

Inv-2295

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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REPORT OF THE DIRECTOR  
BUREAU OF SAFETY

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ACCIDENT ON THE  
BOSTON AND MAINE RAILROAD

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EAST DEERFIELD, MASS.

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SEPTEMBER 20, 1938

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INVESTIGATION NO. 2295

- 2 -

SUMMARY

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Inv-2295

Railroad: Boston and Maine  
Date: September 20, 1938  
Location: East Deerfield, Mass.  
Kind of accident: Derailment  
Train involved: Freight  
Train number: ES-2  
Engine number: 2723  
Consist: 78 cars, caboose and helper engine 615  
Speed: 10-15 m.p.h.  
Operation: Semi-automatic block-signals  
Track: Single; 7°10' curve to the right; 0.77 percent ascending grade  
Weather: Raining  
Time: 3:55 a. m.  
Casualties: 3 killed, 1 injured  
Cause: Sand and gravel washed on track

October 13, 1938

To the Commission:

On September 20, 1938, derailment of a freight train on the Boston and Maine Railroad near East Deerfield, Mass., resulted in the death of three employees and the injury of one employee. The investigation of this accident was made in conjunction with a representative of the Department of Public Utilities of Massachusetts.

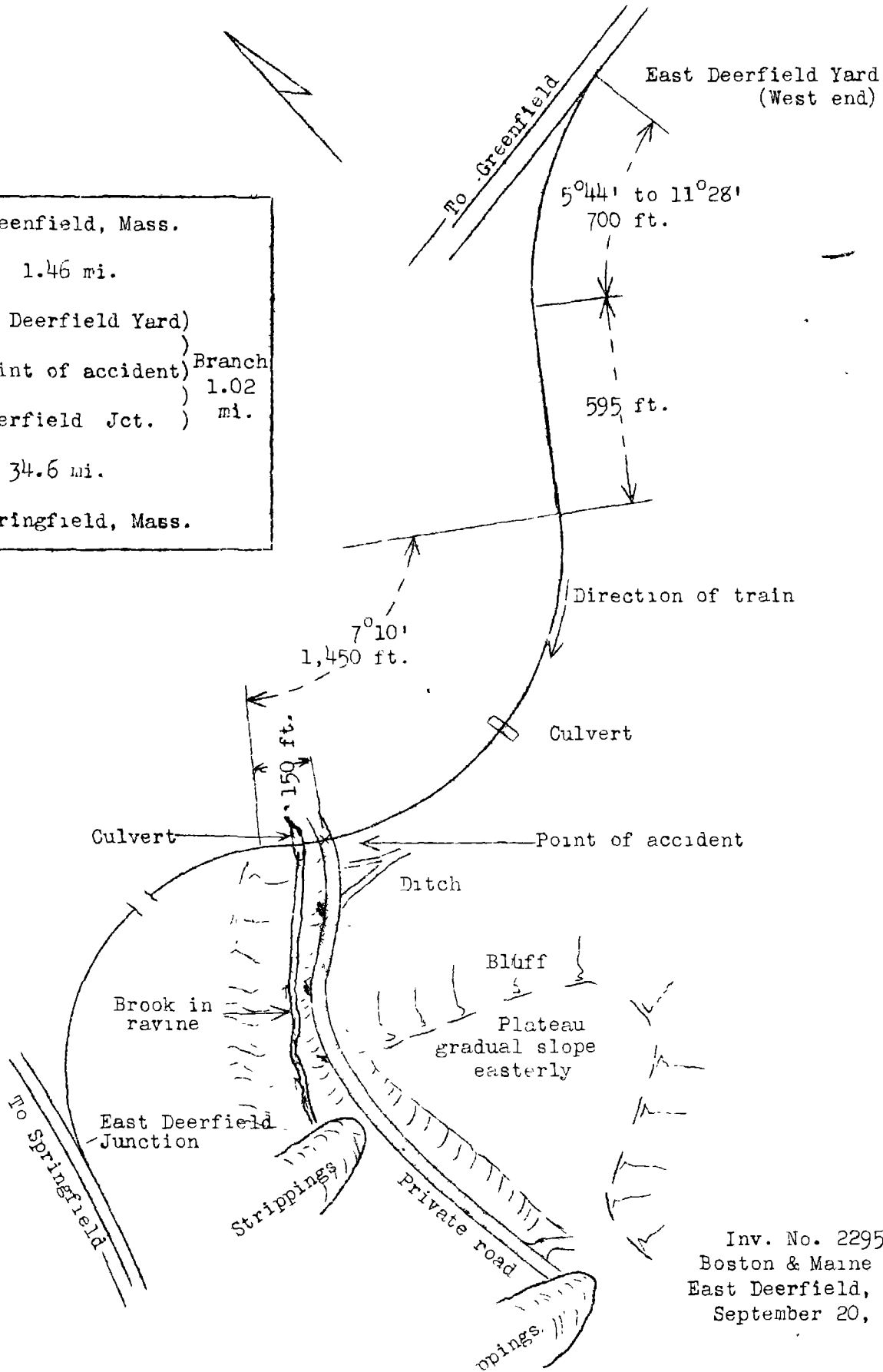
#### Location and method of operation

This accident occurred on that part of the Fitchburg Division designated as the East Deerfield Branch, which extends between East Deerfield Yard and Deerfield Junction, a distance of 1.02 miles. This is a single-track line over which movements are governed by semi-automatic block signals which are operated from a tower at East Deerfield and are also actuated by train movements on the branch. At Deerfield Junction there is a 4-lever interlocking plant controlling movements to and from the branch. An operator-switchman on duty daily from 6:30 p.m. to 3:30 a.m., with one hour out for lunch, handles the switches for movements to and from East Deerfield during these hours. At other hours train crews are required to communicate with East Deerfield tower relative to making movements over the branch. The accident occurred at an abandoned private road crossing located approximately 2,595 feet west of the east switch of the branch. Approaching this point from the east there is a compound curve to the left approximately 700 feet in length which varies from  $5^{\circ}44'$  to  $11^{\circ}28'$ , then tangent track for a distance of 595 feet, followed by a  $7^{\circ}10'$  curve to the right 1,450 feet in length; the accident occurred on this latter curve at a point about 150 feet from its western end. The grade for west-bound trains is 0.77 percent ascending at the point of accident.

The track is laid in a series of fills and cuts; at the point of accident it is on a side-hill fill. The track structure consists of 100-pound rail, 33 feet in length, on 19 treated hardwood ties to the rail length; it is double-spiked on the inside and single-spiked on the outside, tie-plated, ballasted with cinders and gravel to a depth of 12 inches and is well maintained. On the curve on which the accident occurred 35  $1\frac{1}{2}$ -inch anti-spread rods are used.

