

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2569
THE PENNSYLVANIA RAILROAD COMPANY
REPORT IN RE ACCIDENT
AT SEWARD, PA., ON
FEBRUARY 17, 1942

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SUMMARY

Railroad: Pennsylvania

Date: February 17, 1942

Location: Seward, Pa.

Kind of accident: Head-end collision

Trains involved: Express : Freight

Train numbers: Passenger Extra : Extra 6935 East
962 West

Engine numbers: 962 : 6935

Consist: 11 cars, cabooses : 41 cars, cabooses

Speed: 50-60 m. p. h. : 25-35 m. p. h.

Operation: Movements with current of traffic
by automatic block and cab-signal
system; movements against current
of traffic by train orders and
manual block system

Track: Six tracks; 2°30' curve;
practically level

Weather: Clear

Time: 2:05 p. m.

Casualties: 4 killed; 3 injured

Cause: Accident caused by failure to comply
with provisions of a holding order,
and by permitting a train to enter
block occupied by an opposing train

Recommendation: That the Pennsylvania Railroad Company
provide an adequate train order and
manual block system or other suitable
protection for operation of trains
against current of traffic

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2569

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

THE PENNSYLVANIA RAILROAD COMPANY

May 12, 1942.

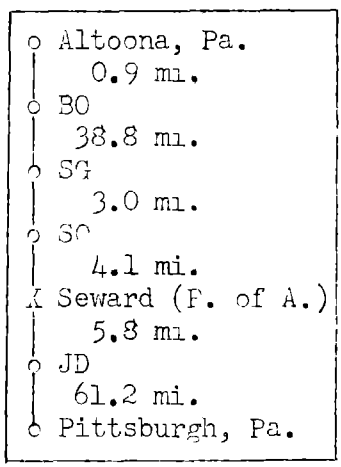
Accident at Seward, Pa., on February 17, 1942, caused by failure to comply with the provisions of a holding order, and by permitting a train to enter a block which was occupied by an opposing train.

REPORT OF THE COMMISSION ¹

PATTERSON, Commissioner:

