

RAILROAD ACCIDENT INVESTIGATION

Report No 3979

BOSTON AND MAINE RAILROAD

WINNISQUAM, N H

DECEMBER 4, 1962

INTERSTATE COMMERCE COMMISSION

Washington

SUMMARY

§ § §

DATE	December 4, 1962		
RAILROAD	Boston and Maine		
LOCATION	Winnisquam, N H		
KIND OF ACCIDENT	Rear-end collision		
EQUIPMENT INVOLVED	Rail-defect detector car	Track motorcar	Freight train
TRAIN NUMBERS	Extra SRS-133 North		Extra 1573 North
LOCOMOTIVE NUMBER	Diesel-electric unit 1573		
CONSIST	14 cars, caboose		
ESTIMATED SPEEDS	Standing	Standing	28-30 m p h
OPERATION	Timetable, train orders		
TRACK	Single, 3°00' curve, 0.58 percent ascending grade northward		
WEATHER	Partly cloudy		
TIME	11 55 a m		
CASUALTIES	1 killed, 3 injured		
CAUSE	Failure to provide rear-end protection for the movement of a track motorcar and a rail-defect detector car		
RECOMMENDATION	It is recommended that this carrier take such steps as are necessary to insure adequate protection of rail-defect detector cars, track motorcars, and similar equipment		

INTERSTATE COMMERCE COMMISSION

REPORT NO 3979

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

BOSTON AND MAINE RAILROAD

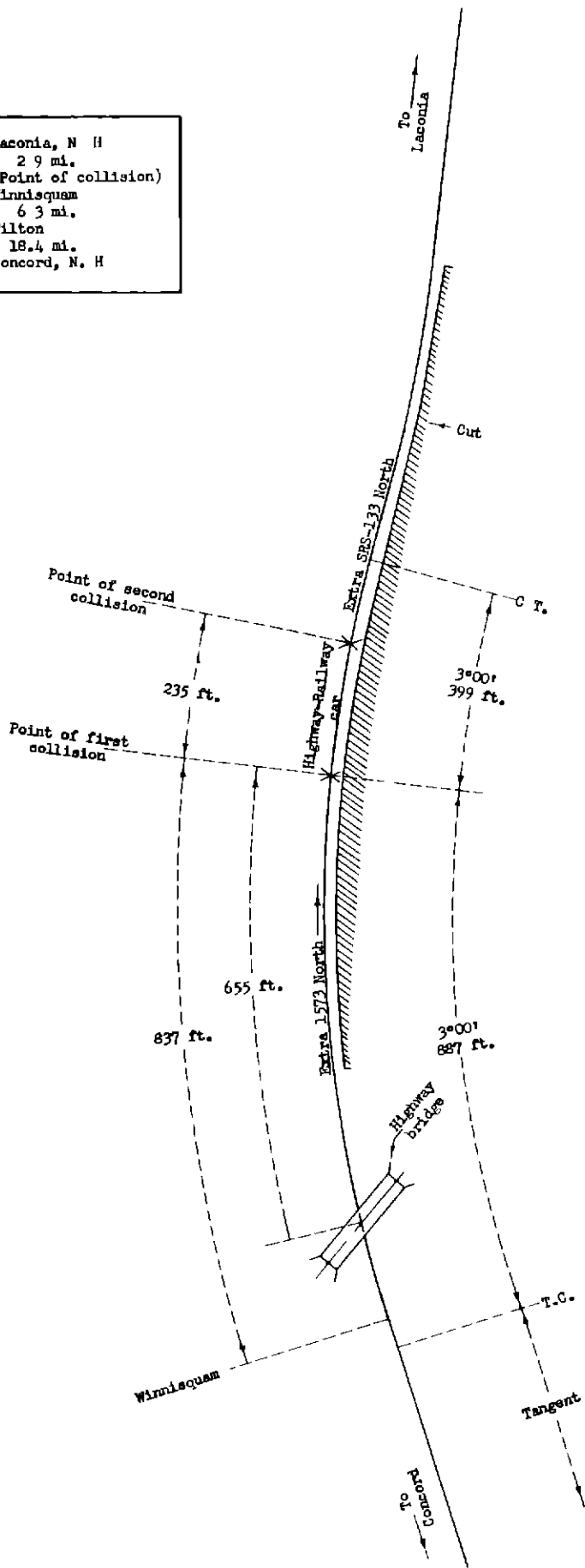
Accident at Winnisquam, N H , on December 4, 1962, caused by failure to provide rear-end protection for the movement of a track motorcar and a rail-defect detector car

