RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 4125

THE DELAWARE AND HUDSON RAILROAD CORPORATION

BALLSTON SPA, N. Y.

AUGUST 12, 1967

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

Washington

Summary

DATE:	August 12, 1967	
RAILROAD:	Delaware & Hudson	
LOCATION:	Ballston Spa, N. Y.	
KIND OF ACCIDENT:	Side Collision	
TRAINS INVOLVED:	Freight	Passenger
TRAIN NUMBERS:	Extra 5021 South	9
LOCOMOTIVE NUMBERS	Diesel-electric units 5021, 4097 5003, 4094, 4108	Diesel-electric units 4024, 4025
CONSISTS:	176 cars, caboose	10 cars
SPEEDS:	25 m.p h.	29 m.p.h.
OPERATION:	Signal indications	
TRACKS:	Double; 1°36' curve; 0.27 percent ascending grade northward	
WEATHER:	Clear	
TIME:	4:04 a.m.	
CASUALTIES:	2 killed; 34 injured	
CAUSE:	Failure of the engineer and fireman to operate the northbound train in accordance with Approach and Stop signal indications.	

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RAILROAD SAFETY BOARD

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Synopsis

On August 12, 1967, a side collision occurred between a passenger train and a freight train on the Delaware and Hudson Railroad near Ballston Spa, N. Y. Two passengers were killed, and 34 passengers and employees were injured.

The accident was caused by failure of the engineer and fireman to operate the northbound train in accordance with Approach and Stop signal indications.

Location and Method of Operation

The accident occurred on that part of the Saratoga Subdivision extending between Albany and Whitehall, N. Y., a distance of 83.7 miles. Ballston Spa is 37 8 miles north of Albany Between JS Cabin and BM Cabin, 4,257 feet south and 1 3 miles north of Ballston Spa, respectively, the railroad is a double-track line over which trains operate in either direction on both main tracks by signal indications of a traffic control system. From the west, the main tracks are designated as No 1 and No. 2. The railroad is a single-track line, over which trains also operate in either direction by signal indications of the traffic control system, north

and south of the double-track line. At each end of the double-track line, track No. 2 converges with track No. 1 and the main track of the single-track line at a power-operated switch. The switch at the north end of the double-track line is 28 feet north of BM Cabin, and is facing-point for southbound movements.

The accident occurred on the double-track line, 1.3 miles north of Ballston Spa and 256 feet south of the end of double track at BM Cabin, at the fouling point of tracks No. 1 and No. 2. Saratoga Springs is 4.2 miles north of the accident point.

Controlled signal 17L, governing southbound movements from the single-track line to the double-track line at BM Cabin, is 262 feet north of the collision point. Controlled signal 15R, governing northbound movements from the single-track line to the double-track line at JS Cabin, and controlled signal 17R, governing northbound movements from track No 1 of the double-track line to the single-track line at BM Cabin, are 2.2 miles and 254 feet south of the collision point, respectively. These signals and the power-operated switches at the ends of the double-track line are controlled by the train dispatcher at Albany.

Because of track curvature and vegetation adjacent to the east side of the track structure, signal 17R cannot be seen from the control compartment of a northbound locomotive on track No. 1 at a distance in excess of 2,280 feet.

Details concerning the tracks, signals, carrier's operating rules, trains, damages, and other factors are set forth in the appendix.

Description and Discussion

About 3:45 a.m. the day of the accident, the train dispatcher arranged for No. 9, a northbound passenger train, to meet Extra 5021 South, a southbound freight train, by establishing the route for No. 9 to enter track No. 1 of the double-track line at JS Cabin and to proceed to signal 17R, and for Extra 5021 South to enter track No. 2 of the double-track line at BM Cabin. When the route is so established, signals 15R and 17R display Approach and Stop aspects, respectively, and signal 17L displays a Medium-approach aspect.

