INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT NO. 3696

THE BALTIMORE AND OHIO RAILROAD COMPANY

IN RE ACCIDENT

AT BRUNSWICK, MD., ON

JULY 3, 1956

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## SUMMARY

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| Date: | July 3, 1956 |
| Railroad: | Baltimore and Ohio |
| Location: | Brunswick, Md. |
| Kind of accident: | Derailment |
| Train involved: | Passenger |
| Train number: | 8 |
| Locomotive number: | Diesel-electric units 92A and 58X |
| Consist: | 12 cars |
| Speed: | 61 m. p. h. |
| Operation: | Signal indications |
| Tracks: | Double; 1°30' curve; 0.10 percent ascending grade eastward |
| Weather: | Clear |
| Time: | 2:24 p. m. |
| Casualties: | 11 injured |
| Cause: | Insecure condition of track |

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3696

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

THE BALTIMORE AND OHIO RAILROAD COMPANY

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August 20, 1956

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Accident at Brunswick, Md., on July 3, 1956, caused by an insecure condition of the track.

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REPORT OF THE COMMISSION[1]

CLARKE, Commissioner:

On July 3, 1956, there was a derailment of a passenger train on the Baltimore and Ohio Railroad at Brunswick, Md., which resulted in the injury of 7 passengers, 2 Pullman Company employees, 1 maintenance-of-way employee, and 1 train-service employee.

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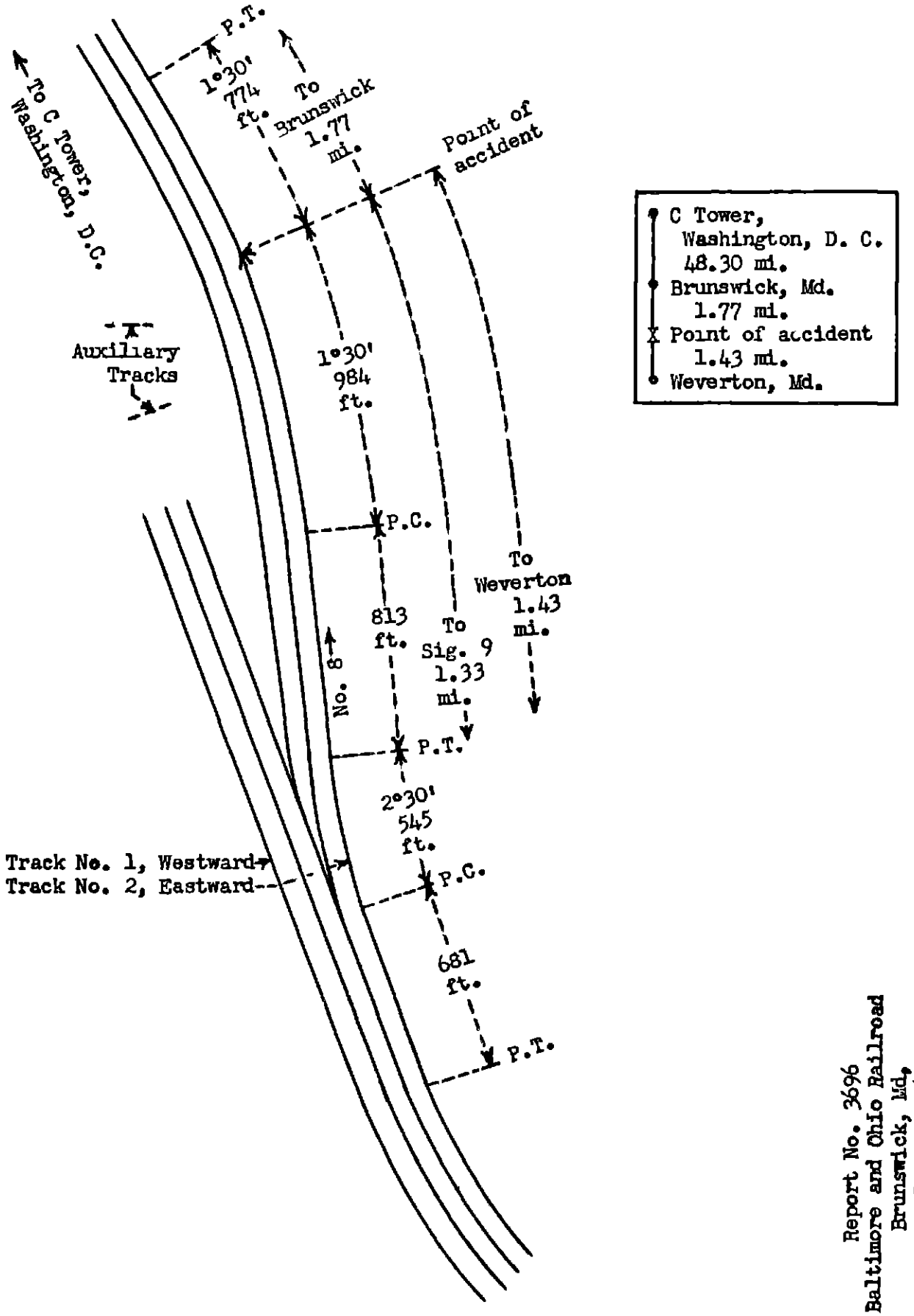
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.




