

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT NO. 3676

NORFOLK AND WESTERN RAILWAY COMPANY

IN RE ACCIDENT

NEAR CEDAR, U. VA., ON

JANUARY 23, 1956

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## SUMMARY

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Date:	January 23, 1956
Railroad:	Norfolk and Western
Location:	Cedar, W. Va.
Kind of accident.	Derailment
Train involved:	Passenger
Train number:	3
Locomotive number:	611
Consist:	11 cars
Speed.	Overturning
Operation:	Timetable, train orders, and automatic block-signal system
Tracks:	Double; 13°13' curve; 0.03 percent descending grade westward
Weather:	Snowing
Time:	12:51 a. m.
Casualties:	1 killed; 60 injured
Cause:	Excessive speed on a curve

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3676

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

NORFOLK AND WESTERN RAILWAY COMPANY

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March 23, 1956

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Accident near Cedar, W. Va., on January 23, 1956, caused  
by excessive speed on a curve.

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

CLARKE, Commissioner:

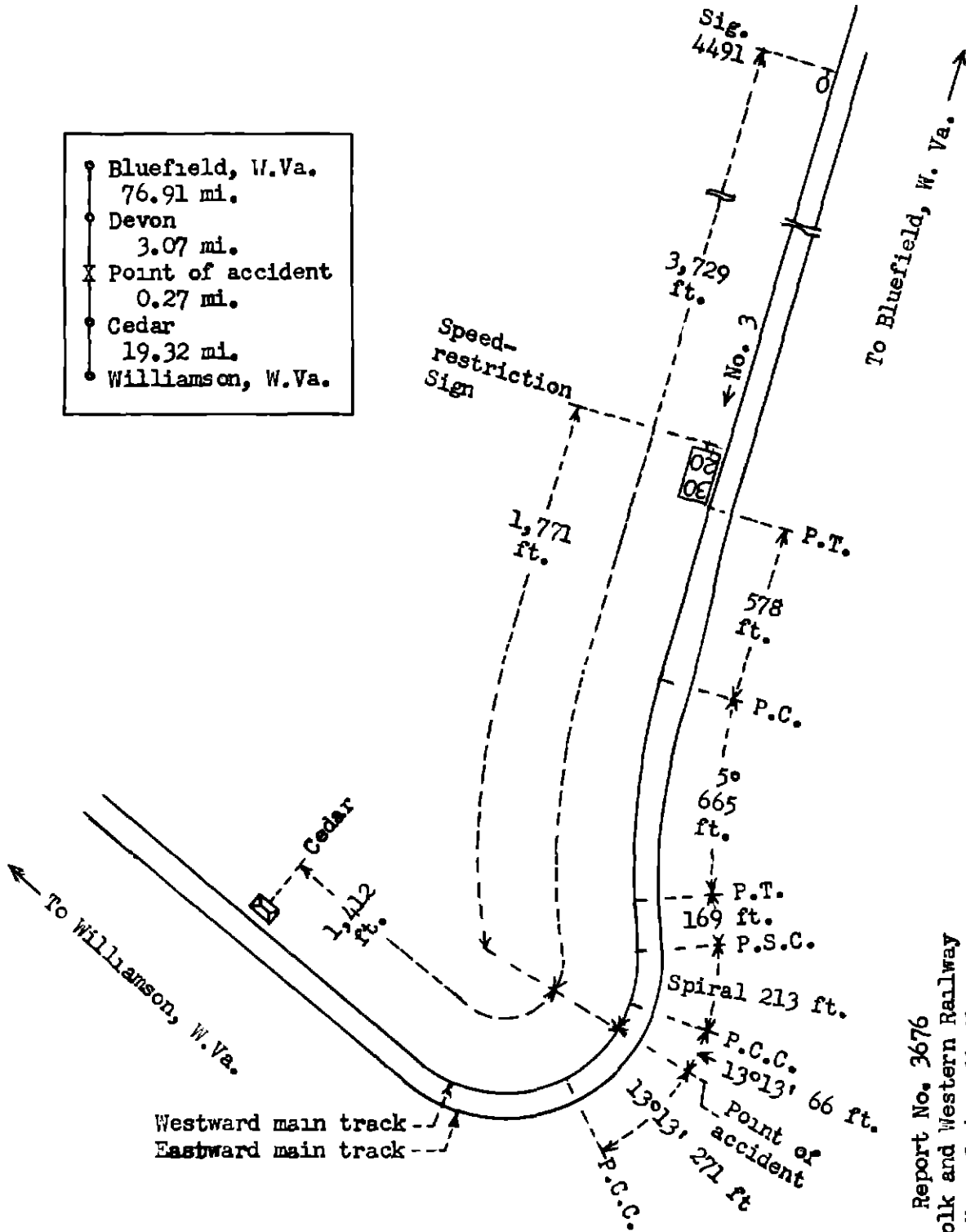
On January 23, 1956, there was a derailment of a passenger train on the Norfolk and Western Railway near Cedar, W. Va., which resulted in the death of 1 train-service employee, and the injury of 51 passengers, 1 express messenger, 3 railway mail clerks, 2 Pullman Company employees, 1 train porter, and 2 train-service employees.

