

RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 4189

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CENTRAL VERMONT RAILWAY INC.

BELCHERTOWN, MASSACHUSETTS

OCTOBER 2, 1972

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FEDERAL RAILROAD ADMINISTRATION

OFFICE OF SAFETY

WASHINGTON, D. C. 20590

Summary

DATE:	October 2, 1972	
RAILROAD:	Central Vermont	
LOCATION:	Belchertown, Massachusetts	
ACCIDENT TYPE:	Head-end collision	
TRAINS:	Freight	Freight
TRAIN NUMBERS:	Extra 4929 South	Work Extra BM 1125
LOCOMOTIVE NUMBERS:	Diesel-electric unit 4929	Diesel-electric unit 1125
CONSISTS:	18 cars, caboose	11 cars, caboose
SPEEDS:	10-15 m.p.h.	25 m.p.h.
OPERATION:	Timetable, train orders	
TRACKS:	Single: 2°45' curve to the right, 1.21% descending northward	
WEATHER:	Clear	
TIME:	1:45 p.m.	
CASUALTIES:	3 killed, 5 injured	
CAUSE:	Failure of Boston & Maine crew members to obey train orders and operating rules	

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION  
RAILROAD SAFETY BOARD

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Synopsis

On October 2, 1972, a head-end collision occurred between Central Vermont and Boston and Maine freight trains near Belchertown, Massachusetts. Three train service employees were killed and five others injured.

The accident was caused by failure of Boston and Maine crew members to obey train orders and operation rules.

Location and Method of Operation

The accident occurred on that part of the Central Vermont, Palmer Subdivision extending southward from Brattleboro, Vermont, to Palmer, Massachusetts, a distance of 56.1 miles. Belchertown is

10 miles north of Palmer. In the accident area, this is a single-track main line over which trains operate by timetable and train orders. There is no block-signal system in use.

The Boston and Maine has trackage rights over the Central Vermont between Canal Jct. and Norwottuck, a distance of 8.3 miles. Canal Jct. is 1.7 miles south and Norwottuck 6.6 miles north of Belchertown. The collision took place on the Central Vermont track 1.8 miles north of Belchertown. A track circuit is installed on the main track at Belchertown. It is connected with a buzzer that sounds over the train dispatcher's telephone when a train passes over the circuit. The purpose of the buzzer is to inform the dispatcher when a train is passing through Belchertown.

A Boston and Maine agent-operator is located 3.46 miles east of Canal Jct. at Bondsville, Massachusetts, on the B&M Wheelwright Branch. He receives train orders and messages from the Central Vermont train dispatcher, in Montreal, Canada, and delivers them to Boston and Maine trains that are to operate over the Central Vermont between Canal Jct. and Norwottuck.

#### Track

From the north there are, in succession, a 4°00' curve to the right 1350 feet, a tangent 19 feet, a compound curve to the left having a maximum curvature of 2°45' for a distance of 751 feet to the collision point and 1244 feet beyond.

From the south there are a tangent for 666 feet and the curve on which the accident occurred.

The grade for northbound trains in this area is 1.21% descending.

#### Sight Distance

Because of track curvature and trees growing alongside the right-of-way, the view between two opposing trains approaching the collision point was restricted to about 650 feet.

#### Time and Weather

The collision took place at 1:45 p.m. in clear weather.

#### Authorized Speed

The maximum authorized speed for the trains involved was 40 m.p.h.

#### Carriers Operating Rules and Timetable Instructions

Boston and Maine Timetable - (Special Rules Covering Joint Operations)  
B&M - CV Railway Between Norwottuck and Canal Jct.

On the Wheelwright Branch between Norwottuck and Canal Jct, Boston and Maine Railroad trains will operate over the Central Vermont Railway track under the jurisdiction of the Central Vermont Railway, its timetable, rules and regulations.

Train orders pertaining to movement of trains between these points will be issued from the Train Dispatcher's Office at Montreal, over the C.V. Ry. Train Dispatcher's signature.

All trains will register at Norwottuck and Canal Jct. unless otherwise directed.