Report No. 3696
Baltimore and Ohio Railroad
Brunswick, Md.
July 3, 1956

Location of Accident and Method of Operation

This accident occurred on that part of the Baltimore Division extending between Weverton, Md., and C Tower, Washington, D. C., 51.5 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. The main tracks from north to south are designated as No. 1, westward, and No. 2, eastward. In the vicinity of the point of accident a number of yard tracks are located between tracks Nos. 1 and 2. The accident occurred on track No. 2 at a point 1.43 miles east of Weverton and 1.77 miles west of the eastward station at Brunswick, Md. From the west on track No. 2 there are, in succession, a tangent 681 feet in length, a 2°30' curve to the right 545 feet, a tangent 813 feet, and a 1°30' curve to the left 984 feet to the point of derailment and 774 feet eastward. From the west the grade is level throughout a distance of 4,950 feet, and 0.10 percent ascending 1,025 feet to the point of accident and a considerable distance eastward.

In the vicinity of the point of accident the track structure of track No. 2 consists of 140-pound rail, 39 feet in length, laid new in December 1955 on an average of 22 treated ties to the rail length. It is fully tieplated with double-shoulder canted tie plates, single spiked, and is provided with 6-hole 36-inch joint bars and an average of eight rail anchors per rail. It is ballasted with 1-1/2-inch stone ballast to a depth of 12 inches below the bottoms of the ties. At the point of derailment the specified curvature is 1°30' and the specified superelevation is 3-1/2 inches.

Semi-automatic signal 9, governing east-bound movements on track No. 2, is located 1.33 miles west of the point of accident.

This carrier's instructions governing the Maintenance of Way Department read in part as follows:

TRACK

LINING AND SURFACING

339. During hot weather, track must be carefully watched to detect any tendency of rail to buckle and throw the track out of line. This tendency may be relieved by slacking the bolts at open joints.

343. Surfacing track out of face is understood to mean the raising of the entire track so that both ends of each tie must be tamped and the general level of the entire track consequently raised. * * *

METHODS OF SURFACING

365. * * *

Surfacing Out of Face.

(h) Always work against the current of traffic, except on heavy grades, where it is desirable to work up grade.

* * *

(m) If the track is tight, exercise care to prevent it from buckling when raised, by slacking bolts at open joints and adjusting expansion.

* * *

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 65 miles per hour.

Description of Accident

No. 8, an east-bound first-class passenger train, consisted of Diesel-electric units 92A and 58X, coupled in multiple-unit control, one express car, one mail car, one baggage car, one combination lounge-buffet-dormitory car, three coaches, one dining car, one dome sleeping car, two sleeping cars, and one lounge-sleeping car, in the order named. The ninth and eleventh cars were of lightweight construction, and the other cars were of conventional all-steel construction. This train passed Weverton at 2:22 p. m., on time, and while moving on track No. 2 at a speed of 61 miles per hour, as indicated by the tape of the speed-recording device, the rear four cars were derailed at a point 1.43 miles east of Weverton and 1.77 miles west of the eastward station at Brunswick.

