

RAILROAD ACCIDENT INVESTIGATION

Report No 3847

THE PENNSYLVANIA RAILROAD COMPANY

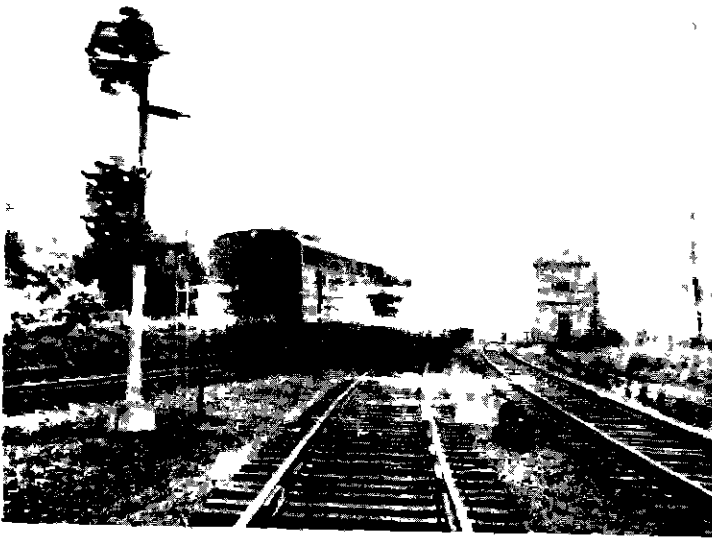
LINDEN, PA

JUNE 13, 1959

INTERSTATE COMMERCE COMMISSION

Washington

PLATE 1



Westward view from point on auxiliary track Linden Branch
to signal 8L are to the left of picture Signal 8LC is to the right

PLATE 2



Locomotive of Extra 9521 West is shown stopped against
third diesel-electric unit of Extra 9592 West

SUMMARY

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DATE	June 13, 1959	
RAILROAD	Pennsylvania	
LOCATION	Linden, Pa	
KIND OF ACCIDENT	Side collision	
TRAINS INVOLVED	Freight	Freight
TRAIN NUMBERS	Extra 9592 West	Extra 9521 West
LOCOMOTIVE NUMBERS	Diesel-electric units 9592A, 9571B, 2020B, 9729A	Diesel-electric units 9521A, 9506B
CONSISTS	83 cars, caboose	111 cars, caboose
SPEEDS	Standing	5 - 10 m p h
OPERATION	Interlocking	
TRACKS	Single, 2°50' curve, 0.11 percent descending grade westward	Double, 4°15' curve, 0.07 percent descending grade westward
WEATHER	Clear	
TIME	8:27 a m	
CASUALTIES	3 injured	
CAUSE	Train entering a route of interlocking immediately in front of an approaching train for which the route was lined, as a result of failure to operate the train in accordance with a signal indica- tion	