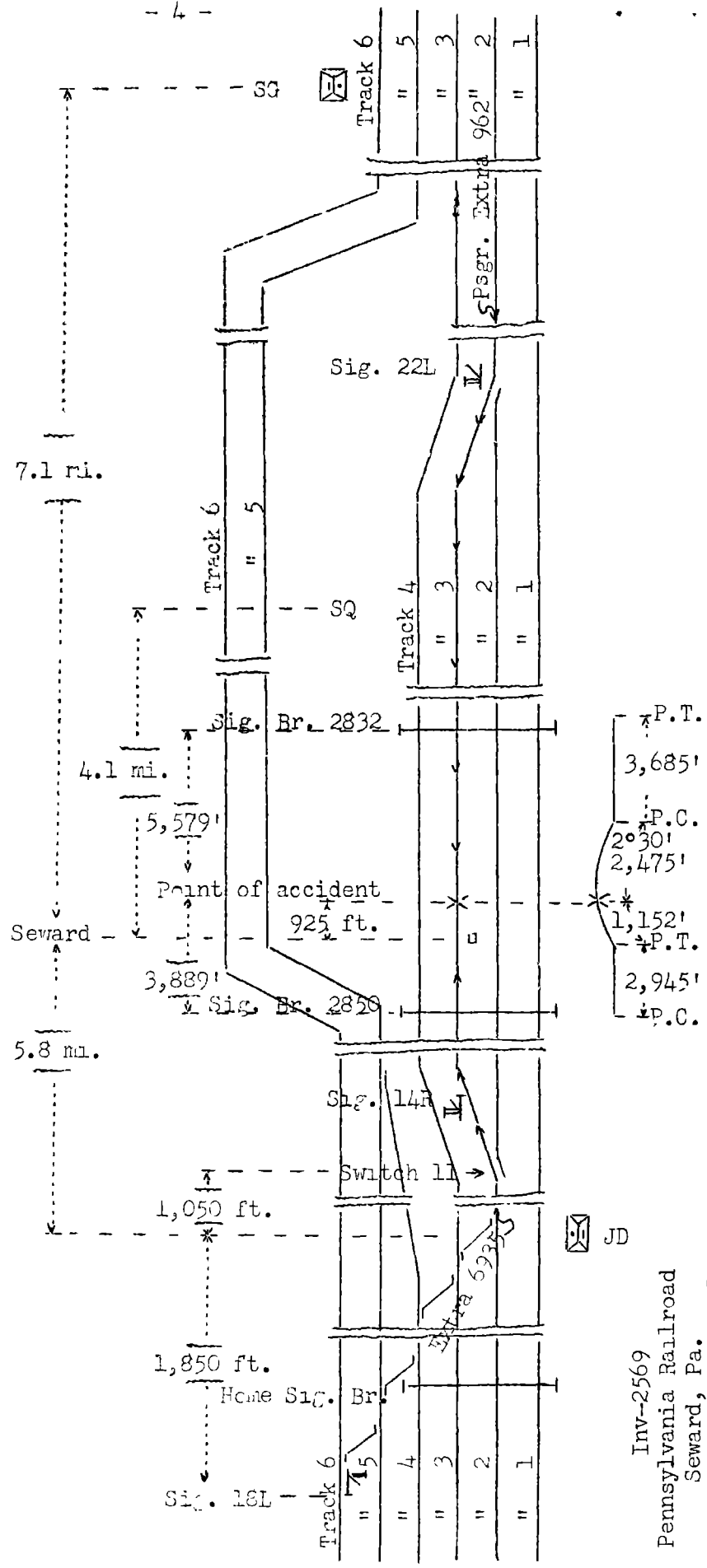
On February 17, 1942, there was a head-end collision between an express train and a freight train on the Pennsylvania Railroad at Seward, Pa., which resulted in the death of four employees and the injury of one express messenger and two employees. This accident was investigated in conjunction with a representative of the Pennsylvania Public Utility Commission.

¹Under 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.



To Altoona →

← To Pittsburgh



Inv-2569
 Pennsylvania Railroad
 Seward, Pa.
 February 17, 1944

Location of Accident and Method of Operation

This accident occurred on that part of the Pittsburgh Division which extends between EC block station, Altoona, and Pittsburgh, Pa., a distance of 112.9 miles. In the immediate vicinity of the point of accident this is a 6-track line. Tracks 1 to 4, inclusive, are laid on a hillside cut on the south side of the Conemaugh River. Tracks 5 and 6 are laid on the north side of the river. On tracks 1 to 4, inclusive, trains moving with the current of traffic are operated by an automatic block and cab-signal system, the indications of which supersede time-table superiority, and trains moving against the current of traffic are operated by train orders and a manual-block system. Between SQ and JD, located, respectively, 4.1 miles east and 5.8 miles west of Seward, the main tracks are numbered consecutively from south to north. Tracks 1 and 2 are eastward freight, track 3, eastward passenger, track 4, westward passenger, and tracks 5 and 6, westward freight. At SQ, tracks 2 and 3 converge, and track 2 is the eastward passenger track between SQ and SG, a distance of 3 miles. The accident occurred on track 3 at a point 925 feet east of the station at Seward. As the point of accident is approached from the east there is a tangent 3,685 feet in length, which is followed by a 2°30' curve to the left 2,475 feet to the point of accident and 1,152 feet beyond. As the point of accident is approached from the west there is a tangent 2,945 feet in length, which is followed by the curve on which the accident occurred. At the point of accident the grade is practically level.