A separation occurred between the ninth and tenth cars. The forward portion of the train stopped with the rear end of the ninth car 1,731 feet east of the point of derailment. The front truck of the ninth car was derailed to the north and stopped with the south wheels in contact with the gage side of the south rail. The rear truck was derailed to the south, and the car stopped with the rear end 17 feet south

of the track. The tenth, eleventh, and twelfth cars stopped approximately in line, with the front end of the tenth car 420 feet east of the point of derailment. The front end of the tenth car was 19 feet 6 inches south of the track, and the rear end of the twelfth car was 10 feet 8 inches south of the track. The tenth car remained upright, the eleventh car leaned to the south at an angle of about 40 degrees, and the twelfth car stopped on its right side. All of the derailed cars were considerably damaged.

The flagman of No. 8 and a maintenance-of-way employee who was working in the vicinity of the point of accident were injured.

The weather was clear at the time of the accident, which occurred about 2:24 p. m.

## Discussion

As No. 8 was approaching the point where the accident occurred the enginemen were maintaining a lookout ahead from the control compartment at the front of the locomotive. Signal 9 indicated Proceed. The enginemen said that the locomotive was riding smoothly and that there was no indication of defective track or equipment. They first became aware that anything was wrong when they felt a jerk, and immediately afterward the brakes became applied in emergency as a result of the derailment. The train baggageman, who was riding in the fourth car, said that he felt the car jerk at approximately the same time that the brakes became applied. He said that there was no lateral movement of the car. The conductor and the dining-car steward were in the eighth car. Both of these employees said that there was a vertical movement or jolt a few seconds before the brakes became applied. Both of them thought the car had run over an obstruction. A Pullman Company employee who was in the ninth car said that before the brakes became applied there was a backward pull on the car followed by a lateral movement to the north. The flagman, who was in the twelfth car, was not aware that anything was wrong until the movement of the car was suddenly retarded and he was thrown forward. All of the employees in the train said that prior to the time of the accident the cars had been riding smoothly and there had been no indication of defective equipment.

Examination of the equipment of No. 8 after the accident occurred disclosed no condition which could have caused or contributed to the cause of the accident. Examination of the

wheels and trucks of the eighth car disclosed no indication of the car having struck or run over an obstruction. Apparently the movement of the car described by the conductor and the dining-car steward was the result of following equipment having become derailed.

Examination of the track structure after the accident occurred disclosed that throughout a distance of 176 feet west of the most westerly marks of derailment the north rail was canted outward. The most westerly marks of derailment were three flange marks on the web of the north rail. These marks continued eastward a distance of about 25 feet. At this point the marks indicated that the wheels had been deflected over the rail at a joint bar. The first flange marks inside the south rail appeared at a point 4 feet east of the marks on the north rail and 10 inches inside the south rail. Between points 27 feet east and 194 feet east of the first marks on the north rail, the north rail was torn loose from the ties. Approximately 31 feet of rail at the west end of the loosened portion was deflected to the north, and the remainder of the loosened portion was deflected to the south. The maximum deflection to the south was about 5 feet. Eastward from the first marks of derailment the south rail was canted northward, and a short distance east of this point the rail was loosened from the ties. The bolts were sheared at joints in the south rail located, respectively, 74 feet and 425 feet east of the first marks of derailment, and the rail was separated at these points. Between these points the south rail was pulled off the ties toward the south. Between points approximately 30 feet and 70 feet east of the first marks of derailment the ties were shifted toward the south, and east of the latter point they had been dislodged by derailed equipment. When repairs were made after the accioccurred it was necessary to replace six rails in each side of the track. At this time it was necessary to cut a 6-1/2-inch section out of the south rail in order to restore the rail to normal alinement. On July 9 both rails were checked with an expansion gauge throughout a distance of approximately 3,354 feet immediately east of the point of accident and 1,950 feet westward. At this time the weather was cloudy and the temperature was 94 degrees above zero. It was found that there was an allowance for 1-11/16 inches of expansion in the joints of the north rail and 9-7/8 inches in the joints of the south rail within this distance.

