

Inv-2429

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
GREAT NORTHERN RAILWAY

CASS LAKE, MINN.

May 29, 1940

INVESTIGATION NO. 2429

SUMMARY

Inv-2429

Railroad: Great Northern
Date: May 29, 1940
Location: Cass Lake, Minn.
Kind of accident: Head-end collision
Trains involved: Passenger : Passenger
Train numbers: 35 : 36
Engine numbers: 1707 : 1702
Consist: 3 cars : 8 cars
Speed: Standing : 25-35 m.p.h.
Operation: Timetable and train orders
Track: Single; tangent; 0.4 percent
descending grade eastward
Weather: Occasional fog pockets but clear
at point of accident
Time: 2:48 a.m.
Casualties: 2 killed, 9 injured
Cause: Failure to control speed of
passenger train properly when
approaching meeting point

Inv-2429

June 28, 1940.

To the Commission:

On May 29, 1940, there was a head-end collision between two passenger trains on the Great Northern Railway at Cass Lake, Minn., which resulted in the death of one employee and one trespasser, and the injury of four passengers, three mail clerks and two employees.

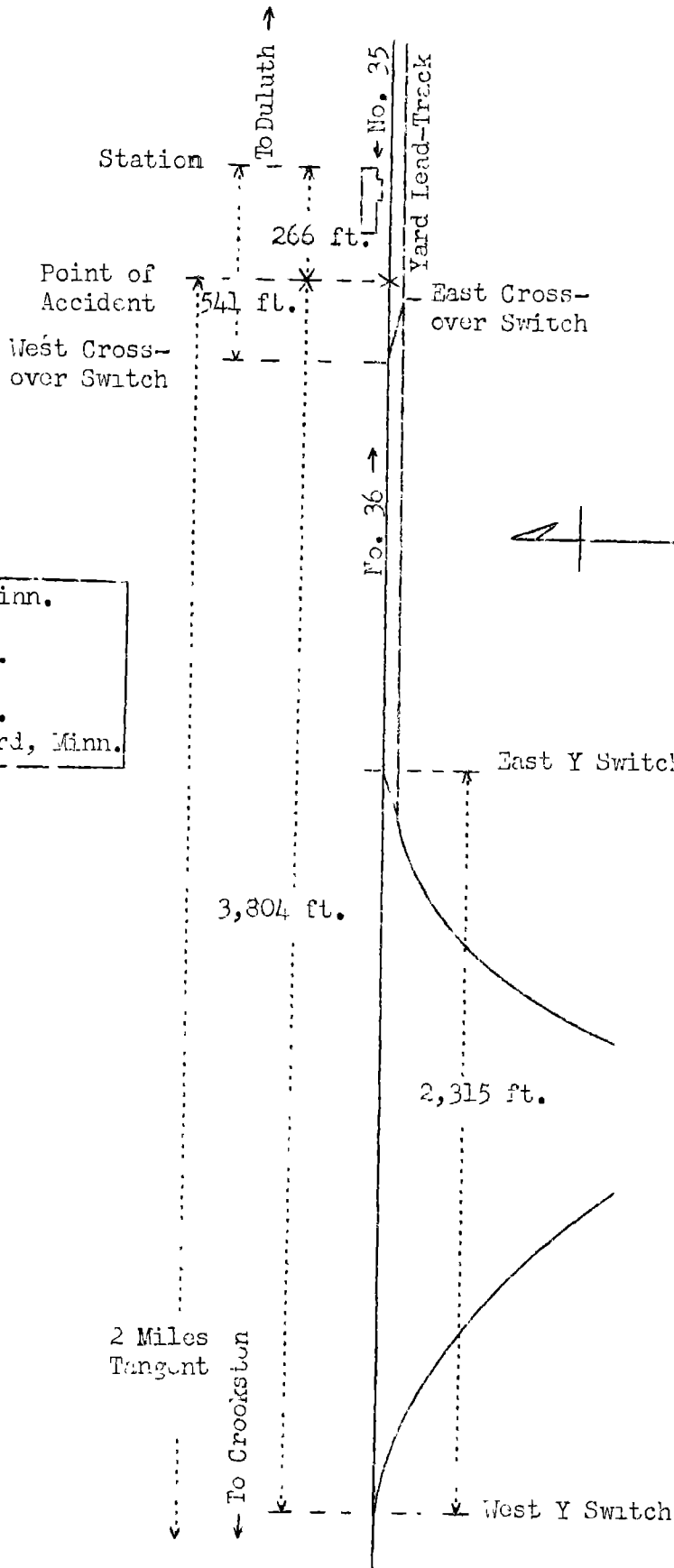
Location and Method of Operation

This accident occurred on that part of the Mesabi Division designated as the Fourth Subdivision which extends between Crookston Yard and Cass Lake, Minn., a distance of 104.93 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders; there is no block system in use. West-bound trains are superior to east-bound trains of the same class. The accident occurred on the main track at a point 266 feet west of the station at Cass Lake. Approaching from the west the track is tangent more than 2 miles to the point of accident and a considerable distance beyond. The grade for east-bound trains is level a distance of 4,000 feet and then 0.4 percent descending a distance of 2,255 feet to the point of accident. At Cass Lake a yard lead-track parallels the main track on the south. A facing-point crossover for east-bound trains connects the main track and the yard lead-track. The crossover is 241 feet long and its west switch is located 541 feet west of the station. The accident occurred at a point 275 feet east of this switch, which is provided with a Ramapo low switch-stand. There is no target on the switch-stand, which is located on the north side of the main track, but the switch lamp has a 2-1/2 inch rim around a 5-inch lens; the rim serves as a target. The center of the switch-stand is 5 feet 1 inch from the gage side of the north rail and the center of the switch-lamp lens is 2 feet 5 inches above the head-block. The switch lamp is lighted continuously.

