INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2921

GREAT NORTHERN RAILWAY COMPANY

REPORT IN RE ACCIDENT

AT MICHIGAN, N. DAK., ON

AUGUST 9, 1945

SUMMARY

Railroad:	Great Northern	
Date:	August 9, 1945	
Location:	Michigan, N. Dak.	
Kind of accident:	Rear-end collision	
Trains involved:	Passenger	: Passenger
Train numbers:	First 1	: Second 1
Engine numbers:	2584	: 2588
Consist:	11 cars	: 11 cars
Speed:	Standing	: 45 m. p. h.
Operation:	Timetable and train orders	
Track:	Single; 1° curve; 0.35 percent ascending grade westward	
Weather:	Cloudy	
Time:	7:22 p. m.	
Casualties:	34 killed; 309 injured	
Cause:	Failure to provide adequate protection for preceding train	
Recommendation:	That the Great Northern Railway Company establish an adequate block system on the line on which this accident occurred	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2921

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

GREAT NORTHERN RAILWAY COMPANY

September 20, 1945.

Accident at Michigan, N. Dak., on August 9, 1945, caused by failure to provide adequate protection for the preceding train.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On August 9, 1945, there was a rear-end collision between two passenger trains on the Great Northern Railway at Michigan, N. Dak., which resulted in the death of 33 passengers and 1 Pullman porter, and the injury of 264 passengers, 1 railway-mail clerk, 1 Pullman porter, 5 train porters, 32 dining-car employees, 1 person carried under contract, 1 train-service employee off duty and 4 train-service employees on duty.

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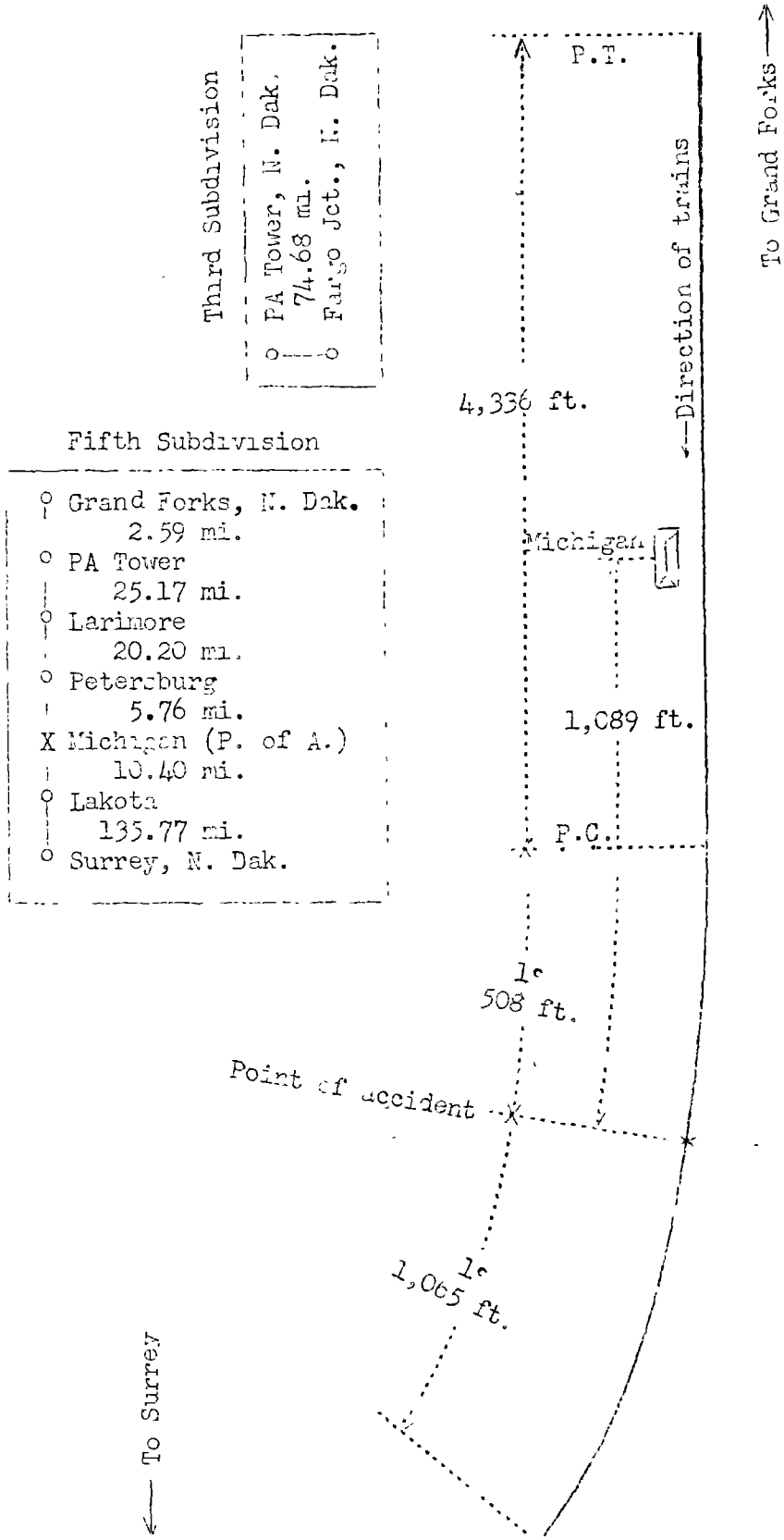
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 2921
Great Northern Railway
Michigan, N. Dak.
August 9, 1945