INTERSTATE COMMERCE COMMISSION

REPORT NO 3847

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

THE PENNSYLVANIA RAILROAD COMPANY

September 18, 1959

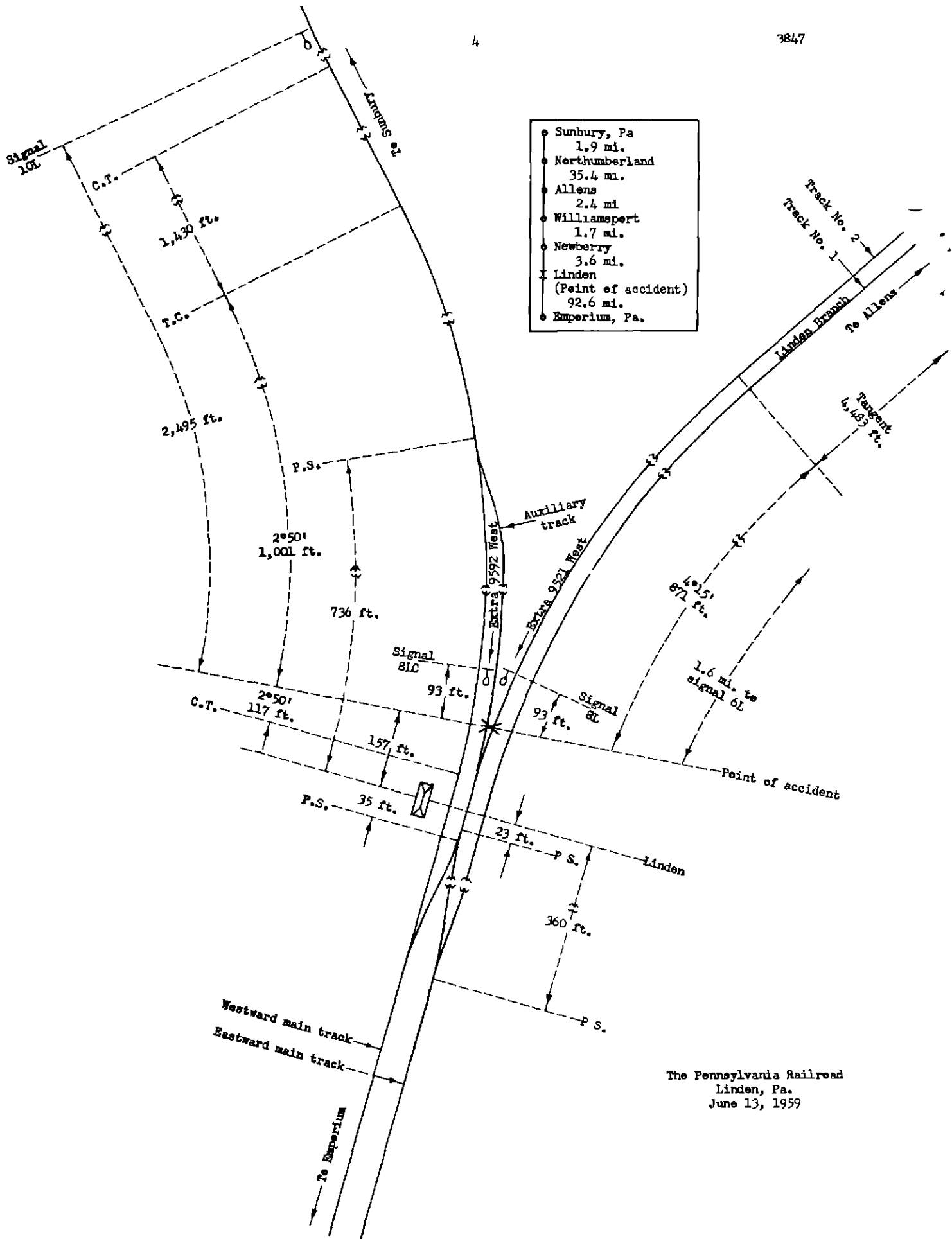
Accident at Linden, Pa , on June 13, 1959, caused by a train entering a route of interlocking immediately in front of an approaching train for which the route was lined, as a result of a failure to operate the train in accordance with a signal indication

REPORT OF THE COMMISSION¹

FREAS, Commissioner

On June 13, 1959, at Linden, Pa , there was a side collision between two freight trains on the Pennsylvania Railroad, which resulted in the injury of 3 train-service employees

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



The Pennsylvania Railroad
Linden, Pa.
June 13, 1959

Location of Accident and Method of Operation

This accident occurred on that part of the Northern Region extending between Sunbury and Emporium, Pa., 137.6 miles. An interlocking is located at Linden, 45 miles west of Sunbury. Movements within the interlocking are governed by signal indications and controlled from a station located north of the interlocking. The switches within the interlocking are power-operated. From the east, a single-track line extends westward through the interlocking to the westward main track of a double-track line. An auxiliary track parallels the single-track line on the south within interlocking limits and connects with the eastward main track of the double-track line. The east switch of this auxiliary track is 736 feet east of the interlocking station. A crossover connects the auxiliary track and the westward main track of the double-track line. The east switch of this crossover is facing point for westbound movements on the auxiliary track and it is 35 feet west of the interlocking station. A double-track line designated as the Linden Branch, 7.7 miles in length, diverges to the south from the single-track line at Allens and extends to the interlocking at Linden. From north to south, the tracks of the Linden Branch are designated as tracks No. 2 and No. 1. At Linden, tracks No. 2 and No. 1 converge with the auxiliary track at switches located, respectively, 23 feet and 360 feet west of the interlocking station. These switches are trailing-point for westbound movements.

The accident occurred 157 feet east of the interlocking station at Linden, at the fouling point of the auxiliary track and track No. 2 of the Linden Branch.

From the east on the single-track line there are, in succession, a tangent 1,430 feet in length, a 2°50' curve to the right 1,001 feet to the point of accident and 117 feet westward. From the east on the Linden Branch there are, in succession, a tangent 4,483 feet in length, and a 4°15' curve to the left 871 feet to the point of accident. In this vicinity the average grades for westbound trains on the single-track line and the Linden Branch are 0.11 percent descending and 0.07 percent descending, respectively.