REPORT OF THE COMMISSION¹*SAFETY AND SERVICE BOARD NO 1*

On December 4, 1962, at Winnisquam, N H , there was a rear-end collision involving a freight train, a track motorcar, and a rail-defect detector car on the Boston and Maine Railroad, which resulted in the death of 1 maintenance-of-way employee and in the injury of 1 maintenance-of-way employee and 2 Sperry Rail Service employees. This accident was investigated in conjunction with representatives of the New Hampshire Public Utilities Commission

¹Under authority of section 17 (2) of the INTERSTATE COMMERCE ACT the above-entitled proceeding was referred by the Commission to Safety and Service Board No 1 for consideration and disposition

- Laconia, N. H.
2.9 mi.
(Point of collision)
- ✕ Winnisquam
6.3 mi.
- Tilton
18.4 mi.
- Concord, N. H.



Boston and Maine Railroad
Winnisquam, N. H.
December 4, 1962

Location of Accident and Method of Operation

This accident occurred on that part of the Boston Division extending between Concord and Laconia, N H , 27.6 miles, a single-track line over which trains are operated by timetable and train orders. There is no block-signal system in use.

The first collision occurred on the main track at a point 24.8 miles north of Concord and 837 feet north of the station at Winnisquam, and the second collision occurred on the main track 235 feet farther northward. From the south there are, in succession, a tangent of considerable length, and a 3°00' curve to the right 887 feet to the point of the first collision and 399 feet northward. In this vicinity the average grade is 0.58 percent ascending northward.

A highway bridge spans the main track 655 feet south of the point of the 1st collision. Between points 352 feet south and 920 feet north of the point of the 1st collision, the main track is laid in a cut. The east wall of this cut rises to a maximum height of about 25 feet above the level of the tops of the rails and is covered with vegetation between 4 and 10 feet in height. Because of the curvature of the track, the piers of the highway bridge, the east wall of the cut and the vegetation on the wall, the forward range of vision from a northbound locomotive closely approaching the points where the collisions occurred is restricted to a distance of about 350 feet.

This carrier's operating rules read in part as follows:

SPEEDS

* * *

Restricted -- A speed that will permit stopping short of another train, obstruction, or switch not properly lined but not exceeding 15 miles per hour.

11 * * *

In territory where no form of block signals is in use, fuses burning red 5 minutes and yellow 5 minutes will be used. Trains operating in non-signal territory will respect fuses as follows:

(a) Fusee burning red - stop, then proceed at restricted speed for 10 minutes.

(b) Fusee burning yellow - immediately reduce to restricted speed and proceed at restricted speed for 5 minutes.

* * *

15 The explosion of two torpedoes is a signal to proceed at restricted speed --

* * *

(b) In non-signal territory, one-half mile, and as much further as physical and weather conditions seem to warrant.

* * *

35 The following signals will be used by flagmen:

Day Signals -- A red flag,
Torpedoes and
Fusees

* * *

99 When a train is moving under circumstances in which it may be overtaken by another train, the flagman must throw off lighted fusees at proper intervals and take such other action as may be necessary to insure full protection.

