

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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INVESTIGATION NO. 2592  
THE BALTIMORE & OHIO RAILROAD COMPANY  
REPORT IN RE ACCIDENT  
NEAR TAYLORSTOWN, PA., ON  
MAY 31, 1942

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## SUMMARY

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Railroad: Baltimore & Onio  
Date: May 31, 1942  
Location: Taylorstown, Pa.  
Kind of accident: Derailment  
Train involved: Freight  
Train number: Second 104  
Engine number: 7110  
Consist: 34 cars, caboos  
Estimated speed: 30-35 m. p. h.  
Operation: Centralized-traffic-control system  
Track: Single; 5°05' left curve; 0.49  
percent ascending grade eastward  
Weather: Clear  
Time: 4:20 p. m.  
Casualties: 2 killed; 1 injured  
Cause: Accident caused by insecure track  
which rendered it unsafe for  
authorized speed

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 2592

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

THE BALTIMORE & OHIO RAILROAD COMPANY

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July 30, 1942.

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Accident near Taylorstown, Pa., on May 31, 1942, caused  
by insecure track which rendered it unsafe for  
authorized speed.

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REPORT OF THE COMMISSION<sup>1</sup>

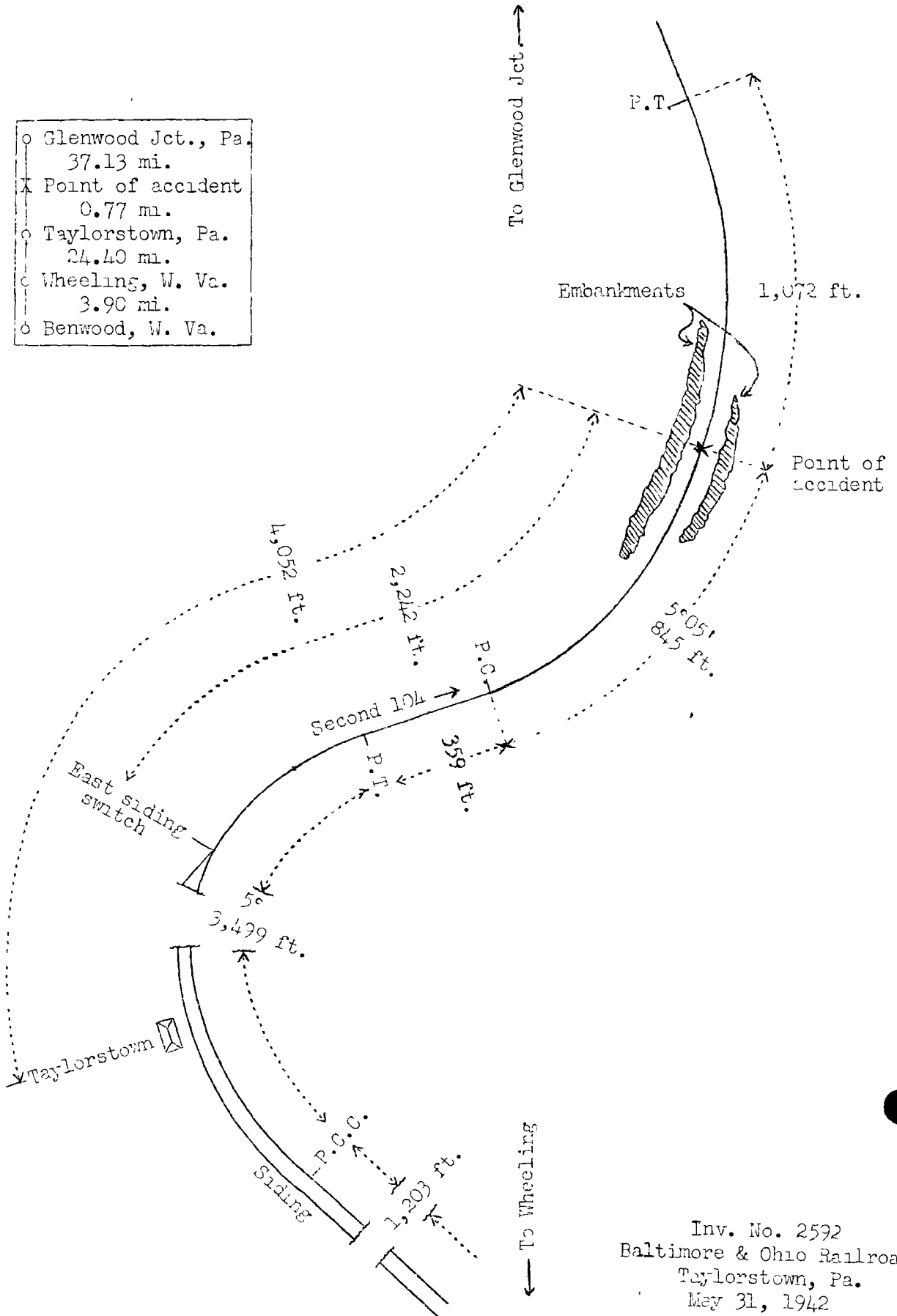
PATTERSON, Commissioner:

