INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2755

THE LEHIGH VALLEY RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT CRANFORD, N. J., ON

DECEMBER 22, 1943

SUMMARY

Railroad:	Lehigh Valley	
Date:	December 22, 1943	
Location:	Cranford, N. J.	
Kind of accident:	Rear-end collision	
Trains involved:	Freight	: Passenger equipment
Train numbers:	Extra 2142 West	: Extra 11 West
Engine numbers:	2142	: Gas-electric 11
Consist:	4 cars, caboose	: Motor-car, coach
Estimated speed:	Standing	: About 30 m. p. h.
Operation:	Automatic block-signal and automatic train-stop system	
Track:	Double; tangent; 0.28 percent descending grade westward	
Weather:	Clear	
Time:	About 8:42 p. m.	
Casualties:	1 killed	
Cause:	Failure properly to control speed of following train in accordance with signal indications, and failure to obey flagging signals	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2755

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

THE LEHIGH VALLEY RAILROAD COMPANY

February 2, 1944.

Accident at Cranford, N. J., on December 22, 1943, caused by failure properly to control speed of following train in accordance with signal indications, and by failure to obey flagging signals.

REPORT OF THE COMMISSION[1]

PATTERSON, Chairman:

On December 22, 1943, there was a rear-end collision between a freight train and a passenger-equipment train on the Lehigh Valley Railroad at Cranford, N. J., which resulted in the death of one employee.

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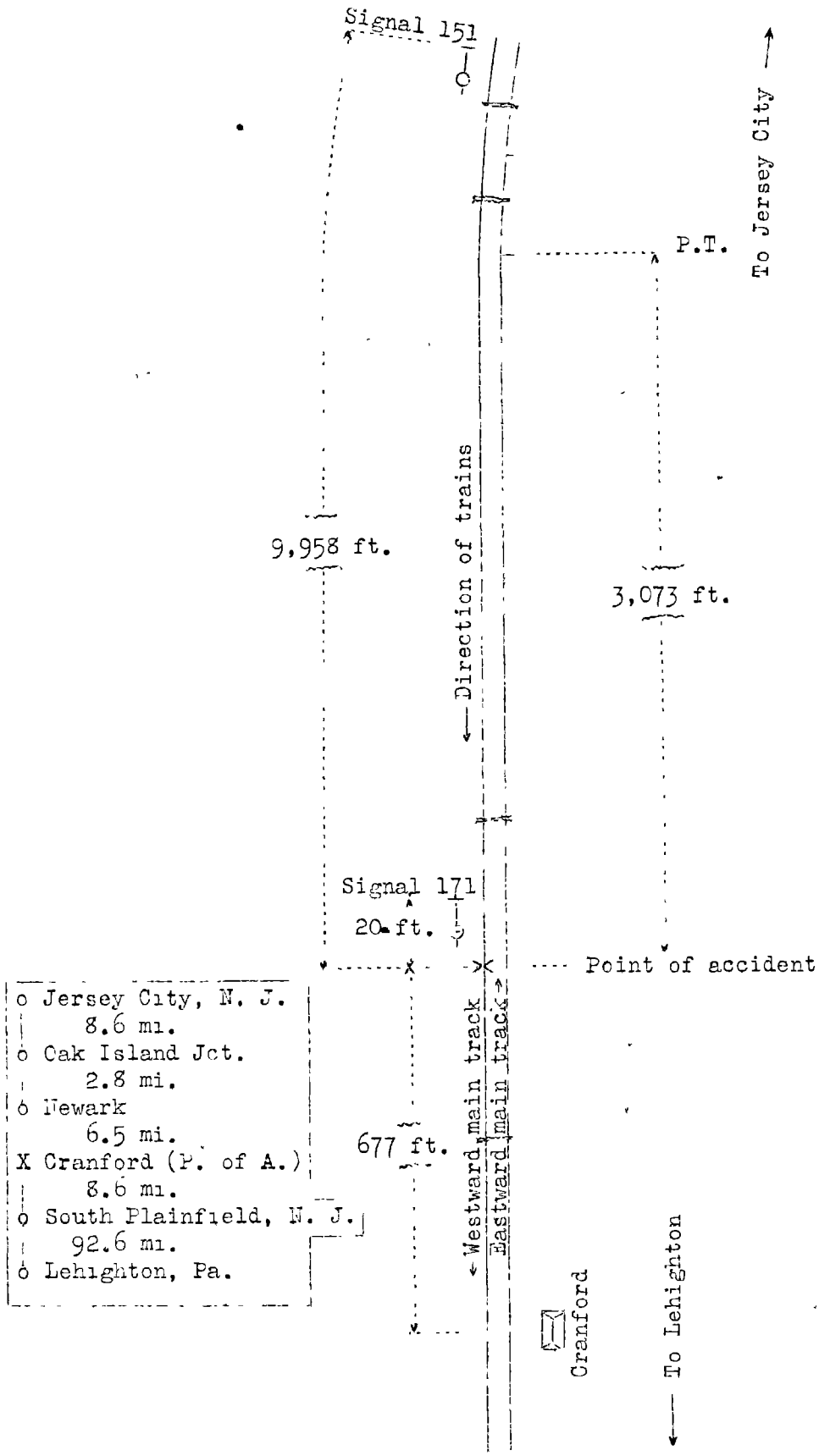
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Chairman Patterson for consideration and disposition.