Interlockings are located at SG, SQ and JD. The interlocking at SQ is controlled by the signalman at SG. Westward home signal 22L at SQ, which governs west-bound movements on track 2 and diverging west-bound movements on track 3, is located at the converging point of tracks 2 and 3. This signal is a 2-indication, position-light, dwarf signal. The indications displayed by this signal and their corresponding names are as follows:

<u>Name</u>	<u>Indication</u>
Restricting	Proceed at restricted speed
Stop	Stop-signal

Signal bridges 2832 and 2850 are located, respectively, 5,579 feet east and 3,889 feet west of the point of accident. The automatic signals on these bridges are of the position-light type and are approach-lighted. Eastward home signal 18L at JD, which governs east-bound movements entering the interlocking on track 6, is located 1,850 feet west of the tower. Switch 11, which is located 1,050 feet east of the tower at JD, is facing-point for east-bound movements and its normal position is for movement from track 2 to track 3.

Operating rules read in part as follows:

SPEEDS

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.

MOVEMENT BY TRAIN ORDERS

221b. * * *

Before a train order is issued to hold trains the fixed signal at the point at which the trains are held must be displayed at "stop" for the track and in the direction of the approaching train and the operating lever blocked by the standard blocking device.

FORMS OF TRAIN ORDERS

J Holding Order

* * *

(5) Hold all _____ ward trains clear of _____ track between A and B.

When a train has been so held it must not proceed until the order to hold is annulled or an order given to the operator in the form No 2 Eng 592 may go.

These orders will be addressed to the operator and acknowledged in the usual manner except that the response "complete" must not be given by the dispatcher until the operator has placed the fixed signal at "stop" for the track and in the direction of the approaching train at the point at which the train is to be held.

D-R

Providing for a Movement Against the Current of Traffic

- (1) No 1 Eng 461 has right over opposing trains on No 2 track C to F.

* * *

A train must not be moved against the current of traffic until holding orders have been issued and the track on which it is run has been cleared of opposing trains.

Under these orders the designated train must use the track specified between the stations named.

FIXED SIGNALS

<u>Name</u>	<u>Indication</u>	<u>Aspect</u>	<u>Rule No.</u>
Train-order	Orders	Yellow	294

MANUAL BLOCK SYSTEM

D-308. When a train is turned out against the current of traffic, manual block system rules must be observed; Rules 316 or 317 to apply as may be designated by special instructions.

317. (For absolute block for opposing movements and permissive block for following movements on the same track.)

Before admitting a passenger train to a block, the signalman in charge of the block station or block-limit station at the entrance of the block must know that the block is clear of all trains and that no other train has been given permission or a signal to enter the block. Signals governing opposing movements, where provided,

must display Stop-Signal. The signalman will then display a Clear-Block signal for the train to be admitted to the block. * * *

* * *

Time-table special instruction No. 2903 provides that Rule 317 is applicable for all movements against the current of traffic in the territory and on the track involved.

The block involved extends between JD and SG, a distance of 12.9 miles.

In the vicinity of the point of accident the maximum authorized speeds are 65 miles per hour for passenger trains and 50 miles per hour for freight trains.

Description of Accident

Passenger Extra 962 West, a west-bound express train, consisted of engine 962, 11 express cars and a caboose, in the order named. All cars and the caboose were of steel construction. A terminal air-brake test was made at Altoona, 46.8 miles east of Seward, and the brakes functioned properly en route. At SG this train received manual block authority to proceed on track 2 from SG to SQ and on track 3 from SQ to JD, and copies of train order No. 228, Form 19, which read as follows:

Pagr Ex 962 west has right
over opposing trains on
eastward Pagr track SG to JD

Passenger Extra 962 passed SG, the last open office, at 1:56 p. m., according to the dispatcher's record of movement of trains, passed signal 22L at SQ, and while moving on track 3 at an estimated speed of 50 to 60 miles per hour it collided with Extra 6935 East.

Extra 6935 East, symbol ED-4, an east-bound freight train, consisted of 41 loaded cars and a caboose. At Conway, 106.5 miles west of Seward, a terminal air-brake test was made and the brakes functioned properly en route. This train entered the interlocking on track 6 at JD, the last open office, under a dwarf signal indication authorizing it to proceed at restricted speed, and departed at 1:58 p. m., according to the dispatcher's record of movement of trains. Through error, this train departed on track 3 instead of track 2. While this train was moving at an estimated speed of 25 to 35 miles per hour it

collided with Passenger Extra 962 West.