On May 31, 1942, there was a derailment of a freight train on the Baltimore & Ohio Railroad near Taylorstown, Pa., which resulted in the death of two employees and the injury of one employec.

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<sup>1</sup>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.

o	Glenwood Jct., Pa.	37.13 mi.
x	Point of accident	0.77 mi.
o	Taylorstown, Pa.	24.40 mi.
o	Wheeling, W. Va.	3.90 mi.
o	Benwood, W. Va.	



Inv. No. 2592  
 Baltimore & Ohio Railroad  
 Taylorstown, Pa.  
 May 31, 1942

Location of Accident and Method of Operation

This accident occurred on that part of the Pittsburgh Division designated as the W. & P. Sub-Division, which extends between Wheeling, W. Va., and Glenwood Jct., Pa., a distance of 62.3 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by a centralized-traffic-control system. The accident occurred at a point 4,052 feet east of the station at Taylorstown. As the point of accident is approached from the west there are, in succession, a tangent 1,203 feet in length, a compound curve to the right 3,499 feet, the maximum curvature of which is  $5^{\circ}00'$ , a tangent 359 feet, and a  $5^{\circ}05'$  curve to the left 845 feet to the point of accident and 1,072 feet beyond. The grade for east-bound trains is descending, successively, 1.16 percent 800 feet, 1.03 percent 1,300 feet, 1.26 percent 800 feet, 0.82 percent 300 feet, 0.54 percent 400 feet, and 0.06 percent 200 feet, and then is 0.49 percent ascending 636 feet to the point of accident.

On the curve involved the track structure consists of 130-pound relay rail, 33 feet in length, rolled in 1923 and relaid in March, 1939, on an average of 19 treated ties to the rail length; it is fully tieplated, partly double-spiked on the inside of the rail and single-spiked on the outside and is provided with 5 rail anchors per rail length. In the immediate vicinity of the point of accident, track repair work which had been started several days before the day of the accident was not completed. The maximum superelevation was 6-1/4 inches and the gage varied between 4 feet 8-1/2 inches and 4 feet 8-7/8 inches. At the point of derailment the superelevation was 4-7/8 inches and the gage was 4 feet 8-5/8 inches.

In the vicinity of the point of accident the track is laid in a cut, the north embankment of which is 737 feet in length and about 25 feet in height. The derailment occurred 386 feet east of the west end of this cut.

Rule 293 of the Instructions governing the Maintenance of Way Department reads as follows:

293. When ballasting, open track shall be reduced to a minimum, and such track carefully watched, loosening bolts if necessary to avoid rail buckling and throwing track out of line.

The maximum authorized speed for the train involved was 30 miles per hour.