#### Boston and Maine Operating Rules

##### Rule 791 - Conductors

They will have general charge of the trains to which they are assigned and all persons employed thereon, will be responsible for the movement, safety and proper care of their trains, and for the vigilance and conduct of the men employed thereon.

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### Central Vermont Timetable

#### 1.2 Train Register

Canal Junction - Register station for B&M trains.

Norwottuck - Register station for B&M trains.

#### 1.7 The Superior direction is East or South.

#### 9.0 Operation of B&M trains between Canal Junction and Norwottuck

B&M trains may operate between Canal Junction and Norwottuck governed by CNR Operating Rules, Special Instructions, and train orders issued by Champlain Area Train Dispatcher in Montreal. Train orders will be obtained through B&M Operator at Bondsville.

Dispatchers telephones are located at Canal Junction and Norwottuck. B&M crews must obtain authority from Montreal Dispatcher before entering upon Palmer Subdivision.

### Central Vermont Operating Rules

#### Definitions

Register Station - A station at which a train register is located.

Train Register - A book or form used at designated stations for registering signals displayed, the time of arrival and departure of trains, and such other information as may be prescribed.

Superior Train - A train having precedence over another train.

Train of Superior Right - A train given precedence by train order.

#### Rules

83. Unless otherwise directed by timetable or train order, conductors must register their trains at the register stations designated for them in the timetable. When a train is authorized to register by register ticket, conductor must deliver register ticket to the operator who will register the train and retain the ticket. Should the operator fail to obtain the ticket he must not enter any information on the train register except such as may be authorized by train order.

- 83-A A train must not leave its initial station on any Subdivision, entering into or move in territory where trains are operated under train order authority ... until it has been ascertained whether all trains due which are superior have arrived or left.
- 83-B When necessary to check the train register to ascertain whether all trains due which are superior have arrived or left, conductor must fill out train register check on the prescribed form and deliver, or have it delivered, to the engineman before leaving register station.
- 83-C When a train is required to meet, or wait for, an opposing extra train, or when an extra train has been made superior to an opposing train, the train register must not be used as evidence of the arrival of such extra train, except as provided by train order, Example (8) of Form W.
- 89-A (Single Track) A train must not leave any point without knowing positively that the train or trains which it was required to meet or clear at that point have arrived.
- 106 Trains will run under the direction of their conductors. ~~When a train is run without a conductor the engineman will perform the duties of the conductor.~~
- Conductors, enginemen, and pilots, if any, are responsible for the safety of their trains and the observance of the rules and, under conditions not provided for by the rules, must take every precaution for protection. This does not relieve other employees of their responsibility under the rules.
- 210-C Conductors and enginemen must require members of their crew to read aloud and have a definite and proper understanding of the requirements of train orders and clearances as soon as practicable after they have been received. Members of the crew are required, if necessary, to remind conductors and enginemen of their contents.
- 211 Clearances must be delivered, together with all train orders, to trains addressed. Train and enginemen must see that their train is correctly designated and that train order numbers shown on the clearance correspond with the numbers of the train orders received. Operators must retain a copy of each clearance.

Trains InvolvedCV Extra 4929 South

This southbound freight train consisted of diesel-electric unit 4929 (GM GRG-17s), 18 cars and caboose at the time of the accident. It originated at Brattleboro, Vermont, and was destined for Palmer, Massachusetts. The locomotive and caboose were both equipped with radios.

B&M Work Extra 1125

This freight train consisted of diesel-electric unit 1125 (EMD SW-1), 11 cars and caboose at the time of the accident. It originated at Wheelwright and was destined for Northampton, Massachusetts. Neither the locomotive nor caboose was equipped with a radio.

Train Orders InvolvedOrder No. 525

To: Engine 4929 at Brattleboro

Engine 4929 run extra  
East Northfield to Palmer  
and register at Canal Jct.

Complete 6:36 a.m.