When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes and, when necessary, in addition, displaying lighted fuseses

* * *

RULES FOR THE OPERATION * * * OF BY-RAIL CARS

1043 Before occupying main track, the * * * operator of car must, where possible, obtain permission from train dispatcher to use the main track between specific points and for a specified clock time over which no extras will be operated other than designated in the permission up to the expiration of the time limit granted * * *

The maximum authorized speed for freight trains in the territory involved is 30 miles per hour, and is 20 miles per hour for highway-railway cars and rail-defect detector cars

Description of Accident

At 8 05 a m on the day of the accident rail-defect detector car No 133 departed from Concord, the last open office, and operated as Extra SRS-133 North, a northbound train. An automobile, designed to operate on rails as well as highway, hereinafter designated as a track motorcar, closely followed the rail-defect detector car from Concord. The detector car and the track motorcar proceeded northward on the main track, stopping frequently for tests and examinations of rails, and at Tilton, 18 4 miles north of Concord, they entered a siding to permit Extra 1127 North, a northbound freight train, to pass. After this train passed, the detector car and the track motorcar re-entered the main track at Tilton, proceeded northward, and passed the station at Winnisquam. About 11 50 a m, the detector car stopped at a point approximately 1,200 feet north of the station, and immediately thereafter it moved in reverse and stopped on the main track 1,072 feet north of the station. Soon afterward the track motorcar stopped on the main track at a point 837 feet north of the station and 235 feet south of the detector car. About 11 55 a m, while both of these cars were standing on the main track, the rear end of the track motorcar was struck by Extra 1573 North. The locomotive of Extra 1573 North then shoved the track motorcar northward on the main track and struck the rail-defect detector car.

Extra 1573 North, a northbound freight train, consisted of road-switcher type diesel-electric unit 1573, 14 cars and a caboose. This train departed from Concord at 11 05 a m and about 50 minutes later, while moving northward on the main track at an estimated speed of 28-30 miles per hour, struck the rear end of the track motorcar. The locomotive then shoved the track motorcar northward to the point where it struck the rail-defect detector car.

The track motorcar was derailed and stopped wedged between the rear end of the detector car and the front end of the locomotive of Extra 1573 North. It was destroyed.

— The detector car was moved 915 feet northward by the impact and was heavily damaged. It was not derailed but was moved off center at the rear truck.

None of the equipment of Extra 1573 North was derailed. The front of this train stopped against the rear end of the detector car, with the track motorcar wedged under the front end of the locomotive. The locomotive was slightly damaged.

A track supervisor, who was operating the track motorcar, was killed. Another track supervisor and 2 rail service employees were injured.

The weather was partly cloudy at the time of the accident, which occurred about 11 55 a m

During the 30-day period immediately preceding the day of the accident the average daily movement in the territory involved was 5 0 trains

The locomotive of Extra 1573 North was equipped with a speed-recording device This device was not provided with tape on the day of the accident

The track motorcar was a 1960 model 9-passenger Chevrolet station wagon equipped for providing transportation both on rails and on highways In addition to conventional automobile wheels it was equipped at the front and the rear with flanged pilot wheels, which acted as guides while operating on rails The weight of the vehicle was carried by the tires of the conventional wheels The car was provided with radio-telephone equipment

The rail-defect detector car involved was owned and operated by a rail service company It was about 59 feet in length, weighed approximately 124,000 pounds, and was of all-steel construction It was self-propelled by means of 2 traction motors and a series 201 Winton engine, and was provided with electronic equipment for detecting defective rails and with a separate power plant for operating this equipment The controls and the electronic equipment were operated by employees of Sperry Rail Service

Discussion

About 6 40 a m on the day of the accident a conductor and two track supervisors entered the yard office at Concord and reported on duty for the movement of rail-defect detector car 133 from Concord to Meredith, N H , 10 1 miles north of Laconia At this time the conductor thought that a flagman had also been assigned for service with the detector car and he inquired of a yard clerk as to the identity of the flagman The yard clerk replied that no flagman was assigned The conductor said that he then expressed concern about the detector car departing from Concord without a flagman, and that at this time one of the track supervisors told him that he would provide the necessary flagging protection against following trains The conductor said that he agreed to this arrangement, and that about 7 05 a m , after train order authority had been obtained for the detector car to operate as Extra SRS-133 North from Concord to Meredith, the detector car commenced operations in and about the yard at Concord At 8 05 a m , after completion of these operations, the detector car departed northward on the main track from Concord with the two track supervisors closely following in a track motorcar An employee of the rail service company was at the controls of the detector car, and 3 other rail service employees and the conductor were at various locations in this car Both the detector car and the track motorcar proceeded northward at speeds varying between 8 and 12 miles per hour, and with the electronic equipment of the detector car in operation to detect defects in the rails Whenever a defect was indicated, the detector car stopped On these occasions the following track motorcar approached the location of the defect and stopped immediately to the rear of the detector car, after which the track supervisors and the rail service employees examined the defective rail to determine whether it required replacement