Description of Accident

Second 104, an east-bound third-class freight train, consisted of engine 7110, of the 2-8-8-0 type, 23 loaded and 11 empty cars and a caboose. A terminal air-brake test was made at Benwood, W. Va., 28.3 miles west of Taylorstown, and the brakes functioned properly en route. This train departed from Benwood at 3:02 p. m., according to the dispatcher's record of movement of trains, passed Taylorstown at 4:18 p. m., and while moving at an estimated speed of 30 to 35 miles per hour it was

derailed at a point 0.77 mile east of the station at Taylorstown.

From an east-bound engine, the view of the point where the accident occurred is restricted to a distance of 314 feet because of track curvature and the cut.

Engine 7110 stopped, badly damaged, on its right side south of the track and parallel to it, with its front end 341 feet east of the point of derailment. The cab was demolished. The tender was torn loose from the engine and stopped, badly damaged, on its right side and behind the engine. The first 16 cars were derailed and stopped, badly damaged, in various positions south of the track and across it. The wreckage was contained within a distance of 300 feet.

The maximum temperature recorded on May 31, 1942, at Washington, Pa., located 7.8 miles east of Taylorstown, was 86 degrees. The weather was clear at the time of the accident, which occurred about 4:20 p. m.

The employees killed were the engineer and the fireman, and the employee injured was the front brakeman.

#### Mechanical Data

After the accident, an inspection of engine 7110 disclosed that all flanges were of good contour, and that all driving-box wedges were well lubricated. The lateral motion of all wheels, and the back-to-back measurements of the driving-wheel tires and the engine-truck wheels conformed to the prescribed requirements.

Engine 7110 is of the articulated single-expansion type and the total weight in working order is 485,600 pounds, distributed as follows: Engine truck, 23,100 pounds; No. 1 pair of driving wheels, 55,200 pounds; No. 2 pair of driving wheels, 59,200 pounds; No. 3 pair of driving wheels, 60,600 pounds; No. 4 pair of driving wheels, 56,800 pounds; No. 5 pair of driving wheels, 56,400 pounds; No. 6 pair of driving wheels, 56,400 pounds; No. 7 pair of driving wheels, 59,700 pounds; and No. 8 pair of driving wheels, 58,200 pounds. The diameters of the engine-truck wheels and the driving wheels are, respectively, 33 and 58 inches. The tender is of the Vanderbilt type and is equipped with two four-wheel trucks. The weight of the tender loaded is 262,000 pounds. The length of the wheelbase of each driving unit is 15 feet 6 inches. The distance between the center of the engine truck and the center of the No. 1 driving wheels is 9 feet 2 inches, and the distance between the driving units is 10 feet 2 inches. The total engine wheelbase is 50 feet 4 inches, and the total length of the engine and tender is 109 feet 7-7/8 inches.

#### Discussion

Second 104 was moving at a speed of 30 or 35 miles per hour when the engine became derailed to the left on a curve to the left. The maximum authorized speed for this train was 30 miles per hour. The curvature was specified as 5°05' and the super-elevation as approximately 5 inches. After the engine became derailed it continued forward a distance of 341 feet and then

overtaken. There was no defective condition of the engine and there was no indication of dragging equipment or of any obstruction having been on the track. The front brakeman, who was the only surviving member of the crew on the engine, saw the track immediately ahead of the engine buckle and felt the engine sway laterally. He did not observe what action was taken by the engineer to stop the train. The last train to pass over the track involved was a west-bound freight train, which passed about 3:55 p. m., or about 25 minutes prior to the time the accident occurred. The engineer of this train stated that the speed was about 20 miles per hour through the cut involved, and he did not observe any abnormal condition of the track.

