INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3706

THE PENNSYLVANIA RAILROAD COMPANY

IN RE ACCIDENT

AT WARSAW, IND., ON

SEPTEMBER 7, 1956

SUMMARY

Date:	September 7, 1956
Railroad:	Pennsylvania
Location:	Warsaw, Ind.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	48
Locomotive number:	Diesel-electric units 5847A, 5862B, and 5859A
Consist:	18 cars
Speed:	82 m. p. h.
Operation:	Signal indications
Tracks:	Double; tangent; 0.16 percent ascending grade eastward
Weather:	Clear
Time:	5:12 p. m.
Casualties:	38 injured
Cause:	Broken journal resulting from overheating

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3706

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

THE PENNSYLVANIA RAILROAD COMPANY

October 31, 1956

Accident at Warsaw, Ind., on September 7, 1956, caused by a broken journal resulting from overheating.

REPORT OF THE COMMISSION[1]

CLARKE, Commissioner:

On September 7, 1956, there was a derailment of a passenger train on the Pennsylvania Railroad at Warsaw, Ind., which resulted in the injury of 17 passengers, 16 dining-car employees, 1 train porter, and 4 train-service employees.

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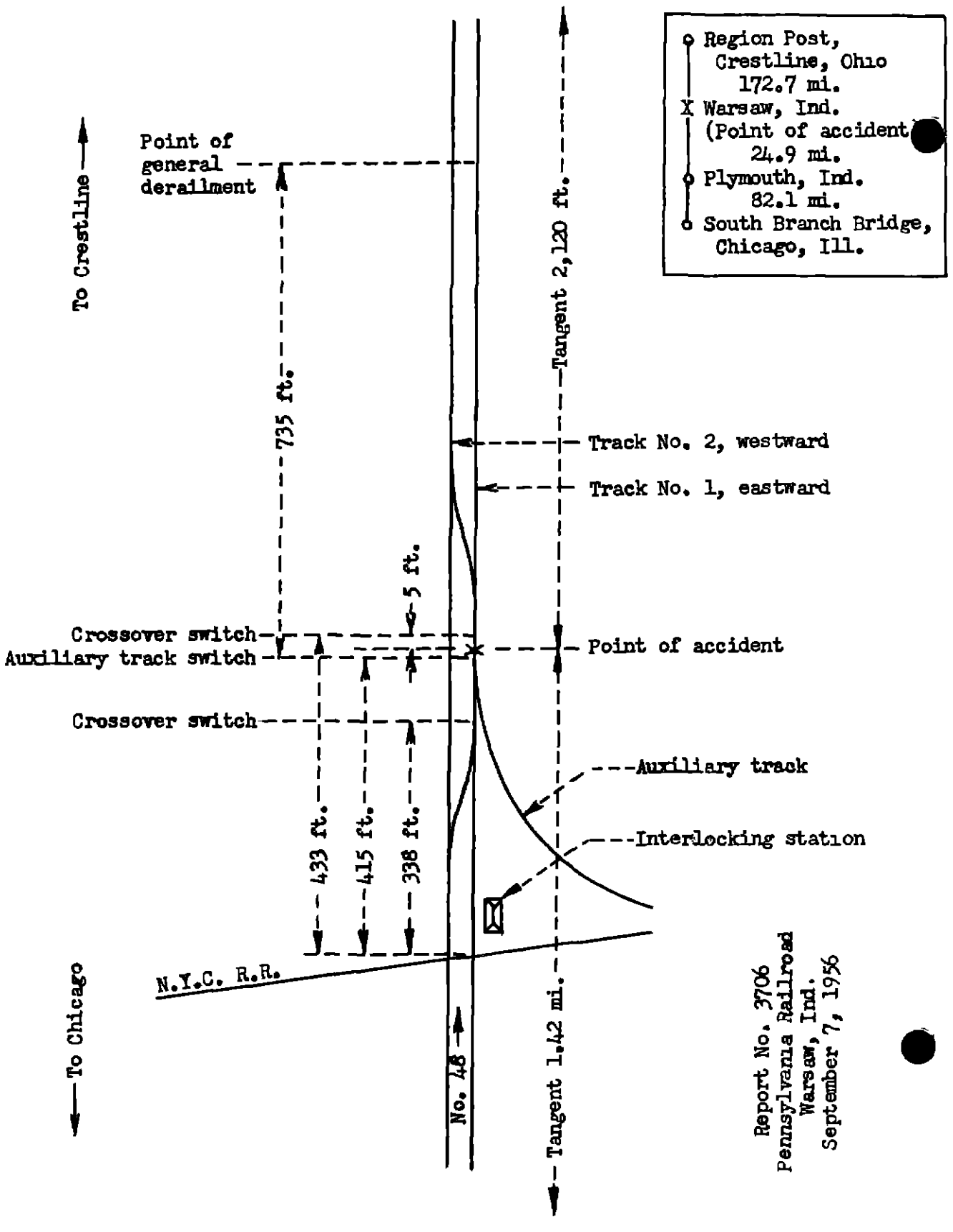
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.