Semi-automatic signal 10L governing westbound movements on the single-track line and semi-automatic signal 8LC governing westbound movements on the auxiliary track are located, respectively, 2,495 feet and 93 feet east of the point of accident. Semi-automatic signals 6L and 8L governing westbound movements on track No. 2 of the Linden Branch are located, respectively, 1.6 miles and 93 feet east of the point of accident. These signals are of the position-light type, are continuously lighted, and are controlled from the interlocking station at Linden. Signal 8LC is of the dwarf type. Aspects applicable to this investigation and the corresponding indications and names are as follows:

Signal	Aspect	Indication	Name
10L	Three amber lights in horizontal position over three amber lights in diagonal position to the left	Proceed at Restricted Speed	Restricting
8LC	Two white lights in horizontal position	Stop	Stop-signal
6L	Three amber lights in diagonal position to the right over three amber lights in vertical position	Proceed approaching next signal at Medium speed	Approach-medium

8L	Three amber lights in horizontal position over three amber lights in vertical position	Proceed, Medium speed within interlocking limits	Medium-clear
	Three amber lights in horizontal position	Stop	Stop-signal

The controlling circuits are so arranged that when the route is lined through the interlocking for a westbound movement from track No. 2 of the Linden Branch to the westward main track and for a westbound movement from the single-track line to signal 8LC on the auxiliary track, signal 6L will display an "Approach-medium" aspect, signal 8L will display a "Medium-clear" aspect, signal 10L will display a "Restricting" aspect, and signal 8LC will display a "Stop" aspect. In the event a movement occupies the auxiliary track between signal 8LC and the crossover, signal 8L will display a "Stop" aspect.

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

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

Restricted Speed -- Not exceeding 15 miles per hour prepared to stop short of train, obstruction or switch not properly lined and to look out for broken rail.

27 A signal imperfectly displayed * * *, must be regarded as the most restrictive indication that can be given by that signal * * *.

34 All members of the crew must, when practicable, as soon as the next signal ahead affecting the movement of their train or engine becomes visible, call the indication to each other by name, and thereafter continue to observe the signal and call any change of indication until it is passed. If the engineman or other member of the crew fails to control the speed of the train or engine in accordance with the signal indication, other members of the crew will take necessary action to insure the safety of the train.

663 A train or engine must stop clear of an interlocking signal indicating Stop * * *.

The maximum authorized speed for freight trains in the vicinity of the point of accident is 45 miles per hour on the single-track line and 30 miles per hour on the Linden Branch.

Description of Accident

Extra 9592 West, a westbound freight train, consisted of diesel-electric units 9592A, 9571B, 2020B, and 9729A, coupled in multiple-unit control, 57 cars and a caboose. This train departed from Northumberland Yard, 5.1 miles west of Sunbury, at 6:24 a. m. and stopped at Williamsport, 39.5 miles west of Sunbury, where 26 cars were added to the train. It then departed from Williamsport, passed Newberry, the last open office, 41.4 miles west of Sunbury, at 8:20 a. m., passed signal 10L which displayed a "Restricting" aspect, entered the auxiliary track at Linden interlocking, passed signal 8LC which displayed a "Stop" aspect and, about 8:25 a. m., it stopped within interlocking limits at Linden with the front end of the locomotive 5 feet west of the switch of track No. 2 of the Linden Branch. About 2 minutes later the fourth diesel-electric unit was struck by Extra 9521 West.

Extra 9521 West, a westbound freight train, consisted of diesel-electric units 9521A and 9506B, coupled in multiple-unit control, 111 cars and a caboose. This train passed Allens, where it entered the Linden Branch, at 8 15 a m, passed signal 6L which displayed an "Approach-medium" aspect, passed signal 8L which displayed a "Stop" aspect, and while moving at a speed of 5 to 10 miles per hour it struck Extra 9592 West.

The 1st diesel-electric unit of Extra 9521 West was derailed. It stopped with the front end 58 feet west of the point of collision and adjacent to the 3rd diesel-electric unit of Extra 9592 West. No other equipment was derailed. The 2nd unit of Extra 9521 West stopped with the right front corner against the 4th unit of Extra 9592 West. The 1st unit of Extra 9521 West was somewhat damaged, and the 2nd unit of Extra 9521 West and the 4th unit of Extra 9592 West were slightly damaged.

The engineer, the fireman, and the front brakeman of Extra 9521 West were injured.

The weather was clear at the time of the accident, which occurred about 8 27 a m.

The locomotives and the cabooses of the trains involved, and the interlocking station, were provided with radio-telephone equipment.