Rule 17 of the book of operating rules reads in part as follows:

17. The headlight will be displayed to the front of every train by night. It must be concealed or extinguished when a train turns out to meet another and has stopped clear of main track, * * *

⊗	Cass Lake, Minn.
	(P. of A.)
	15.27 mi.
○	Bemidji
	89.66 mi.
○	Crookston Yard, Minn.



Inv. No. 2429
 Great Northern Ry.
 Cass Lake, Minn.
 May 29, 1940

Air-brake rules applicable to the movements involved read in whole or in part as follows:

40. On a passenger train, before an engine is changed or an angle cock closed, except for cutting off one or more cars from the rear of train, the brake must be applied. After recoupling and opening the angle cock and before proceeding, an application and release test must be made from the engine. Inspector or trainmen will note that the rear brakes of train apply and then signal for a release, noting that rear brakes release.

43. When one or more cars are added to a train at any point subsequent to a terminal test the cars added, when in the position where they are to be hauled in the train, must be tested * * *. Before proceeding, it must be known that the brake pipe pressure is being restored as indicated by the caboose gauge and that the rear brakes are released. In the absence of a caboose gauge, a test must be made as prescribed in rule 40.

51. On a passenger train, after engine or engine crew has been changed or an angle cock closed, * * * a running test of brakes must be made as soon as speed of train permits. Such test should be made by applying the train brakes with sufficient force to ascertain whether they are operating properly. * * * In case the brakes do not operate properly in this test, the signal for brakes must be given.

62. Enginemen are required to know that the train brakes are operative from the locomotive when approaching * * * meeting points with other trains, * * * or any other point of danger which may necessitate the use of the train brakes.

The maximum authorized speed for passenger trains is 60 miles per hour.

There were occasional fog pockets west of Cass Lake but at the point of accident the weather was clear. The accident occurred about 2:48 a.m.