The maximum speed allowed on this branch is 20 miles per hour and at a point about 500 feet west of the point of accident there is a slow speed board restricting the speed to 10 miles per hour.

o Greenfield, Mass.		
1.46 mi.		
o E. Deerfield Yard)	) Branch	
X Point of accident)		1.02
o Deerfield Jct. )		mi.
34.6 mi.		
o Springfield, Mass.		



Inv. No. 2295  
 Boston & Maine R.R.  
 East Deerfield, Mass.  
 September 20, 1938

At the point of derailment an abandoned road crosses the track at approximately right angles. This road extends northward and southward, and at a point about 850 feet south of the track it is blocked by an earth barrier. From this barrier northward the road has a 13 percent descending gradient to a point about 220 feet south of the track where the grade moderates to 8 percent and continues at that rate to and beyond the track. This road is about 8 feet wide and is surfaced with finely crushed rock firmly packed.

A small plateau located about 400 feet south of the point of accident drains to the east into a deep ravine and then through a 5-foot culvert under the railroad to the Deerfield River. A small area of land west of this plateau drains across the abandoned road into a ravine which closely parallels the road on the west, and then through a 4-foot culvert under the railroad at a point 50 feet west of the point of derailment. Ditches located 24, 67 and 170 feet south of the track have been provided for the purpose of diverting water from the roadway to the ravine on the west.

It had been raining for several days, and an unusually heavy rain was in progress at the time of the accident, which occurred about 3:55 a.m.

#### Description

South-bound freight train ES-2 consisted of 78 cars, and a caboose, hauled by engine 2723, of the 2-8-0 type, and was in charge of Conductor Warren and Engineman Christian. Helper engine 615, in charge of Engineman Lalor, was coupled to the rear of the caboose. This train departed from track 7 in East Deerfield yard at 3:50 a.m., according to the train sheet, and soon afterward it was derailed at an abandoned road crossing while traveling at a speed estimated to have been 10 or 12 miles per hour.

The engine stopped on its left side at an angle of about 45°, south of and parallel with the track, with its front end 145 feet beyond the road crossing. The tender remained coupled to the engine and stopped at right angles across the track; both were badly damaged. The first two cars were derailed and badly damaged; the first car stopped to the right of the track and the second to the left of the track. The third car was derailed but remained in general line with the track. The lead truck of the fourth car was derailed and this car stopped east of the road crossing. The employees killed were the engineman, the fireman and the middle brakeman, and the employce injured was the head brakeman.