Extra 5021 South left Whitehall at 1:05 a.m. the day of the accident and stopped at Fort Edward, 22.0 miles south of Whitehall, to set out and pick up cars. The train, consisting of 5 diesel-electric units, 176 cars and a caboose, left Fort Edward at 3:03 a.m. and proceeded southward with the fireman, a qualified engineer, at the locomotive controls. About one hour later, while moving on the single-track line north of BM Cabin, Extra 5021 South neared signal 17L, which displayed a Medium-approach aspect. The locomotive then passed this signal and, immediately afterward, entered track No. 2 of the double-track line extending between BM Cabin and JS Cabin. Soon afterward, while the train was moving

about 25 miles per hour, as indicated by the speed-recording tape, both enginemen observed the headlight of No. 9 come into view on track No. 1 at a distance of about 1,200 feet. They then observed sparks flying from around the wheels of No. 9, as that train approached and passed on the adjacent track Immediately thereafter, at 4:04 a.m., while Extra 5021 South was entering track No. 2 at 25 miles per hour , the west side of the 26th car was struck by No. 9, 1.3 miles north of Ballston Spa station, at the fouling point of track No. 1 and No. 2 at the north end of the double-track line.

Fourteen cars of Extra 5021 South, and the locomotive and first 3 cars of No. 9, were derailed. Two passengers on No. 9 were killed The engineer, fireman, front brakeman, 2 sleeping-car employees and 29 passengers were injured

No. 9, a northbound first-class passenger train consisting of 2 diesel-electric units and 10 cars, left Albany at 3:10 a m., 55 minutes late, on the day of the accident About 4:02 a m., while moving northward on the single-track line south of JS Cabin at 61 miles per hour, as indicated by the speed-recording tape, the train approached signal 15R, which should have been displaying an Approach aspect. However, the engineer and fireman said that signal 15R displayed a Clear aspect as their locomotive approached and passed it, and that they called this aspect to each other. The train then entered track No. 1 of the double-track line at JS Cabin, and increased speed to 63 miles per hour as it passed the Ballston Spa station. The engineer said that when the locomotive was about 2,400 feet north of the station and was approaching the curve to the right on which the accident occurred, he saw the reflection of the headlight of Extra 5021 South.

As No. 9 moved on the curve and approached signal 17R, the fireman, who was seated on the west side of the control compartment, was unable to observe the signal because of track curvature and the long engine hood in front of the control compartment. The engineer said that signal 17R came into view at a distance of about 2,000 feet, and that at this time he could not see the bottom unit of the signal due to his view being obstructed by track curvature and cars in the consist of Extra 5021 South. However, according to his statements, he observed that the middle and top units of signal 17R each displayed red aspects and immediately realized something was wrong He said that he promptly applied the train brakes in emergency and called a warning to the fireman. Moments later, while moving northward on track No. 1, the locomotive of No. 9 passed the locomotive of the southbound train and passed signal 17R, which displayed a Stop aspect. The speed of the passenger train had been reduced to 29 miles per hour, as indicated by the speed-recording tape, when the collision occurred.

Tests made after the accident disclosed that the signals involved functioned properly.

Findings

It is apparent that as No. 9 approached the accident point signals 15R and 17R displayed Approach and Stop aspects, respectively. Under these circumstances, the aspect displayed by signal 15R required that the speed of the train at once be reduced to medium speed, not exceeding 30 miles per hour, and so controlled in the block of this signal as to stop short of signal 17R. It is further apparent that the engineer and fireman of No. 9 were mistaken about the aspect displayed by signal 15R. The train proceeded in the block of signal 15R at 63 miles per hour, 33 miles per hour above the maximum speed authorized by the Approach aspect displayed by that signal, and failed to stop short of signal 17R, as required, resulting in the accident. Analysis of the speed-recording tape indicates the brakes were not applied until the train was closely approaching signal 17R immediately before the accident occurred.

Cause

This accident was caused by failure of the engineer and fireman to operate the northbound train in accordance with Approach and Stop signal indications.