Location of Accident and Method of Operation

The trains involved in this accident were being operated from Fargo to Surrey, N. Dak., via Grand Forks, over the Third Subdivision of the Dakota Division extending northward from Fargo Jct. to PA Tower, 2.59 miles west of Grand Forks, a distance of 74.68 miles, and over the Fifth Subdivision of the Dakota Division extending westward from Grand Forks to Surrey, 199.89 miles. This is a single-track line between Fargo Jct. and Surrey via PA Tower and a double-track line between Grand Forks and PA Tower, over which trains are operated by timetable and train orders. There is no block system in use. The accident occurred on the main track 53.92 miles west of Grand Forks, at a point 1,089 feet west of the station at Michigan. From the east there is a tangent 4,336 feet in length, which is followed by a 1° curve to the right 508 feet to the point of accident and 1,065 feet westward. The grade for west-bound trains is level throughout a distance of 3,400 feet, then it is 0.35 percent ascending 147 feet to the point of accident and 853 feet westward.

Operating rules read in part as follows:

DEFINITIONS.

* * *

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or anything that may require the speed of a train to be reduced.

* * *

11. A train finding a fusee burning red on or near its track must stop and extinguish the fusee. Train may then proceed at restricted speed.

14. ENGINE WHISTLE SIGNALS.

Note.--The signals prescribed are illustrated by "o" for short sounds: "___" for longer sounds.
* * *

Sound.	Indication.
* * *	
(c) ___ o o o	Flagman protect rear of train.
* * *	

15. The explosion of two torpedoes is a signal to proceed at restricted speed. The explosion of one torpedo will indicate the same as two but the use of two is required.

* * *

35. The following signals will be used by flagmen:

Day signals--A red flag,
Torpedoes and Fusees.

Night signals--A red light,
Torpedoes and Fusees.

91. Unless some form of block signals is used, trains in the same direction must keep not less than ten minutes apart, except in closing up at stations.

99. 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 fusees. When recalled and safety to the train will permit, he may return.

When the conditions require, he will leave the torpedoes and a lighted fusee.

* * *

When a train is moving under circumstances in which it may be overtaken by another train, the flagman must take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fusees must be thrown off at proper intervals.

When day signals cannot be plainly seen, owing to weather or other conditions, night signals must also be used. * * *

99 (A). When it is known by engineman that his train will be delayed, he must immediately whistle out flagman.

854. * * * The rear brakeman or flagman should be on the last car of the train, or in the car next ahead, and on passenger trains should get on and off at the openings between those cars. He must not, except when necessary, disturb the occupants, nor ride in the observation end of observation or special cars, except at times when that part of the car is not occupied.