Order No. 548

To: Extra 4929 at Brattleboro  
Engine BM 1125 at Bondsville

On October 2nd  
Engine BM 1125 Work Extra  
Twelve Thirty 1230  
until  
Twenty One Thirty 2130  
between Canal Jct. and Norwottuck  
not protecting against extra trains

Complete 9:52 a.m. (CV Extra 4929 South)  
12:27 p.m. (BM Engine 1125 North)



Order No. 553

To: Extra 4929 South at Brattleboro  
Work Extra BM 1125 at Bondsville

Work Extra B&M 1125  
protect against Extra 4929 South  
after Twelve Thirty 1230  
and against Extra 4929 North  
after Fourteen Ten 1410  
between Canal Jct. and Norwottuck

Complete 9:55 a.m. (Extra 4929 South)  
12:26 p.m. (Work Extra BM 1125)

Order No. 565 (Example 8 of Form W referred to in rule 830)

To: Work Extra BM 1125 at Bondsville

Work Extra BM 1125  
May check register at Canal Jct.  
for arrival of Extra 4929 South  
Due at Canal Jct.  
after Twelve Twenty 1220  
Monday October 2nd  
and Work Extra 1125  
May check register at Norwottuck  
for arrival of Extra 4929 North  
Due at Norwottuck  
after Fourteen Ten 1410  
Monday October 2nd

Complete 12:32 p.m.

Circumstances Prior to AccidentCV Extra 4929 South

The crew on this southbound local freight train went on duty in Brattleboro at 8:30 a.m. They performed switching work in Brattleboro yard, received copies of 8 train orders, including 525, 548 and 553, and departed from Brattleboro at 11:30 a.m., after having the prescribed brake test, with locomotive 4929 and a caboose.

A stop was made at Millers Falls, 21.4 miles south of Brattleboro, between 12:10 p.m. and 12:45 p.m. where switching was performed and 16 cars were added to the train. At Amherst, 36.3 miles south of Brattleboro, another stop was made and two cars were added. The train departed from Amherst at 1:30 p.m. and consisted of locomotive 4929, being operated in reverse, 18 cars and a caboose. The engineer was at the controls on the southeast side of the locomotive cab. The front brakeman and flagman were on seats in the southwest side of the locomotive cab. The conductor was in the caboose.

Work Extra BM 1125

The engine and train crew on this local freight train went on duty in Wheelwright, Massachusetts, at 7:45 a.m. and 8:00 a.m., respectively. This train operates between Wheelwright and Northampton, Massachusetts, a distance of 38.31 miles on track designated as the Boston and Maine Wheelwright Branch. Included in this branch is 8.32 miles between Canal Jct. and Norwottuck on which the B&M has trackage rights over the CV.

The crew performed switching work at Wheelwright and the train was made up of locomotive 1125, 8 cars and caboose. After having the prescribed brake test, the train departed Wheelwright at 9:40 a.m. At 11:25 a.m. it arrived at Ware, Massachusetts, 8.81 miles west of Wheelwright, performed switching work, added 5 cars to the train and departed about 12:00 noon.

At 12:55 p.m. B&M Work Extra 1125 arrived at Bondsville. The conductor and engineer went into the agent-operator's office and received copies of train orders 548, 553, 565, a clearance form

required by rule 211 and a message that read "If phones are out at Canal Jct. and Norwottuck check train orders against register and OK to go." The message carried the initials of the CV train dispatcher.

The conductor and engineer were concerned because locomotive 4929 was shown both north and south on train order No. 565. The Bondsville operator explained that Extra 4929 was scheduled to turn at Palmer therefore, both the south and northbound trains would carry the same locomotive number. When the orders were clearly understood, the engineer and conductor boarded the locomotive and caboose, respectively, and the train departed from Bondsville at 1:05 p.m. The engineer gave the train orders, clearance form and message to both the fireman and front brakeman after the train departed Bondsville. Both men looked at the orders but neither read them aloud. The engineer said the contents of the orders were discussed while en route from Bondsville to Canal Jct.

