signals are of the position-light type, and are continuously lighted. The involved aspects and corresponding indications and names are as follows:

Signal	Aspect	Indication	Name
18L	Three white lights in diagonal position to the right	Proceed prepared to stop at next signal. Train exceeding Medium speed must at once reduce to that speed.	Approach.

32R) 32L)	Three white lights in horizontal position	Stop.	Stop-signal.
32R) 54L)	Three white lights in horizontal position over three white lights in diagonal position to the right	Proceed prepared to stop at next signal. Slow speed within interlocking limits.	Slow-approach.

The interlocking at Zoo Block Station consists of an electro-pneumatic machine having 145 working levers. Approach, time, and detector locking are provided. An illuminated track diagram is provided, and is so arranged that yellow lights are displayed to indicate track occupancy. An emergency alarm whistle is provided.

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

DEFINITIONS

* * *

Medium Speed--Not exceeding one-half the speed authorized for passenger trains but not exceeding 30 miles per hour.

* * *

Slow Speed--Not exceeding 15 miles per hour.

* * *

606. Emergency Signals--Whistle or Horn.

Note--The signals prescribed are illustrated by "o" for the short sounds; "___" for the longer sounds.

Sound	Indication
(a) _____	All movements within interlocking limits--stop immediately.

* * *

663. A train or engine must stop clear of an interlocking signal indicating Stop. A train or engine must not pass a Stop-signal except when authorized * * *

The maximum authorized speed for passenger trains is 30 miles per hour. The maximum speed for the engine involved moving in backward motion is 25 miles per hour.

Description of Accident

No. 671, a west-bound first-class passenger train, consisted of one multiple-unit passenger-baggage car No. 4551 and three multiple-unit coaches, in the order named. All cars were of steel construction. This train was operated from the front control compartment of the first car. This train departed from Broad Street Station at 3:43 p. m., and while moving on track No. 4 it passed signal 18L, which displayed approach, and stopped about 3:47 p. m. at signal 32R, which displayed stop. Soon afterward, the indication of signal 32R changed from stop to proceed-prepared-to-stop-at-next-signal, then this train proceeded and had moved westward a distance of about 310 feet and had just stopped when it was struck by engine 5704.

Engine 5704, an east-bound steam engine headed westward and en route from the enginehouse to Broad Street Station, moving on secondary track No. 5, passed signal 54L, which displayed proceed-prepared-to-stop-at-next-signal, proceeded through crossover 65 to track No. 4, passed signal 32L, which displayed stop, ran through the east switch of crossover 25, which was lined for the movement of No. 671 through this crossover, and while moving on track No. 4 at an estimated speed of 8 miles per hour it struck No. 671.

The front end of the first unit of No. 671 and the tender of engine 5704 were badly damaged. The second and third units of No. 671 were considerably damaged.

The engineer of No. 671 was killed, and the conductor and the flagman were injured.

The weather was clear at the time of the accident, which occurred about 3:49 p. m.

Discussion

About 3:45 p. m. the train director at Zoo Block Station instructed the leverman to line the route for engine 5704, an east-bound engine headed westward and en route from the enginehouse to Broad Street Station, to proceed from secondary

track No. 5 through crossovers 65, 53 and 47 to main track No. 2. The leverman placed the levers in control of the signals and the switches involved in position for the route to be lined for this movement, except that he overlooked placing the lever in control of the west switch of crossover 53 in position for this switch to be lined for entry to the crossover. The train director and the leverman were not aware of the error until they observed that engine 5704 had passed the west switch of crossover 53 and was proceeding eastward on track No. 4. At that time No. 671, a west-bound passenger train moving on track No. 4, had stopped at signal 32R, which displayed stop. Then the leverman lined the route for No. 671 to proceed from track No. 4 through crossovers 25, 27, 33, 35 and 39 to track No. 1. Signal 32R displayed proceed-at-slow-speed for No. 671 and signal 32L displayed stop for engine 5704. Immediately after the route was lined for No. 671, this train proceeded. Then the leverman observed that engine 5704 had passed signal 32L, and he sounded the alarm whistle signal for all movements within interlocking limits to stop. No. 671 had just stopped with the front end of the first unit standing 306 feet west of signal 32R and 511 feet east of signal 32L when it was struck by engine 5704. The engineer of No. 671 was killed.

The crew of engine 5704 consisted of an engineer and a fireman. These employees estimated the speed of their engine as about 15 miles per hour when it entered track No. 4 at the east switch of crossover 65. The engineer said that he expected the switches of crossovers 53 and 47 to be lined for his engine to proceed from track No. 4 to track No. 2, but, when the fireman informed him that the engine had passed the west switch of crossover 53, which was lined for movement on track No. 4, he thought the train director intended for his engine to proceed on that track. The enginemen said they were maintaining a lookout eastward, but they did not see the stop indication displayed by signal 32L and they were not aware of anything being wrong until the fireman observed that No. 671 was closely approaching on track No. 4. Then the fireman called a warning to the engineer, who immediately moved the brake valve to emergency position, but the collision occurred before the engine could be stopped.

Cause

It is found that this accident was caused by failure to operate engine 5704 in accordance with an interlocking signal indication.

Dated at Washington, D. C., this thirteenth day of October, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.