Dated at Washington, D. C., this 8th
day of February 1968.
By the Federal Railroad Administration
Railroad Safety Board

Bette E. Holt
(SEAL) Acting Executive Secretary

Appendix

Tracks

From the south on track No. 1 of the double-track line there are, in succession, a tangent 1,583 feet long, a 1°00' curve to the left 1,389 feet, a tangent 4,421 feet, and a compound curve to the right, having a maximum curvature of 1°30', 3,873 feet to the accident point and 2 feet northward. From the north on the single-track line and track No 1 of the double-track line there are, successively, a long tangent and the curve on which the accident occurred.

The grade for northbound trains is 0 27 percent ascending 3,873 feet to the accident point and 167 feet northward.

Signals

Signals 15R, 17R and 17L are of the color-light type and are approach lighted. The aspects applicable to this investigation and the corresponding indications and names are as follows:

Signal	Aspect	Indication	Name
17L	Red-over yellow-over-red	Proceed at medium speed preparing to stop at next signal	Medium-approach
15R	Green-over-red-over-red	Proceed	Clear
	Yellow-over-red-over-red	Proceed preparing to stop at next signal. Trains exceeding medium speed must at once reduce to that speed.	Approach
17R	Red-over-red-over-red	Stop	Stop

The signals are controlled from the train dispatchers' office at Albany The controlling circuits are so arranged that when the route is established for a southbound train to enter track No. 2 at the power-operated switch at BM Cabin, and for a northbound train to proceed on track No. 1

to signal 17R, signals 17L, and 15R and 17R display Medium-approach, Approach, and Stop aspects, respectively.

Operating Rules

Definitions

***

Medium Speed. - A speed not exceeding thirty miles per hour, ***

Use of Signals

34. All members of engine and train crews must, when practicable, communicate to each other by its name the indication of each signal affecting the movement of their train or engine as soon as it becomes clearly visible.

Should the engineman fail to comply with the signal indication displayed, other members of the crew will remind him and, if necessary, take action to insure the safety of the train.

Movement of Trains

98. Trains must approach the end of two or more tracks, junctions, *** prepared to stop, unless switches are properly lined, signals indicate proceed, and track is clear. ***

Trains

Extra 5021 South consisted of road-switcher type diesel-electric units 5021, 4097, 5003, 4094 and 4108, coupled in multiple-unit control, 176 cars and a caboose. The brakes had been tested and had functioned properly when used en route. As the train approached Ballston Spa, the engineer and fireman were in the control compartment at the front of the first diesel-electric unit. The fireman, a qualified engineer, was operating the locomotive. The front brakeman and swing brakeman were in the control compartment of the second unit, and the conductor and flagman were in the caboose.

No. 9 consisted of road-switcher type diesel-electric units 4024 and 4025, coupled in multiple-unit control, 4 sleeping cars, 5 coaches and 1 baggage car, in that order. The cars were of all-steel construction and were equipped with tightlock couplers. The train brakes had been tested and had functioned properly when used en route. The headlight was lighted. As the train approached the accident point, the engineer and fireman were in the control compartment at

the rear of the first diesel-electric unit. The conductor, front brakeman, and flagman were in the ninth car.

Damages

Extra 5021 South stopped with the front end 2,009 feet south of the accident point. The 27th to 40th cars, inclusive, were derailed and stopped in various positions on or near the track structure. The 26th car, which was struck by the locomotive of No. 9, was not derailed. Of the 14 cars derailed, 10 were destroyed, 1 was heavily damaged, and 3 were slightly damaged.

No. 9 stopped with the front end 269 feet north of the collision point Both trucks of the two diesel-electric units and the first two cars, and the front truck of the third car, were derailed. The derailed equipment stopped in various positions as shown in the photograph appended to this report

The locomotive units and the 1st car were destroyed The second car was heavily damaged and the third car was slightly damaged.