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

Description of Accident

First 1, a west-bound first-class passenger train, consisted of engine 2584, one passenger-dormitory car, one dining car, two Pullman tourist-sleeping cars, one Pullman sleeping car, one dining car, four Pullman sleeping cars and one Pullman-observation car, in the order named. All cars were of steel construction. This train passed Larimore, 25.96 miles east of Michigan and the last open office, at 6:19 p. m., 9 minutes late, and, because of an overheated journal on the tender of the engine, stopped about 6:40 p. m. at a point about 9 miles east of Michigan, departed at 7:02 p. m., stopped at Petersburg, 5.76 miles east of Michigan, about 7:07 p. m., to adjust a water line to the overheated journal, and departed about 7:09 p. m., 31 minutes late. Because of the condition of the journal, First 1 stopped at Michigan about 7:18 p. m., with the rear end standing 1,089 feet west of the station, and about 4 minutes later it was struck by Second 1.

Second 1, a west-bound first-class passenger train, consisted of engine 2588, one mail car, one baggage car, one passenger-dormitory car, two coaches, one dining car and five coaches, in the order named. The second car was of steel-underframe and steel side-plate construction, and the remainder were of all-steel construction. This train passed Larimore at 6:50 p. m., 40 minutes late, and while moving at a speed of about 45 miles per hour, as indicated by the tape of the speed recorder, it collided with First 1.

The force of the impact separated the engine of First 1 from the first car and the first car from the second, and the train was driven forward about 165 feet. The rear end-sill of the tender was broken. The first and the tenth cars were badly damaged, and the second to the ninth cars, inclusive, were slightly damaged. The rear car was telescoped practically its entire length by the engine of Second 1, and was demolished. The fatalities occurred in the rear car. The engine of Second 1 was derailed but remained upright and in line with the track, and was covered by the top and the side sheets of the rear car of First 1. The front end of the engine was badly damaged and the front flue sheet was punctured. The front coupler of the

first car of Second 1 was broken, and this car was separated from the engine a distance of about 25 feet. The first car was badly damaged, and the second to eleventh cars, inclusive, were slightly damaged.

It was cloudy and daylight at the time of the accident, which occurred about 7:22 p. m.

The fireman, the baggageman, the front brakeman and the flagman of Second 1 were injured.

During the 30-day period preceding the day of the accident, the average daily movement in the vicinity of the point of accident was 7.3 trains.

The tender of engine 2584, of First 1, is equipped with two 6-wheel trucks having 6-1/2-inch by 12-inch journals. Its capacity is 17,250 gallons of water and 5,800 gallons of fuel oil. The weight of the tender loaded is 326,560 pounds. The last monthly repairs to the engine and tender were completed on August 1, 1945. The right No. 3 journal box of the tender was last packed on August 8, 1945, at St. Paul, Minn.

Discussion

First 1 stopped about 7:18 p. m. in the vicinity of the station at Michigan, with the rear end standing 508 feet west of the east end of a 1° curve to the right, because the right No. 3 journal of the front tender-truck was overheated. About 4 minutes later the rear end was struck by Second 1.

After the accident an examination disclosed that the babbitt was melted and the journal bearing was cracked about 3 inches from the inner end. The journal was scored near its center. The investigation disclosed that pedestal liners had been applied to the journal box and the journal was packed at St. Paul, Minn., 394 miles east of Michigan, on August 8, 1945. The journal boxes of the tender were last inspected by mechanical forces at Grand Forks, 53.72 miles east of Michigan, about 1 hour 20 minutes prior to the occurrence of the accident. At this time oil was supplied and the packing was dressed by use of a packing-iron, and no defective condition was found. The first indication of an overheated condition of the journal was when the conductor detected the odor of burning oil about 12 miles east of Michigan. The train stopped for 22 minutes about 9 miles east of Michigan, where the journal was cooled and repacked, and a water-line was arranged to supply water to the journal. It stopped at Petersburg for the crew to adjust the hose, and stopped again at Michigan, because the engineer had observed that the journal was smoking considerably. Investigation disclosed that the valve of the water-line to the journal was clogged with sediment. The roundhouse foreman at Devils Lake, 35 miles west of Michigan, thought that the packing

became wound around the journal and caused the journal to overheat.