Region Post,
Crestline, Ohio
172.7 mi.
X Warsaw, Ind.
(Point of accident)
24.9 mi.
Plymouth, Ind.
82.1 mi.
South Branch Bridge,
Chicago, Ill.
To Crestline
Point of
general
derailment
735 ft.
Tangent 2,120 ft.
Track No. 2, westward
Track No. 1, eastward
5 ft.
Crossover switch
Auxiliary track switch
Point of accident
Crossover switch
Auxiliary track
Interlocking station
433 ft.
415 ft.
338 ft.
N.Y.C. R.R.
To Chicago
No. 48
Tangent 1.42 mi.
Report No. 3706
Pennsylvania Railroad
Warsaw, Ind.
September 7, 1956

Location of Accident and Method of Operation

This accident occurred on that part of the Northwestern Region extending between South Branch Bridge, Chicago, Ill., and Region Post, near Crestline, Ohio, 279.7 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by signal indications. From north to south the main tracks are designated as No. 2, westward, and No. 1 eastward. At Warsaw, Ind., 107.0 miles east of South Branch Bridge, the main tracks are crossed at grade by a single-track line of the New York Central Railroad. The east switch of a trailing-point crossover which connects the two main tracks, a trailing-point switch at which an auxiliary track converges with track No. 1 from the south, and the west switch of a facing-point crossover which connects the two main tracks are located, respectively, 338 feet, 415 feet, and 433 feet east of the N.Y.C. crossing. The initial derailment occurred 5 feet east of the auxiliary-track switch, and the general derailment occurred 735 feet east of the switch. The main tracks are tangent throughout a distance of 1.42 miles immediately west of the point of initial derailment and 2,120 feet eastward. The grade is 0.16 percent descending eastward at the point of accident.

In the vicinity of the point of initial derailment the track structure of track No. 1 consists of 133-pound rail, 39 feet in length, laid new in 1948 on an average of 22 treated ties to the rail length. It is fully tieplated with double-shoulder canted tie plates, spiked with two rail-holding and two plate-holding spikes per tie plate, and is provided with 6-hole 36-inch joint bars and an average of 10 rail anchors per rail. It is ballasted with crushed stone to a depth of 18 inches below the bottoms of the ties.

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

76. * * *

Engine and train crews as frequently as opportunity permits must observe engines and cars in their train, moving and standing, to detect any conditions that might interfere with the safe movement of trains.

* * *

77. So far as practicable and other duties permit, employes will observe passing trains for defects and should there be any indication of conditions endangering the train they must take necessary measures for its protection.

Train and engine crews on moving trains will be on the lookout for signals when passing other trains and while passing stations, highway crossings where watchmen are on duty and points where trackmen and other employes are working and when practicable exchange hand signals with them.

* * *

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 79 miles per hour.

Description of Accident

No. 48, an east-bound first-class passenger train, consisted of Diesel-electric units 5847A, 5862B, and 5859A, coupled in multiple-unit control, three refrigerator express cars, one baggage car, four sleeping cars, one lounge-sleeping car, one dining car, one kitchen-dormitory car, six coaches, and one observation-lounge-buffet car, in the order named. All cars were of all-steel construction. The fifth to the fifteenth cars, inclusive, were equipped with tightlock couplers. This train departed from Chicago Union Station, 1.7 miles west of South Branch Bridge, at 3:30 p. m., on time, and passed Plymouth, Ind., 24.9 miles west of Warsaw and the last open office west of Warsaw, at 4:54 p. m., on time. While it was moving at a speed of 82 miles per hour, as indicated by the tape of the speed-recording device, the rear truck of the eleventh car was derailed at a point 420 feet east of the N.Y.C. crossing at Warsaw. The twelfth to the eighteenth cars, inclusive, were derailed at a point 730 feet farther eastward.

The coupler at the front end of the third car was broken, and a separation occurred between the second and third cars. The locomotive and the first two cars stopped with the front of the locomotive 3,351 feet east of the point of initial derailment. There were no other separations between the units of the train. The rear portion of the train stopped with the front end of the third car 2,692 feet east of the point of initial derailment. The derailed cars remained approximately in line with track No. 1. None of these cars overturned. The trucks and appurtenances below the floor level of the derailed cars were considerably damaged.

The conductor, the front brakeman, a ticket collector, and the flagman were injured.

The weather was clear at the time of the accident, which occurred at 5:12 p. m.

The eleventh car, P.R.R. 4607, a kitchen-dormitory car of all-steel construction, was built in 1949. It is 85 feet in length between the pulling faces of the couplers and weighs 156,680 pounds. It is mounted on four-wheel trucks spaced 59 feet 6 inches between centers. The wheel-base of each truck is 8 feet 6 inches. The journals are 6 inches by 11 inches and are equipped with roller bearings. The spring arrangement consists of helical equalizer springs and helical and elliptical bolster springs.