Because of the track curvature and an embankment on the south side of the track, the view of an approaching train from an engine moving in either direction is restricted to a distance of about 1,000 feet.

Engine 962 was derailed to the left and stopped, badly damaged, between tracks 2 and 3. The tender was derailed to the right and stopped, badly damaged, at the front end of the engine and fouled track 4. The first five cars of Passenger Extra 962 were derailed and stopped in various positions across tracks 1, 2, 3 and 4. Three of the derailed cars were destroyed and the other two were badly damaged. Engine 6935 was derailed and badly damaged. It stopped on the roadbed in line with track 3, with its front end 8 feet above the track, on the running gear of the tender of engine 962. The tender stopped, badly damaged, upright on the roadbed of track 3 and behind engine 6935, with its front truck derailed. The first six cars were derailed and stopped in various positions across tracks 2, 3 and 4. All of these cars were badly damaged. The seventh and eighth cars were slightly damaged.

The weather was clear at the time of the accident, which occurred about 2:05 p. m.

The employees killed were the engineer and the fireman of Passenger Extra 962 and the engineer and the fireman of Extra 6935. The employees injured were the conductor and the front brakeman of Extra 6935.

Data

Train order No. 224, Form 19, addressed to the operator at JD, read as follows:

Hold All Eastward Trains Clear of
Eastward pegr track between JD and SG

Complete 144 pm

The standard blocking device provided at JD interlocking is a tube arrangement, equipped with a spring, which is placed over the knob of the lever to be blocked. This device is applied and removed manually.

Discussion

The rules governing operation on the line involved provide that movements against the current of traffic may be authorized after a holding order has been issued and the track on which the movement to be made has been cleared of opposing movements. The fixed signal, where provided at the point at which trains are to be held, must be displayed at stop for the track involved and in the direction of the approaching train, and the operating lever blocked by the standard blocking device. In addition, manual block-system rules must be observed. All the employees involved understood these requirements. The investigation disclosed that two or three movements against the current of traffic are made daily in the territory involved. On the day of the accident Passenger Extra 962 West was operated against the current of traffic on account of another west-bound train being held at JD on track 4.

Order No. 224, which was addressed to the operator at JD and sent to JD at 1:44 p. m., required the operator at that point to hold eastward trains clear of track 3. Order No. 225, which was sent to the operator at SG at 1:47 p. m., authorized Passenger Extra 962 West to proceed against the current of traffic on track 2 from SG to SQ and on track 3 from SQ to JD. At 1:48 p. m. the operator at SG received block authority from the operator at JD to admit Passenger Extra 962 West to the block. A few minutes later the crew of Passenger Extra 962 West received copies of order No. 225 and block authority to proceed. This train passed the block station at SG on track 2 at 1:56 p. m. and entered track 3 at SQ about 2:00 p. m. The operator at JD routed Extra 6935 East through the interlocking from track 6 to track 3 and this train departed from JD at 1:58 p. m.

When the operator at JD received order No. 224, which required him to hold eastward trains clear of track 3, the eastward home signal governing movements on track 2 and leading to track 3 was displayed at stop and he applied blocking devices to the levers controlling that signal and the switches of routes to track 3, except the lever controlling switch 11. He did not apply a blocking device to the lever for switch 11 because he had previously lined that switch for movement of an eastward train to track 2 and he said it was his intention to keep switch 11 lined for movement of Extra 6935 to track 2. However, when he lined the route leading from track 6 to switch 11 for Extra 6935, he momentarily forgot the position of switch 11 and changed the position of that switch for movement to track 3. A minute or two later, when he reported the departure of Extra 6935 to the operator at SG at 1:58 p. m., he discovered that he had erroneously routed this train to track 3. He notified the agent at Seward and told him to flag the west-bound train, as he thought the east-bound train would be running under a restrictive cab-signal indication. The agent started eastward but had just reached the point of accident when the accident occurred.