Description

No. 35, a west-bound passenger train, with Conductor McLaughlin and Engineman Malone in charge, consisted of engine 1707, three passenger-refrigerator cars, one baggage car, one baggage-mail-express car, one coach, one coach-tourist car, and one business car, in the order named; all cars were of steel-underframe construction. At Cass Lake, the initial terminal on the Fourth Subdivision for No. 35 and its scheduled meeting point with No. 36, the crew received Clearance Card A, and a copy of train order No. 297, Form 19, which read as follows:

No. 35 eng 1707 meet
No. 36 eng 1702 at Cass Lake

No. 35 was due to leave Cass Lake at 2:47 a.m. While it was standing on the main track with the front of its engine 275 feet east of the west crossover-switch, it was struck by No. 36 at 2:48 a.m.

No. 36, an east-bound passenger train, with Conductor Ames and Engineman Falkenger in charge, consisted at the time of the accident of engine 1702, four passenger-refrigerator cars, one baggage car, one baggage-mail-express car, one coach, and one coach-tourist car, in the order named; all cars were of steel-underframe construction. At Crookston, 1.98 miles west of Crookston Yard, the crew received Clearance Card A, and a copy of train order No. 297, Form 19, previously quoted. No. 36 departed from Crookston at 11:35 p.m., according to the train sheet, on time, and arrived at Bemidji, 15.27 miles west of Cass Lake, at 2:10 a.m. A car was picked up at this point and the train departed at 2:27 a.m., 4 minutes late. No. 36 passed the crossover switch at Cass Lake where it was required to take siding and, while moving at a speed estimated from 25 to 35 miles per hour, collided with No. 35.

The force of the collision moved No. 35 backward a distance of 90 feet. The two engines were locked together but remained upright. The front end of engine 1707 of No. 35 was considerably damaged, and the engine truck was dislodged and derailed. The front end of the first car in this train was slightly damaged. Engine 1702, of No. 36, and its tender were derailed and badly damaged. The first car was derailed and demolished. The fourth car was slightly damaged.

The employee killed was the engineman of No. 36, and the employees injured were the engineman of No. 35 and the front brakeman of No. 36.

Summary of Evidence

Engineman Malone, of No. 35, stated that his train was standing on the main track at Cass Lake with the engine headlight dimmed. He first observed the beam of the headlight of No. 36 when the engine of that train was about opposite the west Y switch, located 3,804 feet west of the point of accident. Although there were streaks of fog he could see the headlight beam without difficulty but it seemed as though the engine had just emerged from a dense fog. He was not apprehensive about the opposing train until it reached a point about 800 feet distant, when it appeared to him that No. 36 might not stop. The collision occurred at 2:47 or 2:48 a.m. He did not hear any engine whistle-signal sounded by No. 36. Ordinarily his train meets No. 36 at Cass Lake and usually the west crossover-switch is lined for the inferior train to enter the yard lead-track.

Fireman Thurn, of No. 35, stated that the switch lamp involved was lighted and it displayed a clear indication. He did not hear any engine whistle-signal sounded by No. 36, and he was unaware of anything being wrong until the collision occurred.

Front Brakeman-Messenger Beerman, of No. 35, stated that as soon as he finished with the station work he walked forward to line the crossover switch. The switch-lamp was burning and it displayed a clear indication. He saw the beam of the headlight of No. 36 as that train emerged from a dense fog about 2,600 feet west of the point of accident. When No. 36 was about 1,075 feet west of the point of accident he became apprehensive about it stopping and he waved stop signals with his lighted white lantern. When the engine was 600 or 700 feet from the switch his signals were acknowledged by one short blast of the engine whistle. He was a short distance east of the switch when No. 36 passed him at a speed of 30 or 35 miles per hour. He did not think the engineman of No. 36 had sufficient time before jumping from the engine to sound two short blasts of the engine whistle in acknowledgment of his stop signals. When a train is holding the main track at a meeting point it is customary, in order to avoid delay, to line the switch for the inferior train to enter the crossover; however, occasionally the switch is not so lined. On this occasion there was not sufficient time for him to line the switch for No. 36.