Inv-2755
Lehigh Valley Railroad
Cranford, N. J.
December 22, 1943

Location of Accident and Method of Operation

This accident occurred on that part of the New York Division extending between Jersey City, N. J., and Lehighton, Pa., 119.1 miles. In the immediate vicinity of the point of accident this was a double-track line over which trains moving with the current of traffic were operated by an automatic block-signal system, the indications of which superseded time-table superiority, and by an automatic train-stop system. A wye for the turning of trains and engines was located 4.96 miles east of Cranford. The accident occurred on the westward main track at a point 677 feet east of the station. From the east there was a tangent 3,073 feet to the point of accident and a considerable distance beyond. The grade for west-bound trains was 0.28 percent descending.

Signals 151 and 171, which governed west-bound movements on the westward main track, were located, respectively, 9,958 and 20 feet east of the point of accident. These signals were of the position-light type and were approach lighted. The involved aspects and corresponding indications and names of these signals were as follows:

Signal	Aspect	Indication	Name
151	Three white lights, diagonal.	Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	Approach.
171	Three white lights, horizontal, over one white light.	Stop; then proceed at restricted speed.	Stop and proceed.

Automatic train-stop inductors were located 75 feet east of each signal. Inductors for back-up movements were not provided in connection with these signals.

DEFINITIONS

Medium Speed.--One-half authorized speed, at point involved, unless otherwise provided, but not exceeding 30 miles per hour.

Reduced Speed.--Proceed prepared to stop short of train or obstruction.

* * *

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or switch not properly lined, and to look out for broken rail.

Operating rules read in part as follows:

15. The explosion of two torpedoes is a signal to proceed at reduced speed. * * *

16. Communicating Signals

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

SOUND	INDICATION
* * *	
(b) o o	When running--stop at once.
* * *	
(f) o o o o	When running--reduce speed.
* * *	

35. The following signals will be used by flagmen:

* * *

Night signals--A red light,
Torpedoes and
Fusees.

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes and when necessary, in addition, displaying lighted fusees. When recalled and safety to the train will permit, he may return.

When the conditions require, he will leave the torpedoes and a lighted fusee.