As Second 1 was approaching Michigan the throttle was in half-open position, and the speed was 57 miles per hour, as indicated by the tape of the speed recorder. No train order had been issued restricting the authority of this train to proceed at maximum authorized speed. The enginemen were maintaining a lookout ahead. No warning signal was seen or heard by these employees until their engine reached a point about 1,000 feet east of the east end of the curve on which the accident occurred. Then the enginemen saw, simultaneously, stop signals being given with a lighted red fusee from a point about 1,100 feet distant and the rear end of the preceding train. The engineer immediately moved the brake valve to emergency position, opened the sander valve and closed the throttle. The speed of Second 1 was about 45 miles per hour when the collision occurred. The brakes of this train had been tested and had functioned properly en route.

The engineer of First 1 said he realized that his train had been considerably delayed on account of the hot journal. He waited until the train had passed around a curve east of Michigan before he prepared to stop, as he planned to have the rear end beyond the train-order signal at Michigan because he was under the impression the office at that station was open, and because more favorable conditions for flagging would be provided. However, in such circumstances it had not been his practice to sound the signal calling for flag protection before the train was stopped. When the collision occurred, the engineer was attending to the overheated journal, the fireman was on the engine and the conductor and the front brakeman were in the vicinity of the engine. The flagman said that as his train was approaching Michigan he was in the rear vestibule of the second rear car, in compliance with the rule prohibiting flagmen from occupying the observation end of an observation car except when necessary. The brakes were applied about 1 mile east of the point where the train stopped, and the flagman was aware that the speed was being reduced. Although no whistle signal calling for flag protection was sounded at that time, he understood that, in accordance with the rules, lighted fusees were required to be dropped at proper intervals when his train was moving under circumstances in which it might be overtaken by another train, as in this case. However, because he thought a fusee dropped from a moving train would not remain lighted, no fusee was dropped. He alighted a few seconds before his train stopped, and, carrying a lighted fusee and a red flag, ran eastward. He had reached a point about 500 feet to the rear of his train and was giving stop signals with the red flag and the fusee when the engine of Second 1 passed him. The engineer of Second 1 said he could have stopped his train short of First 1 if a lighted fusee had been displayed immediately east of the curve on which the accident occurred.

In this territory trains are operated by timetable and train orders only. The only provision for spacing following trains is by the time-interval method enforced by operators at open stations, or by burning fusees dropped by flagmen. The 10-minute spacing rule at open stations had been modified to provide an interval of 20 minutes for a passenger train following another passenger train. Between Grand Forks and Surrey, a distance of 199.89 miles, there were only four continuously operated offices, located 27.76 miles, 64.12 miles, 88.72 miles and 145.96 miles west of Grand Forks. Practically all the day offices were closed during the time First 1 and Second 1 were proceeding toward Surrey, and consequently the four continuously-operated offices were the only ones where the required time interval would be enforced. Although the trains involved left the last open office 31 minutes apart, the collision occurred about 10 miles east of Lakota, the next open office. First 1 stopped three times between the last open office and the next open office. The first two stops consumed about 25 minutes, which nullified any protection afforded by the 20-minute spacing interval. The book of operating rules of this carrier contains manual-block rules which provide, among other things, that no train may be permitted to enter a block occupied by a passenger train, and no passenger train may be permitted to enter a block occupied by any train, except in emergency. If these rules had been in effect in the territory involved the following passenger train would not have been permitted to enter the block occupied by the preceding train.

Cause

It is found that this accident was caused by failure to provide adequate protection for the preceding train.

Recommendation

It is recommended that the Great Northern Railway Company establish an adequate block system on the line on which this accident occurred. A rule to show cause why it should not do so will be served on said carrier.

Dated at Washington, D. C., this twentieth day of September, 1945.

By the Commission, Commissioner Patterson.

W. P. BARTEL,
Secretary.

(SEAL)