Conductor McLaughlin, of No. 35, stated that when the station work was finished he walked to the engine and conversed with the engineman. The brakeman-messenger went to line the switch for No. 36, as usual, but did not have time to reach it. The conductor saw the beam of the headlight of No. 36 as its

engine emerged from a dense fog at the west Y switch. He saw his brakeman wave stop signals to No. 36, and he heard the engineman of that train sound one blast on the whistle. He thought the speed of No. 36 was too high for that train to be stopped at the switch; he told his own engineman to back their train, but before this could be done the collision occurred. He estimated that the speed of No. 36 at the time of the accident was 35 miles per hour. He said there was no rule which required the crew of the superior train to line the switch for the inferior train, but that it was so lined to expedite train movements.

The statement of Flagman Sullivan, of No. 35, added nothing of importance.

General Manager McDonough was on the rear car of No. 35 at the time of the accident. Soon after the accident he examined the equipment of No. 36 but did not see the brake-pipe angle-cock at the rear of the tender as it was broken off and missing. The front end of the first car was demolished. The air brakes on all cars of No. 36 were applied. In his opinion the accident was caused by the engineman of No. 36, for some unknown reason, operating his train at excessive speed when approaching the meeting point.

Fireman Schmidt, of No. 36, stated that at Grand Forks, the initial terminal, the air brakes of his train were tested and they functioned properly en route to Bemidji. He read train order No. 297 and was aware that his train was required to enter the crossover at Cass Lake to meet No. 35. Brake-pipe pressure of 90 pounds and main-reservoir pressure of 110 pounds were maintained. At Bemidji a car was picked up and placed immediately behind the tender, and the brakes were applied and released. He thought the trainmen observed the brakes apply and release. The trainmen reported that the brakes were functioning. The headlight on his engine was burning brightly. He was not positive that a running air-brake test was made just after the train departed from Bemidji. No stop was made between Bemidji and Cass Lake, and the maximum speed attained between these points was about 30 miles per hour. When his train was about 3 miles west of Cass Lake the communicating signal was sounded for the meeting point, and the engineman acknowledged it by sounding the engine whistle. About 2 miles west of the west Y switch the engineman began to use a drifting throttle; soon afterward he sounded the station whistle-signal. Fog pockets were encountered en route and a fog bank was encountered just west of the west Y switch. The fireman was on the left seat-box and he saw the dimmed headlight on the engine of No. 35 at a distance of about 1 mile. The engineman made a brake-pipe reduction, as he usually did,

when the train was near the west Y switch. The brakes responded and the speed was reduced to 45 or 50 miles per hour as the engine passed the west Y switch. It seemed as though the brakes were released and as though after an interval of about 1/2 minute, during which time the train moved a distance of about 1,500 feet, the engineman made a second brake-pipe reduction when the speed was about 45 miles per hour, but the brakes did not seem to hold properly. The fireman did not know the amount of the brake-pipe reduction in each case but it did not seem to be heavy. When the engine was about 850 feet west of the crossover switch the fireman saw the switch lights in the vicinity of the station and immediately told the engineman, who was manipulating the brake-valve handle, that the switch was not lined for the crossover and cautioned him to be careful. The engineman seemed to hear him but did not reply. As the engine neared the switch involved the fireman told the engineman to apply the brakes in emergency, and then the fireman jumped; at this time the speed was about 35 miles per hour. He was not apprehensive about the train not stopping at the switch until after the second application was made. He estimated the speed of the train at 35 miles per hour when the accident occurred. He did not know whether the engineman made an emergency application, reversed the engine or opened the sander valve. The engineman appeared normal and the fireman had conversed with him about 10 minutes prior to the accident. The fireman said that enginemen are required to approach meeting points under control. There is no rule that requires the crew of the superior train to line the switch for the inferior train to take siding; however, it had always been so lined on previous occasions. The engineman apparently made every effort to stop, but there was insufficient time between the first and second applications within which to recharge the brake-pipe pressure. The fireman said that it was the practice of his engineman to make two brake-pipe reductions in making a station stop.