### Summary of evidence

Head Brakeman Towne stated that before leaving East Deerfield the air brakes were tested, and were reported as functioning properly. Approaching the scene of the accident he was on the fireman's seatbox with the middle brakeman behind him, and the fireman was on the deck tending to the fire. The headlight was burning brightly, and the windows on both sides of the cab were open but due to the curve to the right he was unable to observe the track ahead. The train was traveling at a speed of about 12 miles per hour when he felt the engine jump and tip to the left. He had been on the engine of a north-bound train that moved over this branch about 12:40 a.m., at which time there was a hard rain, but he did not notice any unusual condition of the track. A very hard rain fell before ES-2 left East Deerfield, harder than previously that night, but he did not think it was raining when the derailment occurred.

Conductor Warren stated that after the air brakes were tested at East Deerfield he observed engine 615 coupled to the rear of the caboose, the air hose was coupled and the angle cocks opened. The train had attained a speed of about 15 miles per hour, but at the time of derailment the speed was about 12 miles per hour.

Flagman Sullivan estimated the speed to have been 10 or 15 miles per hour at the time of the accident, and the members of the crew of the helper engine thought it was 10 or 12 miles per hour.

Engineman Lalor, of the helper engine, gave the time of accident as 3:55 a.m.

Section Foreman Mazor, in charge of the section on which the accident occurred, stated that he walked over the branch line about 7:40 p.m., September 19, and it was in good condition and there was no evidence of any dirt being washed on the track. A steady rain had been falling but nothing of an alarming nature at the time he completed his patrol about 9 p.m. He then went home and went to bed and did not know that there had been a heavier rain until informed of the occurrence of the accident. He stated that the ditch on the south side of the track is about 1 foot wide and 6 inches deep and was in good condition, and he had never had any trouble with dirt being washed down on the track in that vicinity. At the time he reached the scene of the accident the track had been cleared of dirt. He last inspected the slope south of the track in the vicinity of the point of accident about 10 days previously.

Road Foreman of Engines Gurley arrived at the scene of the accident about 4:40 a.m. and found that sand and gravel covered the track to a depth of about 3 inches and extended a distance of

15 feet along the track. After daylight he saw various flange marks on the ties west of the crossing where mud and sand had receded, but he could not identify the first mark of derailment. When he arrived at the scene of the accident it was not raining, but there had been hard showers during the night and it rained hard about 3:30 a.m. in the vicinity of his home, 2 miles from Deerfield Jct. Examination of the engine disclosed that the automatic brake valve was in running position and the independent brake valve in service position. He gaged the wheels and found them to be in good condition; he also examined the brake gear but did not find anything that could in any way have contributed to the cause of the accident.

Assistant Superintendent Harrington of the Water Department, Greenfield, Mass., who keeps the local weather record for the State Board of Health, stated that his record of rainfall for twenty-four hour periods ending 8 a.m. showed the following:

8 a.m. September 18,	0.55 inch
8 a.m. " 19,	4.34 inches
8 a.m. " 20,	3.08 "

The record of rainfall of the Turners Falls Power Company, Turner Falls, Mass., located within a few miles of East Deerfield, shows a total fall of 4.61 inches from 11:30 a.m., September 19, to 5:30 a.m., September 20.

According to the Springfield Daily News of September 20, the record kept at Massachusetts State College located at Amherst, Mass., about 20 miles from Deerfield Junction, shows a rainfall of 0.7 inch in 10 minutes at 2 a.m., on September 20.

#### Observations of the Commission's Inspectors

Inspection of the track east of the point of accident failed to disclose any evidence of anything having been dragging or any other damage to the track. Inspection of the barrier located at the top of the private roadway south of the tracks, which is made of soft earth, failed to show any signs of having washed on account of heavy rains; the unused roadway, however, from that point to the railroad track showed several deep gouges or holes which indicated unusually heavy rains.

An inspection of the engine and tender disclosed that the wheels, foundation brake gear and running gear were in good condition and did not contribute to the cause of the accident.

West of the road crossing there were heavy flange marks on five ties on the south side of the rail; from this point westward the track was completely torn up for a distance of about 140 feet.

### Discussion

The evidence indicates that an exceedingly heavy rainfall occurred within a few hours prior to the accident. This resulted in sand and gravel being washed down from the abandoned road upon the track, covering it to a depth of about 3 inches and for a distance of 15 feet. The track was in good condition when it was patrolled by the section foreman at 7:40 p.m., the previous evening, and at 12:40 a.m. when a north-bound train passed over it there was no indication of dirt being on the track.

### Conclusion

This accident was caused by a deposit of dirt upon the track at a road crossing, due to heavy rainfall.

Respectfully submitted,

W. J. PATTERSON,

Director.