* * *

Brake and Train Air Signal instructions read in part as follows:

40. BACK UP HOSE--* * * This is a device, connected by a standard hose coupling, to the air brake hose, by means of which the trainman on the leading car is enabled to apply the brakes either in service or emergency applications, * * *

* * *

When cars are pushed by an engine, the trainmen in charge of the movement must know that the air brake and train air signal are coupled thru from the front of the leading car to the engine, and in an operative condition; that the Back Up Hose is coupled to the front end of the leading car, and is in good working order. The trainman riding the leading car will then take a conspicuous position on the front end, and signal the engineman by the use of both communicating air signals and hand signals.

The engineman will control the movement in accordance with signals from the trainman on the front end of the leading car.

When necessary to stop, the trainman on the front end of the leading car will signal to the engineman by means of the communicating air signal. If the engineman does not quickly respond to this signal, the trainman will be held responsible for stopping the movement at once by opening cut-out cock; also to stop the movement in emergencies.

* * *

Time-table special instructions read in part as follows:

AUTOMATIC TRAIN STOP

4701. * * *

* * *

Locomotives and motor cars must not be operated in backward movement without orders from the Superintendent, except in territory equipped with back-up inductors * * *

Time-table special instruction 4701 was in effect in the territory involved.

The maximum authorized speed for gas-electric motor car 11 was 50 miles per hour.

Description of Accident

Extra 2142 West, a west-bound freight train, consisted at the time of the accident of engine 2142, four loaded cars and a caboose. This train departed from Newark, N. J., 6.5 miles east of Cranford and the last open office, at 8:03 p. m., and stopped on the westward main track at Cranford about 8:15 p. m., with the rear end standing 20 feet west of signal 171. About 27 minutes later the rear end was struck by Extra 11 West.

Extra 11 West, a west-bound passenger-equipment train, consisted of a coach and gas-electric motor-car M-11, in the order named. Both were of steel construction. This train, making a back-up movement, was en route from Newark to South Plainfield, N. J., 8.6 miles west of Cranford. It departed from Newark at 8:30 p. m., passed signal 151, which displayed approach, passed signal 171, which displayed stop-and-proceed, and while moving at an estimated speed of 30 miles per hour it collided with the rear end of Extra 2142 West. The brakes of this train had functioned properly en route.

The coach telescoped the caboose of Extra 2142 about 10 feet. The west end of the coach was considerably damaged.

It was clear at the time of the accident, which occurred about 8:42 p. m.

The conductor of Extra 2142 was killed.

According to data furnished by the railroad, the coach was 75 feet 6 inches in length, and gas-electric motor-car M-11 was 73 feet 11-1/2 inches in length. A back-up headlight was provided on the rear end of the coach, and a standard back-up nose, which consisted of a pipe provided with a whistle and an emergency cock, was coupled to the rear brake-pipe hose.

Discussion

Rules governing operation on this line provide that when a train stops under circumstances in which it may be overtaken by another train the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, place two torpedoes and, when necessary, in addition, display lighted fusees. Under the rules governing operation in automatic block-signal territory, a stop-and-proceed indication requires a train to stop at the signal, then it may proceed but must be prepared to stop short of a preceding train or an obstruction. When torpedoes are exploded trains must be operated prepared to stop short of a train or an obstruction.

Extra 2142 West stopped at Cranford with its rear end standing 20 feet west of signal 171. About 27 minutes later, while 10 cars were being set off, the rear end was struck by Extra 11 West.

As soon as Extra 2142 stopped at Cranford, the flagman proceeded to the rear to provide flag protection. He had in his possession a lighted white lantern, a lighted red lantern,

torpedoes and fusees. He reached a point about 2,300 feet to the rear of his train and placed two torpedoes on the rail, then proceeded westward toward the rear of his train in order to avoid delay when his train was ready to proceed. He had reached a point about 400 feet to the rear of his train when he observed a west-bound train approaching. He gave stop signals with his lanterns, but they were not acknowledged. He did not display a lighted fusee, because he thought the speed of the approaching train was being reduced. He was stationed on the north side of the westward main track and was out of the view of the engineer of the following train.