As the rail-defect detector car and the following track motorcar were en route northward from Concord to Tilton, a distance of 18 4 miles, one of the track supervisors placed lighted 5-minute fuses on the track structure at various intervals for protection against following trains When these cars were closely approaching Tilton, Extra 1127 North, a northbound freight train, stopped at a lighted fusee to the rear of the track motorcar after which both the detector car and the track motorcar entered the siding at Tilton to permit the following train to pass As Extra 1127

North was passing the siding, the conductor of the detector car obtained approximately twenty 10-minute fuses from its caboose and gave them to the track supervisor who had volunteered at Concord to provide some protection to the rear. The conductor said this track supervisor then told him that he intended to place 10-minute lighted fuses on the main-track structure at 8-minute intervals for protection of the detector car and the track motorcar against following trains. Soon after Extra 1127 North passed the siding at Tilton, the detector car and the following track motorcar re-entered the main track and departed northward toward Winnisquam. About 10:50 a.m., while these cars were stopped en route for an examination of a defect in the rails, the conductor and the track supervisors determined by use of the radio telephone equipment on the track motorcar that Extra 1573 North, a northbound local freight train, would soon depart from Concord. The detector car, with the track motorcar following, then continued northward toward Winnisquam, testing rails en route, and the conductor said he observed that one of the track supervisors on the track motorcar was placing lighted fuses on the track structure at various intervals. As the detector car was moving in the vicinity of a point approximately one-half mile south of the station at Winnisquam a defective rail was disclosed, and both the detector car and the track motorcar stopped for examination of this rail. When the examination was completed, the track supervisor who had volunteered at Concord to drop lighted fuses to the rear boarded the detector car to eat his lunch and rode this car northward while the other track supervisor followed on the track motorcar at a distance of several hundred feet. The conductor said that the detector car then entered the tangent located immediately south of the station at Winnisquam, and that as it proceeded northward on the tangent he was unable to observe the track motorcar on the curve to the rear. He said that the detector car stopped 2 or 3 times on the tangent for examination of defects in the rails, and that it then passed the station at Winnisquam and entered the curve on which the accident occurred. As the detector car was moving in the vicinity of the highway bridge located near the south end of the curve, the track motorcar came into the conductor's view on the tangent track to the rear. He said that he did not observe any lighted fuses on the track structure at this time, and did not subsequently see any lighted fuse to the rear of the detector car before the accident occurred. About 11:50 a.m., when the detector car reached a point on the curve about 1,075 feet north of the station at Winnisquam, it detected a defect in the rails and stopped at a point 100 to 200 feet farther northward. Immediately afterward, it moved in reverse and stopped on the main track at the location of the defect in the rails, after which the conductor and a rail service employee alighted for an examination of the defect. A short time later, the track motorcar stopped on the main track 235 feet to the rear of the detector car. The conductor said that he and the rail service employee completed the examination of the defective rail and boarded the detector car approximately four minutes afterward, and that at this time he heard the horn of a locomotive sounding to the rear. He said that he then looked southward and first observed Extra 1573 North approaching from the rear, and that about this time the approaching train collided with the track motorcar. He said that he also observed the track supervisor in the track motorcar attempting to alight from that car immediately before it was struck by the train. The conductor alighted from the detector car immediately before it was struck. The rail service employees and the other track supervisor first became aware of the approach of Extra 1573 North about the same time the conductor first heard the locomotive horn. They also jumped off the detector car immediately before it was struck.