Discussion

As No. 48 was approaching the point where the accident occurred the enginemen were in the control compartment at the front of the locomotive, a ticket collector was in the seventh car, the conductor was in the ninth car, the front brakeman was in the thirteenth car, and a ticket collector and the flagman were in the rear car. Both the conductor and one of the ticket collectors had walked through the eleventh car during the trip. The dormitory end of this car was toward the rear. The ticket collector had last walked through the car when the train was about 10 miles west of Warsaw. Neither of these employees had noticed any unusual condition. The enginemen had inspected the train as it moved on curves at various points en route and had detected no defective condition. The front brakeman said that when the car in which he was riding reached a point about 600 feet west of the N.Y.C. crossing at Warsaw he heard stones striking the bottom of the car. The derailment occurred before he could take action to stop the train. The other members of the crew first became aware that anything was wrong when the brakes became applied in emergency as a result of the derailment.

Examination of the track structure after the accident occurred disclosed that timbers on the south side of the south rail in a rail-highway grade crossing 5.2 miles west of the point of accident had been marked by dragging equipment. The marks were 3 inches wide and 5-3/4 inches from the outside of the head of the rail and apparently were made by the equalizer on the rear truck of the eleventh car of No. 48. Similar marks were found at a crossing 4 miles west of the point of accident. All crossings through Warsaw west of the point of accident were marked in the same manner.

The rails at three turnouts west of the N.Y.C. crossing and the rails at the crossing were marked at approximately the same distance south of the south rail of track No. 1. Rail braces on the south side of the south rail at the east switch of the trailing-point crossover east of the crossing had been struck and broken. The north side of the north rail of the auxiliary track had been heavily scraped immediately west of the frog. The north side of the south rail of this track and the south side of the south rail of track No. 1 had been heavily scraped in the vicinity of the switch, and the heel block of the switch had been struck a severe blow. Marks on the ties indicated that a pair of wheels had become derailed to the north 5 feet east of the switch. The rails of the facing-point crossover north of the north rail of track No. 1 had been struck and bent, and marks on the ties east of the frog indicated that a second pair of wheels had become derailed to the north. These marks extended to the point at which the general derailment occurred. East of the latter point the track was destroyed.

Examination of the equipment after the accident occurred disclosed that the right rear journal of the eleventh car, P.R.R. 4607, had been heated to the extent that it had broken off 8-1/2 inches from the end of the axle. After this occurred the broken end of the journal adjacent to the wheel had ground through the top of the journal box. The rear end of the equalizer then dropped sufficiently to come in contact with the track structure. The marks on the track structure indicate that the derailment occurred as a result of the lateral thrust when the equalizer struck the side of the south rail of the auxiliary track.

The bearing assembly involved consisted of two roller bearings separated by a bearing spacer. Each bearing was constructed with two rows of solid rollers mounted in a cage between the races. When the bearing was examined by members of the test department of the carrier after the accident occurred it was found that the entire assembly had been subjected to intense heat. The front adaptor plate and gasket were in place, and there was no evidence of oil leakage. With the exception of two cap screws which were sheared off in the accident, the screws were tight and properly wired. All cap screws which secured the rear enclosure plate were sheared off, and the plate was missing. The oil fill and drain plugs were in place and properly wired. Both the inner and outer races of the front roller bearing were badly burned and discolored by heat, and the roller paths were scored. The roller retaining cage had collapsed and broken. The rollers were burned and discolored by heat

but were not severely battered. The bearing spacer was broken. The portion remaining in the box was badly battered, burned, and discolored by heat. All parts of the rear roller bearing were missing except two rollers found loose in the box, a small piece of the roller retaining cage, and the outer race, which remained in the box. The outer race was badly burned and discolored by heat, and the roller path was scored. The surface of the broken-off end of the journal was worn and scored over its length from turning in the inner race. It was severely burned and discolored by heat. Laboratory analysis of the axle indicated that it met the chemical specifications of the Association of American Railroads for Grade F axles. The fact that the entire bearing had been subjected to intense heat indicates that the heating and breaking of the journal resulted from the failure of the roller bearing assembly. Because of the loss of parts and the extent of damage to the bearing, the cause of failure was not determined. After the accident the oil levels in the other boxes on the car were found to be satisfactory.

The records of the carrier indicate that the bearing involved was placed in service in February 1951. In October 1954 the bearing was disassembled and inspected. No defective condition was found. The axle was given a magnetic particle test at this time. In June 1956 the wheels on this axle were turned. The front covers were removed and the front of the bearings were inspected and were found to be satisfactory for service. At this time the oil was renewed and the wheel assembly was applied to P.R.R. 4607. The oil level was checked on August 25, 1956. The journal boxes received routine inspection at Chicago before the car departed in No. 48 on the day of the accident, and no defective condition was observed. The operator at Plymouth inspected the south side of the train as it passed that station, and he detected no defective condition.

Cause

This accident was caused by a broken journal resulting from overheating.

Dated at Washington, D. C., this thirty-first day of October, 1956.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,

Secretary.