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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.

•	Bluefield, W. Va.	76.91 mi.
•	Devon	3.07 mi.
X	Point of accident	0.27 mi.
•	Cedar	19.32 mi.
•	Williamson, W. Va.	



Report No. 3676  
 Norfolk and Western Railway  
 Near Cedar, W. Va.  
 January 23, 1956

### Location of Accident and Method of Operation

This accident occurred on that part of the Pocahontas Division extending between Bluefield and Williamson, W. Va., 99.57 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 timetable, train orders, and an automatic block-signal system. The accident occurred on the westward main track at a point 79.98 miles west of Bluefield and 1,412 feet east of the station shelter at Cedar. From the east there are, in succession, a tangent 578 feet in length, a 5° curve to the left 665 feet, a tangent 169 feet, a spiral 213 feet, and a 13°13' curve to the right 66 feet to the point of accident and 271 feet westward. The grade is 0.03 percent descending westward at the point of accident.

In the vicinity of the point of accident the tracks parallel the north bank of the Tug River. The tracks are laid in a sidchill cut, and at the point of accident the westward track is about 35 feet above the level of the shoreline of the river and about 75 feet horizontally distant from it.

The track structure of the westward main track consists of 132-pound rail, 39 feet in length, laid new in 1954 on an average of 24 treated ties to the rail length. It is fully tieplated with double-shoulder centered tie plates, spiked with five spikes per tie plate, and is provided with 6-hole 38-inch joint bars and an average of 10 rail anchors per rail. It is ballasted with crushed limestone to a depth of 30 inches below the bottoms of the ties.

Automatic signal 4491, governing west-bound movements on the westward main track, is located 3,729 feet east of the point of accident.

The maximum authorized speed for passenger trains is 50 miles per hour, but it is restricted to 30 miles per hour on the curve on which the accident occurred.

A speed-restriction sign 20 inches in diameter is located 1,771 feet east of the point of accident. This sign is mounted on a post and is approximately 9 feet north of the north rail of the westward main track and 9 feet above the level of the ground. It bears the numerals "30" above the numerals "20" in black on a yellow background.

Description of Accident

No. 3, a west-bound first-class passenger train, consisted of steam locomotive 611, one express car, one mail car, four coaches, one tavern car, one dining car, and three sleeping cars, in the order named. All cars were of all-steel construction, and all except the first, second, and eighth were equipped with tightlock couplers. This train passed Devon, 76.91 miles west of Bluefield and the last open office, at 12:49 a. m., 21 minutes late, according to the dispatcher's record of the movement of trains. While it was moving on a 13°13' curve to the right the engine and tender, the first five cars, and the front truck of the sixth car were derailed at a point 79.98 miles west of Bluefield and 1,412 feet east of the station shelter at Cedar.

The engine stopped on its left side. The front end was 305 feet west of the point of accident and 68 feet south of the westward main track, and the rear end was 100 feet south of the track. The tender remained coupled to the engine. It stopped on its top and approximately parallel to the track. Separations occurred at each end of each of the first four cars. The first car was leaning on its left side. It stopped at right angles to the track with the front end near the rear end of the tender. The second car stopped on its side and approximately parallel to the track. The front end was near the rear end of the first car and 35 feet south of the westward main track. The third car stopped on its left side. The front end was near the rear end of the second car, and the rear end was in the edge of the river. The fourth car stopped upright and at right angles to the tracks. The front end was near the rear end of the third car. The fifth car stopped upright with the front end near the rear end of the third car. The rear end was derailed to the north and stopped on the track structure of the westward main track. The sixth car stopped approximately in line with the track. The front truck was derailed to the north. The locomotive and the first four cars were considerably damaged, and the fifth and sixth cars were somewhat damaged.

The engineer was killed. The fireman and the conductor were injured.

A light snow was falling at the time of the accident, which occurred at 12:51 a. m.

Engine 611 is of the 4-8-4 type. The total weight of the engine in working order is 494,000 pounds, distributed

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as follows: Engine-truck wheels, 101,600 pounds; driving wheels, 288,000 pounds; and trailing-truck wheels, 104,400 pounds. The specified diameters of the engine-truck wheels, the driving wheels, and the trailing-truck wheels are, respectively, 36 inches, 70 inches, and 42 inches. The rigid wheelbase is 18 feet 9 inches, the total wheelbase is 47 feet 3-1/2 inches, and the total length of the engine and tender is 109 feet 2-1/4 inches. The tender is rectangular in shape and is mounted on two six-wheel trucks. Its capacity is 20,000 gallons of water and 35 tons of coal. The weight of the tender fully loaded is 378,600 pounds.

