INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3485

GRAND TRUNK WESTERN RAILROAD COMPANY

IN RE ACCIDENT

AT BURTON, MICH., ON

SEPTEMBER 26, 1952

SUMMARY

Date:	September 26, 1952	
Railroad:	Grand Trunk Western	
Location:	Burton, Mich.	
Kind of accident:	Derailment and collision	
Trains involved:	Passenger	: Passenger
Train numbers:	22	: 57
Engine numbers:	6040	: 6057
Consists:	7 cars	: 8 cars
Estimated speeds:	Standing	: 40 m. p. h.
Operation:	Timetable and train orders	
Track:	Single; tangent; 0.17 percent descending grade westward	
Weather:	Clear	
Time:	3:28 a. m.	
Casualties:	2 killed; 5 injured	
Cause:	Train approaching meeting point and entering turnout at an excessive rate of speed	

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3485

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

GRAND TRUNK WESTERN RAILROAD COMPANY

November 17, 1952

Accident at Burton, Mich., on September 26, 1952, caused by a train approaching a meeting point and entering a turnout at an excessive rate of speed.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On September 26, 1952, there was a derailment of a passenger train and a collision between derailed equipment of that train and a passenger train standing on an adjacent track on the Grand Trunk Western Railroad at Burton, Mich. This accident resulted in the death of two train-service employees, and the injury of two railway-mail clerks and three train-service employees. The accident was investigated in conjunction with a representative of the Michigan Public Service Commission.

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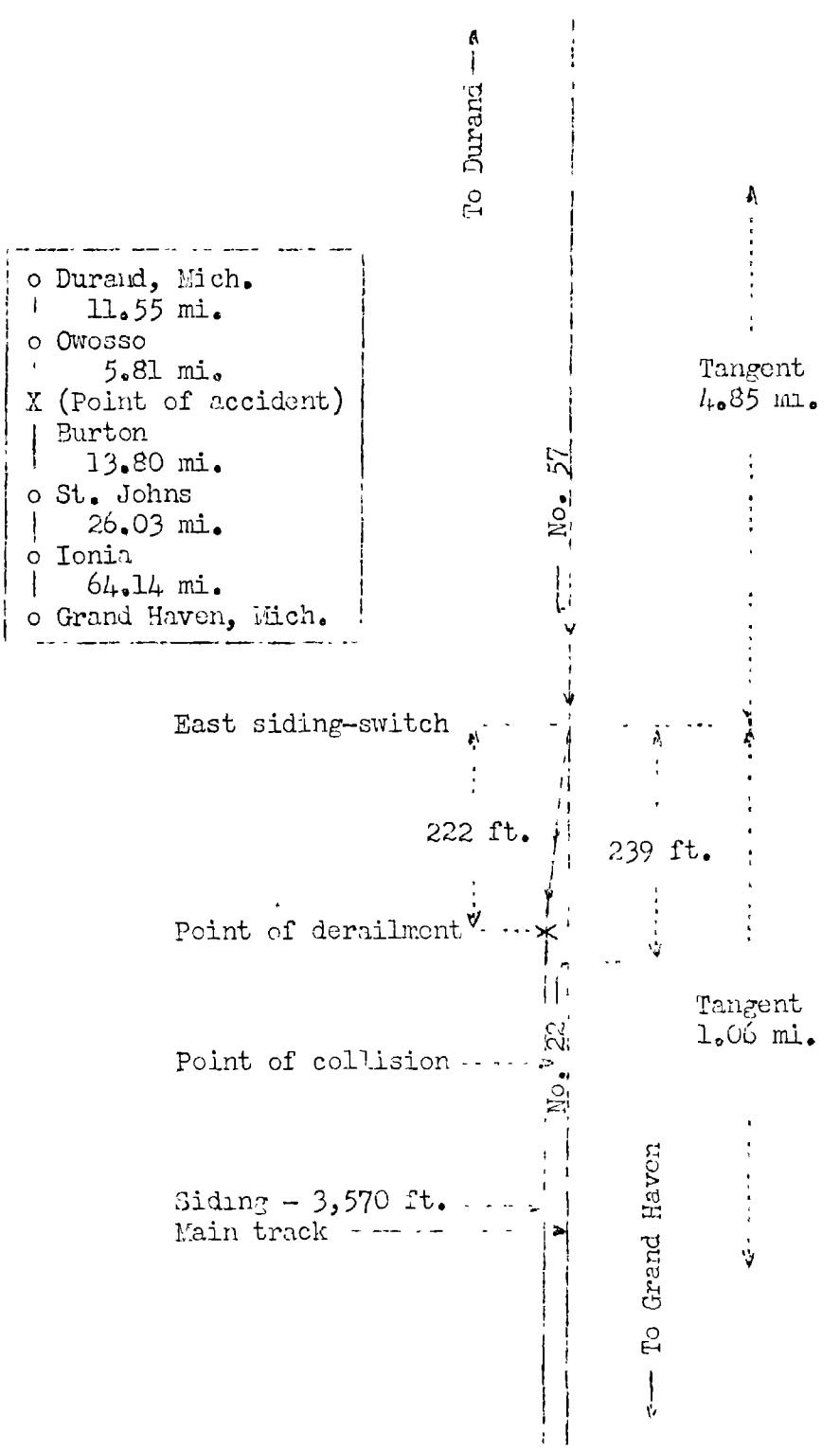
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3485
Grand Trunk Western Railroad
Burton, Mich.
September 26, 1952