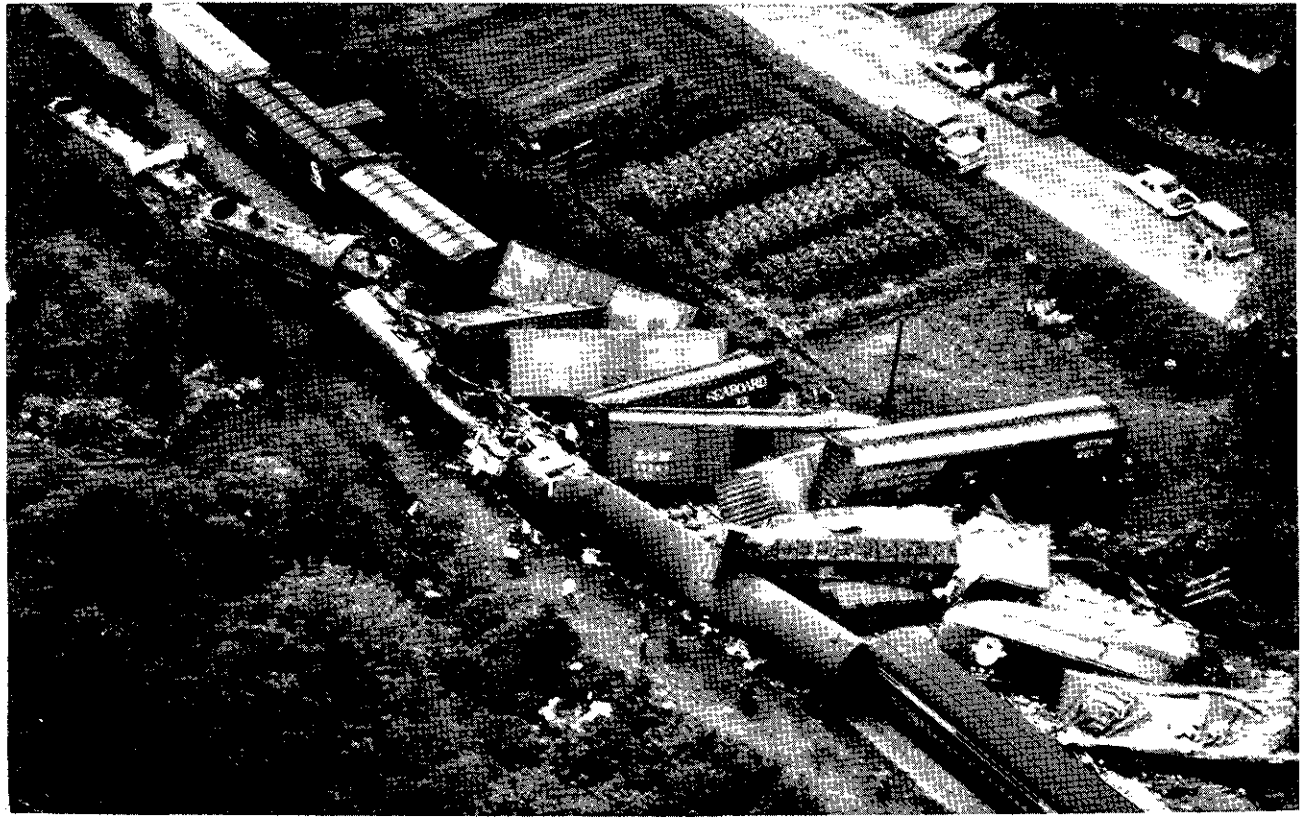
Other Factors

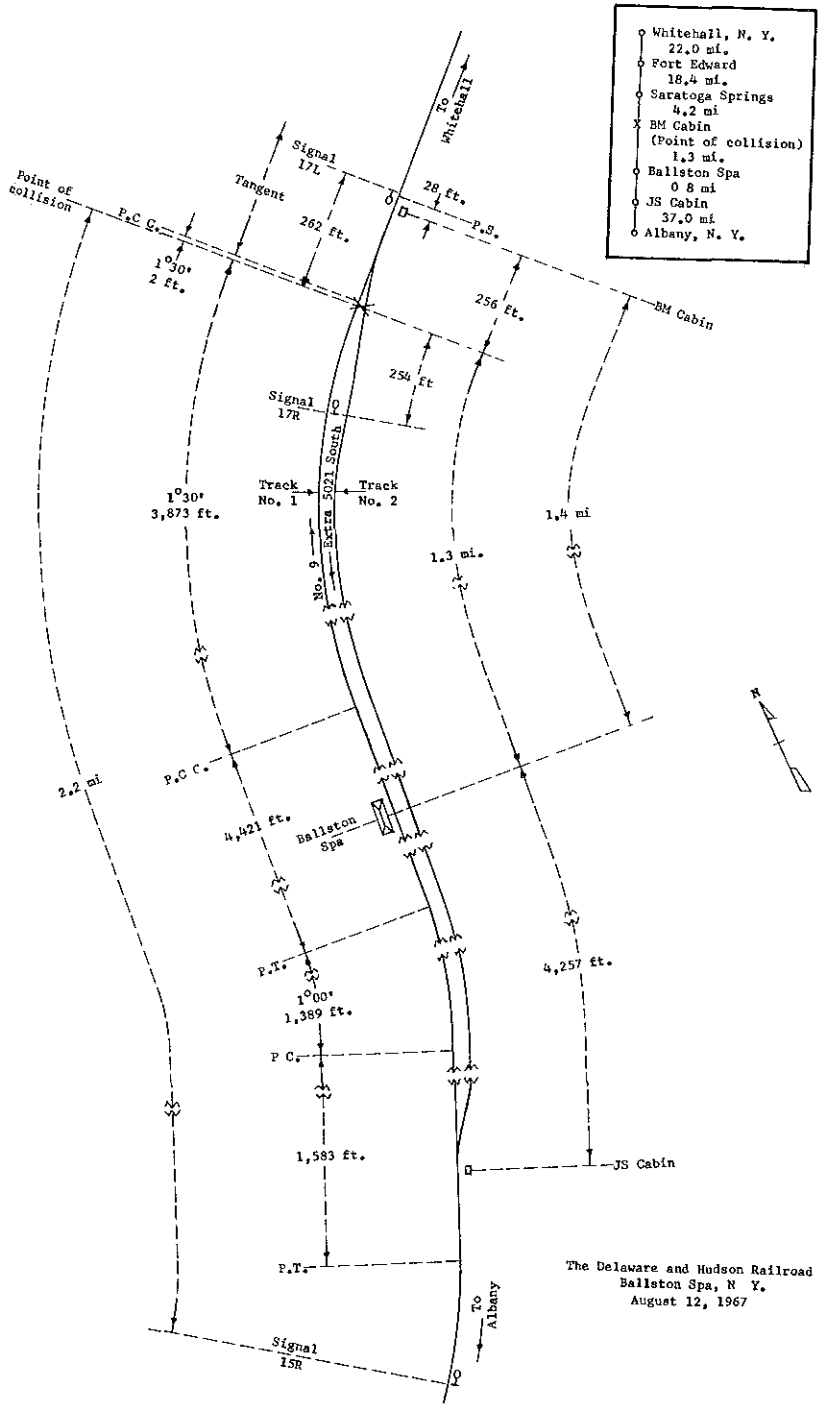
The accident occurred at 4:04 a.m , in clear weather.

The maximum authorized speeds for passenger and freight trains in the accident area are 70 and 60 miles per hour, respectively However, all trains are restricted to 35 miles per hour when entering a diverging route at the end of two or more main tracks.

According to their daily time returns, all crew members of Extra 5021 South had been on duty 4 hours 34 minutes at the time of the accident, after having been off duty 17 hours 30 minutes. The engineer and fireman of No. 9 had been on duty 2 hours 54 minutes, after having been off duty 30 hours 50 minutes and 44 hours, respectively. The conductor, front brakeman and flagman had been on duty 2 hours 19 minutes. The conductor and flagman had previously been off duty in excess of 30 hours, and the front brakeman had been off duty 10 hours 15 minutes.

The accident was investigated in conjunction with representatives of the New York State Public Service Commission





The Delaware and Hudson Railroad
Ballston Spa, N Y.
August 12, 1967