Front Brakeman Ellis, of No. 36, stated that at Bemidji when the car was placed in the train he attended to the couplings. When the brakes were tested he observed that the brake shoes on the first two cars applied and released but he did not observe the brake-cylinder piston-rods. As the train approached Cass Lake he was in the seventh car. He sounded the meeting-point signal on the train air-signal system and it was answered. He felt only one air-brake application; the brakes responded properly. He was not aware of anything being wrong until the collision occurred. He estimated that the speed was 25 or 30 miles per hour at the time of the accident.

Conductor Ames, of No. 36, stated that at Grand Forks the air brakes were tested and they functioned properly en route. At Crookston he received train order No. 297 and personally delivered a copy of it to the engineman, who read it aloud and understood that their train was required to enter the cross-over at Cass Lake to meet No. 35. The engineman appeared normal. The conductor corroborated the statement of the front brakeman with regard to the operation of the train to the time of the sounding of the meeting-point signal. When the train was nearing the west Y switch the conductor felt an air-brake application, which was made at the usual point. The brakes responded properly and the speed was reduced to about 30 miles per hour. There was a dense fog bank in the vicinity of the Y. The conductor was in the front vestibule of the rear car and thought he heard the brakes release. When the train was about 1/4 mile west of the switch involved he opened the vestibule door. It seemed as though the speed of the train was too high, that the brakes were not holding as they should, and that the train was gliding. Immediately prior to the accident the engineman sounded one short blast on the engine whistle. The conductor said he did not have time to take emergency action toward stopping the train. The collision occurred at 2:48 a.m. After the accident he examined the brake-cylinder piston-rods and on each car they were projecting outward and the brake shoes were fully applied against the wheels. He could not say whether a running test of the brakes was made when leaving Bemidji. He said that possibly a damp-rail condition affected the braking of the train.

The statement of Flagman Murry, of No. 36, added nothing of importance.

Railway Mail Clerk Blue stated that he was in the fifth car of No. 36. When the train approached Cass Lake the speed was about 40 miles per hour. He felt a sudden application of the air brakes; the brakes were fully effective and the train gave a violent jerk, which threw him forward, and after an interval of about 10 seconds the impact occurred. He did not feel any other air-brake application. In his opinion the sudden air-brake application in this instance was like an emergency application.

Trainmaster Elliott stated that he arrived at the scene of the accident about 6 a.m. All the equipment had been removed except the two engines and the demolished car of No. 36. He observed a stub of a steam-heat hose at the rear end of the tender of No. 36, but the angle cock and the air-signal connection were broken off. Later, his attention was directed to a closed angle cock attached to a hose lying 60 or 70 feet from

the engine. Apparently the angle cock had been struck a severe blow as the paint was disturbed and the handle was out of line 3/4 inch. As there was no grease on the angle cock it apparently had been on a car instead of the tender.

Superintendent Kelsey stated that he arrived at the scene of the accident at 7:05 a.m. His description of the damaged condition at the rear end of the tender of No. 36 coincided with that of Trainmaster Elliott. The superintendent examined the track for 1,000 feet west of the point where the engines stopped. There were no marks on the rails such as would be made by wheels sliding. He observed fresh sand on the rails and the ties a distance of 735 feet west of the point where the engines stopped.

Master Mechanic Fisher stated that he arrived at the scene of the accident about 9 a.m. Inspection of engine 1702 disclosed that the reverse lever was 2 or 3 notches from center in forward position, the automatic brake-valve was bent against the boiler head and the stem and handle were broken off, the straight-air brake-valve was in lap position, and the throttle was closed. Damage sustained at the rear end of the tender of No. 36 was as previously described. The speed-recorder tape removed from engine 1702 disclosed that the highest speed No. 36 attained between Bemidji and Cass Lake was 63 miles per hour, which occurred about 2 miles west of the point of accident. The speed at a point about 1 mile west of the point of accident was 52 or 53 miles per hour, from which point it tapered down to a stop.