Extra 11 West, consisting of a coach and a gas-electric motor-car, in the order named, was being operated in a back-up movement. The crew consisted of a conductor, a brakeman and an engineer. These employees understood that an approach indication required the speed of the train be reduced to one-half the maximum authorized speed, but not to exceed 30 miles per hour, and that a stop-and-proceed indication required a train to be stopped short of the signal, then it could proceed prepared to stop short of a preceding train or an obstruction. Because this train was being operated in backward motion the automatic train-stop receiver was on the side opposite to the inductors. A back-up hose was provided at the front of the train in the direction of its movement. The communicating air-signal whistle was operative, and the brakes had functioned properly.

The engineer of Extra 11 said that he was maintaining a lookout toward the front of the train but was unable to see the indications displayed by signals 151 and 171 because of the cars ahead of him and the signals being on the opposite side; therefore, he was depending upon signals from the other members of the crew for information with regard to controlling the speed. Under these conditions, the conductor and the brakeman were required to control the movement by lantern signals, communicating whistle signals or by opening the valve of the back-up hose. They were stationed inside the coach at the front end and maintaining a lookout ahead. Both said that signal 151 displayed approach, and the brakeman pulled the communicating signal cord once; however, speed was not reduced, but they took no further action to reduce the speed. When Extra 11 was about 4,000 feet east of signal 171, the speed was about 30 miles per hour, and the conductor and the brakeman observed the signal displaying stop-and-proceed and the lighted markers of Extra 2142 just beyond. Torpedoes were exploded about 2,300 feet east of signal 171, and the brakeman said that he pulled the signal cord twice. The engineer said that throughout a distance of several miles east of signal 171, the communicating whistle did not sound until his train was about 250 feet east of signal 171, then two blasts sounded. He immediately moved the brake valve to emergency position, but the collision occurred before the brakes became effective. The conductor said that he did not sound the communicating signal when he first observed signal 171 as he did not want to stop the train that distance east of the signal; furthermore, he depended upon the engineer being able to see signal indications. The conductor thought that

Extra 11 was about 500 feet east of signal 171 when he became alarmed, and proceeded to the front platform and opened the emergency valve of the back-up hose. When the engineer moved the brake valve to emergency position he found no indication that the brakes had been applied from any other source. If signals had been given either by the communicating whistle or lanterns to reduce speed at signal 151 and to stop east of signal 171, or if the valve of the back-up hose had been opened a sufficient distance east of signal 171, this accident would have been averted. If proper action had been taken when the torpedoes were exploded, this accident would have been averted.

Inductors were provided only on the north side of the westward main track, and motor-car 11 was equipped with automatic train-stop devices which were operative only when it was in forward motion; therefore, Extra 11 did not receive the protection for which the automatic train-stop system was designed. All members of the crew understood that their train was not permitted to be operated in back-up motion unless authorized to do so by the superintendent. The conductor said that he did not turn his train at a wye 4.96 miles east of Cranford, because it was blocked with cars. No one except the members of the crew knew that Extra 11 was proceeding in backward motion west of Hillside wye, 1.54 miles west of Newark. This crew was assigned to short turn-around service, and on the last trip each day the train was operated in back-up motion from Newark to the wye. The engineer and the conductor had an understanding with each other that when the wye was blocked with cars they would continue westward without turning the train. The dispatcher said that if the conductor or the engineer had asked for instructions, he would have instructed them to proceed to Oak Island Jct., 2.8 miles east of Newark, to turn at that point. If this train had been turned, the automatic train-stop equipment on the motor-car would have been operative, and the engineer would have been able to observe the indications displayed by signals 151 and 171.

Cause

It is found that this accident was caused by failure properly to control the speed of the following train in accordance with signal indications, and by failure to obey flagging signals.

Dated at Washington, D. C., this second day of February, 1944.

By the Commission, Chairman Patterson.

W. P. BARTEL,

(SEAL)

Secretary.