The investigation disclosed that on the day of the accident a maintenance-of-way force consisting of an extra gang foreman, 2 section foremen, 14 trackmen, and a tamping machine operator was engaged in raising and surfacing track

in the vicinity of the point of accident. The track was being raised an average of 1-1/2 inches. On the day before the accident occurred, this force had raised track No. 2 between points 1,118 feet and 435 feet west of the point at which the first marks of derailment were later found. On the day of the accident the members of the force raised track No. 2 throughout a distance of approximately 625 feet immediately east of the section which had been raised the previous day. They then cleared the track for two eastbound passenger trains due at Brunswick at 9:05 a. m. and 9:37 a. m., respectively. The run-off to the portion of track which had not been raised extended about 160 feet on the high side of the curve and about 120 feet on the low side. After the second train passed, the track at two points approximately 240 feet west of the run-off was lined slightly to the north. At one of these points the track was lined by the use of bars, and at the other point it was necessary to use a track jack. From the time this work was completed until the time the accident occurred, except during the lunch period, the members of the force were engaged in removing ballast from between track No. 2 and an adjacent auxiliary track to the north and placing it in the cribs and at the south ends of the ties of track No. 2. No. 8 was the first train to be operated over track No. 2 after the second passenger train passed about 9:37 a. m.

The investigation also disclosed that on June 13, 1956, track No. 2 at Weverton was found to be shifted out of alinement a maximum of approximately 2-1/2 inches, and it was necessary to remove a 4-inch section from each rail to allow for expansion. On June 15, while track No. 2 was being raised at a point about 2,000 feet east of the point at which the accident occurred, it was found that the rails were under excessive compression, and it was necessary to remove a 6-1/2-inch section from each rail to allow for expansion. At the time of the accident the weather was clear and the temperature was 96 degrees above zero. The section foreman in charge of raising the track said that the joints did not appear to be unusually tight and that there were no indications that the rails had been creeping appreciably, and he did not consider it necessary to make additional allowance for expansion of the rails on the curve on which the accident occurred. He said that if the rails had been under excessive compression it would have been impossible to line the track toward the inside of the curve as was done about 9:45 a. m. The track supervisor was in the vicinity of the point of accident about 3 hours before the accident occurred. He took no exception to the condition of the track.

The track in the vicinity of the point of general derailment was disturbed by derailed equipment to the extent that marks made by the first wheels to become derailed could not be identified, and the exact point at which the first wheels became derailed could not be determined. The fact that there were only three flange marks on the web of the north rail at the point where the most westerly marks of derailment were found indicates that this rail did not overturn until the rear truck of the rear car, which was equipped with six-wheel trucks, was passing over it. Apparently this rail was overturned and the rear truck of the rear car was derailed at this point as a result of the derailment of preceding equipment. The track supervisor arrived at the scene of the accident about 1 hour after the accident occurred. He said that he was unable to determine the cause of the accident. Neither he nor the division engineer was of the opinion that the rails had been under sufficient compression to cause the track to buckle under the train. The general derailment occurred within a distance of about 150 feet, and from the absence of marks of derailed equipment west of this area, with the exception of the marks made by the wheels of the rear truck of the rear car, it appears that the derailment resulted from a track condition rather than from any condition of the equipment. There were no broken rails, and the track was in normal alinement when the forward portion of No. 8 passed over it. It had been necessary to remove sections of rail at two locations near the point of accident to allow for expansion of the rails during hot weather about 2 weeks before the accident occurred, and the track had been raised and the ties loosened in the ballast throughout a distance of about 1,150 feet immediately west of the point of accident during the 2 days prior to the time of the accident. The temperature at the time of the accident was approximatelt 96 degrees above zero. Under these conditions it appears that the rails were under sufficient compression so that this compression, together with the loosening of the track structure in raising track, caused the track to buckle under the train.

## Cause

It is found that this accident was caused by an insecure condition of the track.

Dated at Washington, D. C., this twentieth day of August, 1956.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,

Secretary.