The operator at SG stated that when the operator at JD informed him that Extra 6935 had been routed to track 3, he could

tell by the indication lights that Passenger Extra 962 had not entered the approach circuit for SQ, and he immediately displayed signal 22L at SQ in stop position for Passenger Extra 962. About 1-1/2 or 2 minutes later he stated that the track diagram indicated that Passenger Extra 962 passed this signal without stopping. The most favorable indication that can be displayed by signal 22L requires trains to be operated within the limits of SQ interlocking at a speed not exceeding 15 miles per hour and to be prepared to stop short of train, obstruction or switch not properly lined. The conductor and the brakeman did not observe the indication displayed by signal 22L. The first they knew of anything being wrong was when the brakes were applied in emergency. The impact occurred almost immediately thereafter. In tests made after the accident signal 22L functioned properly.

The surviving members of the crew of Extra 6935 said that their train was moving at a speed of 25 to 35 miles per hour and the first they knew of anything being wrong was when the impact occurred.

The issuance of the holding order addressed only to the operator at JD, together with the issuance of the order addressed to Passenger Extra 962 West at SG authorizing that train to operate against the current of traffic from SG to JD, was in accordance with the rules of the carrier. The superintendent said that the operator at JD was not required to display the train-order signal for the holding order addressed only to the operator at JD, but that he was required to display the home signal at stop until the blocking devices were applied to the levers controlling the switches involved in the movement. The operator is permitted to display the home signal at other than stop position after the blocking devices have been applied to the levers controlling the route covered by the holding order. This method of issuing train orders is the single-order system. If the double-order system had been in use on the line involved, the order received by Passenger Extra 962 West would have been addressed to eastward trains at JD. In this case, the operator at JD would have been required to display the train-order signal against eastward trains before he repeated the order to the dispatcher, and safety of the movement of Passenger Extra 962 would not have depended solely upon the memory of the operator at JD to apply and to keep a blocking device on a lever controlling a certain switch and upon his correct observation of the position of the lever.

The manual-block rules of this carrier require the operator to display a stop signal, where provided, when he grants block authority for a train to enter the block at the opposite end. There is no signal at JD for manually blocking an east-bound train en route from track 6 to track 2 or 3 other than the eastward home signal on track 6. After an east-bound train has passed the eastward signal at the west end of the interlocking, its route through the interlocking is determined by the position of the switches. In the movement of Extra 6935 East, if the

home signal, located 1,350 feet west of the tower and 2,900 feet west of the switch involved, had been displayed at stop until Passenger Extra 962 reached JD, Extra 6935 would not have been able to enter either track 2 or track 3 until after Passenger Extra 962 was clear of the block and the home signal had been changed to display proceed. Nevertheless, it was intended that Extra 6935 would proceed to track 2 before Passenger Extra 962 reached JD, in which case the operator was required to clear the home signal. Thereafter, he had no control of the movement east of the home signal.

The trains involved in this accident were being operated on a passenger track on which the automatic block and cab signal systems were not designed to provide protection for opposing train movements, and the protection that was intended to be provided by the manual block system which was in use for such movements was entirely nullified in the circumstances here under consideration. If the track involved had been signalled for movements in both directions, or if a signal had been displayed at "stop" at JD for track No. 3, or if train order No. 224 or 225 had been delivered to Extra 6935 at JD, this accident would not have occurred.

Cause

It is found that this accident was caused by failure to comply with the provisions of a holding order, and by permitting a train to enter a block which was occupied by an opposing train.

Recommendation

It is recommended that the Pennsylvania Railroad Company provide an adequate train order and manual block system or other suitable protection for the operation of trains against the current of traffic.

Dated at Washington, D. C., this twelfth day of May, 1942.

By the Commission, Commissioner Patterson.

W. P. BARTEL,

(SEAL)

Secretary.