The train arrived at Canal Jct. at 1:25 p.m. The front brakeman got off the locomotive, went to a small shanty-type building containing the train register, and registered the train in at 1:25 p.m. and out at 1:30 p.m. He called the CV train dispatcher from the shanty, identified his train, and asked "Is it alright to come out?" He stated the telephone line was difficult to hear over, but understood the dispatcher to say it was OK. Subsequent to the accident, the dispatcher stated he told the front brakeman "OK, after Extra 4929 South is by at Canal Jct., it will be okay to go." This reply was overheard and

verified by the B&M operator at Bondsville. The front brakeman said he "assumed" Extra 4929 South had passed and he did not check the train register for its arrival. A "train register check" was not prepared as required by rule 83-B because there were no forms provided and the form had not been prepared in the past to the best of his knowledge. After talking with the dispatcher, the front brakeman lined the switch from the B&M to the CV, gave a signal to proceed and as the train pulled by, he boarded the locomotive. When the train cleared the B&M track, it stopped and the flagman aligned the switch to its original position. Shortly thereafter, the train arrived at Belchertown where the two head cars were set off. The front brakeman stated their work order indicated they were to pick up 5 cars at Belchertown but the cars were not there. The investigation after the accident disclosed that these 5 cars were part of the consist of Extra 4929 South en route for the interchange with the B&M at Belchertown. The conductor's delay report indicated the train departed from Belchertown at 1:40 p.m. consisting of locomotive 1125, 11 cars and caboose. The engineer was at the controls, the fireman and front brakeman were in their respective seats on the left side of the locomotive cab. The conductor and flagman were in the caboose.

#### The Accident

##### Extra 4929 South

The CV train dispatcher stated that at 1:41 p.m. the buzzer sounded over his telephone line indicating that a train was passing Belchertown. He became concerned as to which train

had actuated the buzzer and contacted the operator at Palmer who unsuccessfully tried to contact Extra 4929 South by radio.

According to the flagman, the only surviving crew member on the head-end, the train slowed at Norwottuck where the engineer, front brakeman and himself checked their watches and reviewed the train orders. They all agreed that if Norwottuck was clear of trains, they could proceed and the train continued on toward Belchertown. Shortly thereafter, the train entered the 2°45' compound curve to the left north of Belchertown. As it moved through the curve, the front brakeman yelled "BM Job" and the engineer applied the brakes in emergency. The flagman said he took a quick look ahead, opened the door behind him, grabbed the hand-rail and swung himself off the locomotive just prior to the collision that occurred several seconds later. He estimated the signal at the time of impact at 10 m.p.h. and said that as he went through the door the front brakeman had crossed to the left side of the locomotive and the engineer was standing, both apparently preparing to get off on the engineer's side. After the accident, the engineer and front brakeman were found underneath the BM locomotive fatally injured. The flagman received minor injuries. The conductor was unaware of the accident until the emergency brake application took place. He was uninjured and estimated the speed to be 15 m.p.h. at the time of collision.

Work Extra BM 1125

The engineer stated that as the train proceeded northward from Belchertown, he made several light brake applications to reduce the lateral motion of the locomotive and estimated the speed of his train at 30-35 m.p.h. approaching the accident location. He said the headlight was on and he was sounding the whistle for a highway crossing when Extra 4929 South came into view on the curve. He immediately applied the train's brakes in emergency, shouted the word "Jump" to the other crew members, hurriedly departed from the locomotive cab and jumped off on the east side. The front brakeman followed the engineer out the rear door and jumped off on the west side. Several seconds later, BM Extra 1125 collided head-on with CV Extra 4929 South.

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The front brakeman stated he felt sure the fireman followed him out the door and had reached the rear platform of the locomotive just prior to the collision. The fireman was fatally injured, the front brakeman and engineer sustained minor injuries. The conductor and flagman were unaware of anything wrong until the brakes were applied in emergency and the train stopped abruptly. Both the flagman and conductor sustained minor injuries as a result of being thrown about in the caboose when the train stopped.

DamagesExtra 4929 South

The locomotive and first 3 cars were derailed. The locomotive came to rest on its side to the east of the right-of-way and was substantially damaged. The first 2 cars were destroyed and the 3rd car sustained minor damage.