After the accident, measurements of the track throughout a distance of 235 feet immediately west of the point of derailment disclosed that the curvature varied from  $3^{\circ}30'$  to  $7^{\circ}30'$ . At stations 202 feet and 120 feet west of the point of derailment the curvature was, respectively,  $5^{\circ}30'$  and  $3^{\circ}30'$ . At a point 70 feet west of the point of accident the curvature was  $7^{\circ}30'$ , and at the point of derailment it was  $3^{\circ}45'$ . At the ends of a number of ties the condition of the ballast indicated that the track had moved both to the right and left from its normal position. Several rail joints immediately west of the point of derailment were closed tightly.

The first abnormal mark on the track structure was a slight abrasion on the gage side of the low, or north rail. Immediately beyond, a flange mark extended diagonally across the head of the rail a distance of 21 feet 8 inches to the outside edge. Beginning at a point 3 feet 4 inches east of the eastern end of the mark on the head of the rail there was a tread mark, 17 inches long, about 1-1/2 inches outside the base of the low rail. The outside angle bars at the first three joints east of the point of derailment were marked by the flange of a wheel, and there were marks intermittently near the outside edge of the base of the low rail. Beginning at a point about 119 feet east of the point of derailment and extending throughout a distance of 150 feet, the low rail was off the ties toward the north. The lower outside edge of the head of the north rail was abraded throughout a distance of 100 feet immediately east of the point of derailment. No rail on the low side was broken. The first mark of derailment on the south side was on the gage side at a point 3 feet 3 inches east of the east end of the diagonal mark on the head of the north rail. At this point the inside angle bar was bent downward, and the upper surfaces of the nuts were heavily indented. The inside angle bars at the next six joints were battered and sheared. The gage side of the head of the high rail was somewhat abraded a distance of 210 feet, but there was no mark on the ties or the base of the rail. At the fourth joint the receiving end of the rail bore a heavy batter mark, and eastward throughout a distance of 6 feet there was a deep shear mark at the upper edge of the inside of the head. At a point 10 feet east of the seventh joint the rail was broken, and just east of this point there was a heavy shear mark 21 inches in length on the upper gage side of the head. Starting at the third joint east of the point of derailment and extending eastward 109 feet, the south rail was torn from the ties, and some of it was

12 feet south of its original location. The outside edge of the tread of the right wheel of the No. 1 pair of driving wheels of engine 7110 was ground off smoothly around the entire circumference. The front outer point of the counterbalance was roughly and unevenly battered, and the rear point was similarly marked, but to a lesser degree. The outer edge of the counterbalance was burred a distance of 9-1/4 inches. The inside edge of the flange of the companion wheel was marked with vertical indentations 1/2 to 3/4 inch in length. The marks on the track structure and on the wheels of the engine indicate that the No. 1 pair of driving wheels were the first wheels to become derailed.

The track work on the curve involved consisted of ditching, renewal of ties and reballasting, and of raising, surfacing and alining the track. The section force ceased working on the evening of May 29, and no work on this track had been performed for a period of about 48 hours prior to the time of the accident. During this period the track was left in an open condition. There was practically no ballast at the ends of the ties or between them. Rail anchors had not been replaced on the three rails immediately west of the point of accident. The section foreman in charge of this track stated that at the time his force stopped working on May 29, he considered the track safe for normal service, and no inspection of this track was made until after the accident occurred. The rules of the carrier require that open track be watched carefully.

Considering the statement of the front brakeman that the track buckled to the right and to the left in front of the engine, the variation in the alinement of the track after the accident, the relatively high temperature causing the joints to be tight, and the marks in the ballast indicating that the track had been deflected to the left as well as to the right, undoubtedly the left front driving wheel climbed to the head of the low rail when the track momentarily buckled to the left and thus formed a temporary curve to the right with the outside rail lower than the inside rail. In addition, irregularity in the surface of the track caused the engine to roll laterally, which action would assist in causing the wheel to be lifted high enough for the flange to climb to the head.

#### Cause

It is found that this accident was caused by insecure track which rendered it unsafe for authorized speed.

Dated at Washington, D. C., this thirtieth day of July, 1942.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,  
Secretary.