Engineman Redmond stated that he was in the station at Cass Lake when he heard one short blast sounded on an engine whistle and then the sound of the collision. He found the body of a trespasser between the tender and the first car of No. 36. Engineman Redmond said that he saw a piece of brake pipe with a closed angle cock attached hanging from the rear end of the tender.

Car Foreman Paechem stated that when the undamaged cars of No. 36 arrived at Duluth after the accident the air brakes were tested and they functioned properly. The brake-cylinder piston-travel on each car measured 7 inches.

Observations of the Commission's Inspectors

The Commission's inspectors inspected the angle cocks which were identified as having been located at the rear of the tender and the front end of the first car of No. 36. No defect was disclosed, nor was any mark found such as probably would have been made if either angle-cock handle had been struck.

Discussion

According to the evidence, No. 35, the superior train, was standing on the main track at Cass Lake awaiting the arrival of No. 36. Before the front brakeman of No. 35 could line the west crossover-switch No. 36 passed that switch and, while moving at a speed of 25 to 35 miles per hour, collided with No. 35. The crew of No. 36 understood that their train was required to enter the west crossover-switch for No. 35. The weather was clear in the vicinity of the point of accident; however, No. 36 had encountered fog pockets en route. When this train was at a point about 1 mile west of the point of accident the fireman saw the headlight of No. 35 but at a point about 3,800 feet west of the point of accident the train encountered a bank of dense fog, which obscured the view ahead. When the engine was about 1,100 feet west of the engine of No. 35, the fireman saw the switch lights near the station and warned the engineman that the crossover switch was not lined for their train to enter the yard lead-track. It had been the practice that when the superior train arrived at the meeting point before the inferior train a member of the crew of the superior train lined the switch for the inferior train to take siding; however, there was no rule to that effect.

The brakes on No. 36 functioned properly en route to Bemidji, about 15 miles west of Cass Lake. At Bemidji a car was picked up and placed next to the tender; before the train left this point the brakes were observed to apply and to release. Between Bemidji and a point about 3,800 feet west of Cass Lake the brakes were not used. When No. 36 reached a point about 2 miles west of the crossover switch, the engineman began to use a drifting throttle and the speed was reduced from about 63 to 52 or 53 miles per hour when the train reached a point 1 mile west of the point of accident. There was considerable conflict in the testimony as to the brake-pipe reductions made by the engineman in the vicinity of Cass Lake. The fireman said it seemed that the engineman made a light reduction at a point about 3,800 feet west of the point of accident and that it was effective, then it seemed as though the brakes were released and soon afterward there was a second reduction made, which was not effective; the front brakeman felt only one reduction; the conductor felt only one reduction and thought the brakes were released soon afterward; a railway mail clerk felt only one application, which was made about 10 seconds before the accident occurred and which he thought to be an emergency application. Subsequent to the accident the brakes on the undamaged cars were tested and found to be functioning properly. After the accident occurred the body of a trespasser was found between the rear of the tender and the front of the first car; however,

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since the evidence was to the effect that the brake pipe was not closed at any point between the engine and the fifth car of the train 10 seconds before the collision occurred, it appears conclusive that the trespasser did not close an angle cock between the tender and the first car.

The engineman of No. 36 appeared normal en route. Whether the fog encountered just west of Cass Lake obscured the view of the track ahead sufficiently to confuse the engineman as to the distance to the crossover switch is not known, as he was killed in the accident.

Conclusion

This accident was caused by failure to control the speed of a passenger train properly when approaching a meeting point.

Respectfully submitted,

S. N. MILLS,

Director.