Work Extra BM 1125

The locomotive and first 3 cars on this train were also derailed. The locomotive was completely derailed, destroyed, and came to rest on its side east of the track structure. The first 2 cars had substantial damage and the 3rd car minor damage.

Cost of Damages

According to estimates submitted by both carriers, the cost of damage to track and equipment totaled \$116,812.

Train Crews Hours of ServiceCV Extra 4929 South

All crew members had been on duty for 5 hours and 15 minutes after having been off duty over 24 hours.

Work Extra BM 1125

The train and engine crews had been on duty 5 hours and 45 minutes and 6 hours, respectively, after having been off duty over 24 hours.

Crew of Work Extra BM 1125Engineer

The engineer, age 47, was first employed by the carrier as a fireman in 1946, he was promoted to engineer in 1956. He was first qualified on the CV operating rules and physical characteristics between Canal Jct. and Norwottuck in 1967. He had his last physical examination and eye test in January and June of 1972, respectively. He was disciplined in 1959 for failure to properly control a passenger train resulting in it striking a bumping post, in 1963 for failure to control a passenger train resulting in injury to passengers and in 1969 for responsibility in a rear-end collision.

Fireman

The fireman, age 44, was first employed by the carrier as a fireman in 1955, he was promoted to engineer in 1968. He first qualified on the physical characteristics between Canal Jct. and Norwottuck in 1963 and on the CV operating rules in 1966. He had his last physical examination and eye test in 1971 and 1972, respectively. He was disciplined in 1971 for improper train operation resulting in a collision.

Front Brakeman

The front brakeman, age 33, was first employed by the carrier as a brakeman in 1968, he was promoted to conductor in 1970. He was qualified on the physical characteristics between Canal Jct. and Norwottuck and on the CV operating rules on September 6, 1972. He had his last physical examination and eye test in 1968 and 1972, respectively. He was disciplined in January of 1972 for being absent without permission.

Findings

Train order NO. 525 gave CV Extra 4929 South permission to operate southward to Palmer. Order No. 553 required the Boston and Maine train to protect against the Central Vermont train after 12:30 p.m. and thus made the CV train superior. Order No. 565 permitted the BM train crew to check the register at Canal Jct. for the arrival of CV Extra 4929 South.

The Central Vermont operating rules require that train orders be read aloud and that crew members have a "definite and proper understanding of the requirements." Testimony of crew



members after the accident indicated that the orders were not read aloud. The rules also require that trains will run under the direction of their conductor and that the conductor will check the train register, fill out a register check form and deliver it to the engineer. Subsequent testimony revealed that the conductor did not check the register, but permitted the front brakeman to perform this duty. The front brakeman did not make out a register check form and the engineer failed to take exception to not receiving one.

Central Vermont rules 83-A and 89-A emphasize and require that trains must not enter a track without knowing positively that superior trains have cleared. The front brakeman stated he "assumed" the superior train had cleared and that he did not check the register for its arrival. The balance of the crew failed to take any exception to the procedure followed by the front brakeman.

Testimony after the accident revealed that register tickets had not been used at Canal Jct. for "many" years, a supply of these forms was not available at Canal Jct. and operating officials did not require its use prior to the accident. It was also revealed that Boston and Maine employees were not subjected to a periodic review of the Central Vermont operating rules.

Cause and Contributing Factors

1. This accident was caused by failure of the Boston and Maine crew members to obey train orders and operating rules. This failure resulted in their train occupying the Central Vermont main track without proper authority and the subsequent collision.

2. Failure of the conductor to check the train register for the arrival of the superior train and prepare a register ticket and the failure of the engineer to make certain the superior train had cleared when the conductor failed to do so were contributing factors.

3. The front brakeman's failure to check the train register for the arrival of the superior train and his assumption that it had cleared were major causal factors.

4. Failure of operating officials to provide register tickets and make checks to insure that they are used and the lack of periodic review of operating rules were also contributing factors.

Dated at Washington, D. C., this 25th  
day of March, 1975  
By the Federal Railroad Administration

Donald W. Bennett  
Chairman  
Railroad Safety Board

63321



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