Discussion

At 8 17 a m, as Extra 9592 West and Extra 9521 West were approaching the interlocking at Linden, the operator at that point lined routes in the interlocking for the movement of Extra 9592 West from the single-track line to signal 8LC on the auxiliary track, and for the movement of Extra 9521 West from track No. 2 to the westward main track.

As Extra 9592 West was approaching Linden the enginemen and the front brakeman were in the control compartment at the front of the locomotive. The conductor and the flagman were in the caboose. The brakes of this train had been tested and had functioned properly when used en route. As the train passed signal 10L, which indicated "Proceed at Restricted speed," and entered the auxiliary track the speed was reduced to about 15 miles per hour. When the train entered the auxiliary track, the engineer assumed that the route was lined for movement of the train to the eastward main track of the double-track line west of Linden interlocking, and that he would receive a train order at the interlocking station to authorize the movement of the train against the current of traffic. The members of the crew on the locomotive said that as the train moved on the auxiliary track, they were unable to determine the aspect being displayed by signal 8LC, because of reflection of sun rays on the lenses of the signal, until the locomotive reached a point about 50 feet east of the signal. The engineer said that at this time he saw the signal indicating "Stop," and that he immediately made an emergency application of the brakes. The train passed signal 8LC, trailed through the switch connecting track No. 2 with the auxiliary track and stopped with the front end of the locomotive 5 feet west of the switch. The enginemen and the front brakeman immediately alighted from the locomotive, and the engineer proceeded to the interlocking station to inform the operator that the locomotive had passed signal 8LC and was fouling track No. 2. About 2 minutes after the train stopped, and before the front brakeman or the fireman was able to provide flagging protection against westbound trains moving on track No. 2, the fourth diesel-electric unit was struck by Extra 9521 West.

The operator at Linden interlocking said that Extra 9521 West had passed signal 6L shortly before the locomotive of Extra 9592 West passed signal 8LC. He said that when the engineer of Extra 9592 West informed him that the locomotive of that train was fouling track No. 2, he made an unsuccessful attempt to communicate by radio-telephone with members of the crew of Extra 9521 West to warn them to stop their train.

As Extra 9521 West was approaching the point where the accident occurred the enginemen and the front brakeman were in the control compartment at the front of the locomotive. The fireman, a qualified engineer, was operating the locomotive. The conductor and the flagman were in the caboose. The brakes of this train had been tested and functioned properly. As the train was approaching the interlocking at Linden, the members of the crew on the locomotive observed signal 6L displaying an "Approach-medium" aspect, and the speed of the train was 34 miles per hour, according to the tape of the speed-recording device, as it passed that signal. Shortly after the locomotive had passed signal 6L, the engineer observed Extra 9592 West moving on the auxiliary track and he maintained a lookout to ascertain whether that train was fouling the route of Extra 9521 West. He said when he determined that the train ahead was fouling track No. 2 he called a warning to the fireman, who immediately applied the brakes in emergency at a distance of about 870 feet east of the point of accident. The fireman said that immediately before the brakes were applied, he heard the operator at Linden interlocking call "9521" over the radio-telephone. The enginemen and the front brakeman alighted from the locomotive before the collision occurred, and the fireman estimated that the speed of Extra 9521 West had been reduced to slightly less than 10 miles per hour at the time of the collision.

After the accident occurred an examination of the signals involved disclosed that they functioned as intended. Observations made of signal 8LC, between 8 20 a m and 8 40 a m 10 days after the accident occurred, disclosed that eastward from a point 426 feet east of the signal, the aspect being displayed by the signal could not be determined because of the reflection of sun rays on the signal lenses. Observations made of signal 8L disclosed that the aspect being displayed by that signal could be determined throughout a distance of about 950 feet east of the signal.

Extra 9592 West was moving on a restricting signal indication as it approached signal 8LC and was required to be operated in such manner that it could be stopped short of this signal. The most restrictive indication that can be given by signal 8LC is "Stop." In the instant case, when the members of the crew on the locomotive of Extra 9592 West were unable to determine the indication of signal 8LC as the train was approaching that signal, they were required to regard signal 8LC as indicating "Stop," and the train should have been stopped short of that signal.

Cause

This accident was caused by a train entering a route of interlocking immediately in front of an approaching train for which the route was lined, as a result of failure to operate the train in accordance with a signal indication.

Dated at Washington, D. C., this eighteenth
day of September, 1959

By the Commission, Commissioner Freas

(SEAL)

HARDOLD D. McCOY,
Secretary