As Extra 1573 North was approaching Winnisquam, the engineer, the fireman and the front brakeman were in the control compartment near the front of the locomotive, which was of the road-switcher type. The conductor and the flagman were in the caboose. The brakes had been tested and had functioned properly when used en route. The headlight was lighted. The engineer said that before departure from Concord he and the conductor were orally informed by the operator at this point that a rail-defect detector car had departed northward earlier, but he had no knowledge

prior to the time of the accident that a track motorcar was being operated in conjunction with the detector car. He said that the train was being operated at a speed between 28 and 30 miles per hour as it entered the curve on which the accident occurred, and that soon after the locomotive passed under the highway bridge near the south end of the curve he first observed the track motorcar on the main track ahead at a distance which he estimated to be about 250 feet. He said that he called a warning and simultaneously initiated an emergency application of the brakes. The speed was not materially reduced before the train collided with the track motorcar and the detector car. Both the fireman and the front brakeman said that they were unaware of anything being wrong until they heard the engineer call a warning. The conductor and the flagman were unaware of anything being wrong before they felt the brakes of the train become applied in emergency. All the members of the crew said that they did not hear the explosion of any torpedoes, or observe a lighted fusee, at any point between Concord and the curve where the collisions occurred.

The surviving track supervisor said that on the day of the accident neither he nor the fatally injured track supervisor obtained permission as required for the track motorcar to occupy and operate on the main track. He said that when he conversed with the conductor of the detector car at Concord he did not volunteer to provide full protection against following trains as prescribed by Rule 99, but only offered to throw off lighted fusees at proper intervals en route northward from Concord.

Examination of the track structure after the accident occurred disclosed freshly burned-out fusees at points 2.4, 4.7, and 6.0 miles south of the point of the 1st collision.

The investigation disclosed that on the day of the accident the rail defect detector car was operated on train-order authority without an assigned flagman. The conductor in charge of its movement said that because no flagman was provided, he arranged with the two track supervisors closely following on a track motorcar to provide rear-end protection for the rail-defect detector car. The surviving track supervisor said that they had not agreed to provide flag protection but instead had agreed only to throw off or place lighted fusees at proper intervals. They did this by computing the time intervals during which the fusees would remain lighted. The surviving track supervisor said that they did not obtain permission from the train dispatcher for the track motorcar to occupy the main track because on previous occasions such permission had not been obtained when the track motorcar was accompanying the rail-defect detector car as in the instant case. He said that he and the other track supervisor intended to clear the main track whenever the rail-defect detector car was required to clear, thus using its train-order authority as a line-up. However, the locomotive of the following train did not explode torpedoes at any point and crew members of this train did not observe a lighted fusee or other flagman's signals between Concord and the point where the accident occurred.

When a train is moving under circumstances in which it may be overtaken by another train, the rules require that the flagman take such action as may be necessary to insure full protection. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection. Similar protection was required for the track motorcar, under the existing circumstances, when it was occupying the main track without permission previously having been obtained from the train dispatcher. In the instant case, it is evident that no protection was provided against following trains by either the occupants of the track motorcar or the conductor of the preceding train, Extra SRS 133 North, after both were stopped at the point where the accident occurred.

In this instance the conductor of the preceding train was required to act as pilot for rail-service employees operating the rail-defect detector car who were unfamiliar with the physical

characteristics of this line and, in addition act as flagman, although previously a flagman had been assigned exclusively for that duty. The conductor attempted to delegate responsibility for providing flag protection to the accompanying track supervisors. The surviving track supervisor disclaimed such responsibility. It is evident that the rail-defect detector car, moving at slower speed than other extra trains and stopping at frequent intervals while testing rails, required a greater degree of protection than was here afforded.

Cause

Failure to provide rear-end protection for the movement of a track motorcar and a rail-defect detector car

Recommendation

It is recommended that this carrier take such steps as are necessary to insure adequate protection of rail-defect detector cars, track motorcars, and similar equipment.

Dated at Washington, D. C., this
day of September, 1963

By the Commission, Safety and Service Board No. 1

(SEAL)

HAROLD D. McCOY,
Secretary