The last class repairs to the engine were completed on November 23, 1955. The accumulated mileage since class repairs was estimated as 30,628. The last trip inspection and repairs were made at Norfolk, Va., on January 22, 1956.

According to data furnished by the carrier, the center of gravity of engine 611 is 77 inches above the level of the tops of the rails. The center of gravity of the tender with the estimated amount of fuel and water remaining at the time the accident occurred was calculated as 68 inches above the level of the tops of the rails. The calculated theoretical safe and overturning speeds for the engine moving on a 13°30' curve having a superelevation of 4-1/2 inches are, respectively, 35.4 miles per hour and 53.6 miles per hour. The calculated safe and overturning speeds for the tender moving on a similar curve are, respectively, 36.9 miles per hour and 56.5 miles per hour.

### Discussion

As No. 3 was approaching the point where the accident occurred the speed was about 40 miles per hour, as estimated by the fireman. The enginemen were in the cab of the locomotive, and the members of the train crew were in the cars of the train. The headlight was lighted. The brakes of the train had been tested and had functioned properly when used on route. The fireman said that signal 4491 indicated Proceed. He said that the engineer made an application of the brakes and closed the throttle when the train was in the vicinity of the speed-restriction sign east of the curve on which the accident occurred, and he estimated that the speed was reduced to about 30 miles per hour. He noticed nothing unusual about the operation of the locomotive until it was closely approaching the curve on which the accident occurred. He said that at this time the right side of the engine lifted and the engine then overturned. He thought that this occurred before the engine entered the curve.

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The members of the train crew said that they noticed nothing unusual before the derailment occurred. The front brakeman estimated that the speed was between 35 and 40 miles per hour at the time of the accident, and the flagman estimated that it was about 30 miles per hour. The conductor said that the speed was normal. None of these employees noticed whether there was a brake application as the train approached the point of accident. An engineer not on duty who was on the train estimated that the speed was about 35 miles per hour, and he said that there was a brake application several seconds before the accident occurred. An express messenger who was in the first car said that he felt the car tilt immediately before it became derailed.

Examination of the locomotive after the accident occurred disclosed no defective condition which could have caused or contributed to the cause of the accident. The counterbalances and sides of the driving wheels on the left side of the engine were marked, but there were no marks on the flanges or treads of the wheels which could be identified as having been caused by contact with the track structure. The skirting, running board, part of the valve gear, and most of the other appurtenances on the left side of the engine had been torn off. There were no indications on the pilot that the engine had struck an obstruction before becoming derailed.

Examination of the track structure disclosed no indications of dragging equipment nor of an obstruction having been on the track. At the point of derailment the track was shifted to the north, and one rail in the south side of the track was kinked. After this rail and three ties were replaced the track was restored to service. Measurements of the track immediately east of the point at which the track was shifted were as follows:

<u>Distance east of point of derailment</u>	<u>Superelevation</u>	<u>Gage</u>		<u>Curvature</u>
<u>Feet</u>	<u>Inches</u>	<u>Feet</u>	<u>Inches</u>	<u>Degrees</u>
278	1/2	4	8-1/2	0°00'
247	1	4	8-1/2	1°15'
216	1-3/4	4	8-3/4	4°15'
185	2-1/8	4	8-5/8	6°15'
154	2-5/8	4	8-3/4	7°22'
123	3	4	8-5/8	8°53'
92	3-3/4	4	9	11°45'
61	4-1/2	4	9	13°30'
30	4-1/4	4	9	13°38'



The portion of track which was shifted was restored to normal alignment by a bulldozer during wrecking operations and before measurements were taken. The engine and tender left the rails, as indicated by the path which they plowed through the ballast and roadbed after they left the track, at the point at which the track was shifted. No marks were found which would indicate that the flanges of the wheels of the engine or tender had crossed the high rail, and no marks indicating derailment of the engine or tender were found between the rails. The portion of track which was shifted was shifted toward the inside of the curve and apparently was shifted as a result of the derailment. The damage to ties throughout this area was slight. Between points 55 feet east and 285 feet west of the point of derailment the eastward track was torn up and pushed over the embankment.

If the engine and tender had become derailed before they overturned, there would have been considerable damage to the track on which they were moving. From the facts that there were no indications that the wheels of the locomotive had contacted the track structure between the rails and that there was only slight damage to the track, it appears that the speed was considerably higher than estimated by surviving members of the crew and that the locomotive was moving at overturning speed when it entered the curve.

A west-bound passenger train consisting of a locomotive and five cars passed Cedar about 1 hour before the accident occurred. The enginemen of this train said that they passed the point of accident at a speed of about 30 miles per hour and that they noticed no unusual or defective condition of the track. This was the last west-bound train which passed Cedar prior to the time of the accident.

#### Cause

This accident was caused by excessive speed on a curve.

Dated at Washington, D. C., this twenty-third day of March, 1956.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,  
Secretary.