Location of Accident and Method of Operation

This accident occurred on that part of the Detroit Division extending between Grand Haven and Durand, Mich., 121.38 miles, a single-track line, over which trains are operated by timetable and train orders. There is no block system in use. At Burton, 103.97 miles east of Grand Haven, a siding 3,570 feet in length parallels the main track on the north. The derailment occurred on the siding at a point 222 feet west of the east siding-switch, and the collision occurred immediately west of the point of derailment. The main track is tangent throughout a distance of 1.06 miles immediately west of the east siding-switch and 4.85 miles eastward. The grade is 0.17 percent descending westward at the point of accident.

In the vicinity of the point of accident the structure of the main track consists of 100-pound rail, 39 feet in length, relaid in its present location in 1950 on an average of 28 treated ties to the rail length. It is fully tieplated with double-shoulder tieplates, single-spiked, and is provided with 4-hole joint bars and an average of 8 rail anchors per rail. It is ballasted with crushed rock ballast to a depth of 8 inches below the bottoms of the ties. The turnout at the east end of the siding is provided with a No. 10 spring-rail frog. The degree of curvature of the lead curve is 7°15'. The siding is laid with 100-pound rail through the turnout to compromise joints located 165 feet west of the switch, and 80-pound rail west of these joints. It is fully tieplated, double-spiked between the switch and the point of tangent on the siding, and single-spiked west of that point. It is laid on an average of 19 treated hardwood ties to the rail length and is ballasted with crushed stone and pit-run ballast to a depth of 6 inches below the bottoms of the ties.

The switch stand at the east siding-switch is of the hand-throw, intermediate-stand type, and is located 9 feet 1-3/4 inches north of the center-line of the main track. It is equipped with an oil-burning lamp, which displays a green aspect in the direction of approaching trains when the switch is lined in normal position and a red aspect when the switch is lined for entry to the siding. The centers of the lenses of the lamp are 7 feet 2-1/8 inches above the level of the tops of the ties. A circular red banner 1 foot 6 inches in diameter is attached to the spindle at a point 5 feet 2 inches above the level of the tops of the ties. This banner is parallel to the track when the switch is lined in normal position and at right angles to the track when the switch is lined for entry to the siding.

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

14. Engine Whistle Signals

NOTE--The signals prescribed are illustrated by "o" for short sounds, "__" for longer sounds. * * *

(Sound)	(Indication, Purpose or Use)
* * *	
(g) o o	Answer to any signal not otherwise provided for.
* * *	

16. Air Communicating Signals

NOTE--The signals prescribed are illustrated by "o" for short sounds, "__" for longer sounds.

(Sound)	(Indication)
* * *	
(l) o o __	Approaching meeting or waiting points (See Rule 90).

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

17a. On engines equipped for the purpose the headlight will be dimmed * * * at meeting points * * *

27. * * *

Employees using a switch where the switch light is imperfectly displayed or absent must, if practicable, correct or replace the light.

* * *

72. * * *

Trains in the direction specified by the time table are superior to trains of the same class in the opposite direction.

88. (SINGLE TRACK) At meeting points trains must take the siding as herein prescribed, unless otherwise provided.

Between trains of the same class * * * the train in the inferior time table direction must take the siding;

* * *

A train required to take siding for an opposing train must pull in when practicable. * * *

90. (SINGLE TRACK) The conductor of every passenger train must give communicating signal 16 (l) between one and three miles from every station at which it is to meet or wait for a train, or to clear a train which is superior to it either by right, class or direction, when the engineman must immediately make running test of the brake and then give whistle signal 14 (g) in acknowledgment. Should the engineman fail to respond to signal 16 (l) as herein prescribed, immediate action must be taken to stop the train.

104. * * *

* * *

A trainman of a train occupying the main track at a meeting or passing point will, when practicable, open the switch for the expected train, and protect the switch until relieved by a trainman of the other train * * *

* * *

214. * * *

* * *

Conductors and enginemen must require their brakemen and firemen to read aloud and know the contents of all train orders.

Forms of Train Orders

Form A--(SINGLE TRACK) Fixing meeting points for opposing trains.

(1) No. 2 Eng. 402 meet No. 1 Eng. 401 at B.
* * *

* * *

Trains receiving these orders will run to the designated points and there meet in the manner prescribed by the Rules.

* * *

Timetable special instructions provide that east-bound trains are superior to trains of the same class in the opposite direction.

The maximum authorized speed for passenger trains was 57 miles per hour on the main track and 15 miles per hour through turnouts.

Description of Accident

No. 22, an east-bound first-class passenger train, consisted of engine 6040, one express-refrigerator car, one baggage car, one box express car, one baggage car, one baggage-mail car, one sleeping car, and one coach, in the order named. The second car was of steel underframe construction, and the other cars were of all-steel construction. At Ionia, 39.85 miles west of Burton, the crew received copies of train order No. 205 reading as follows:

No 22 Eng 6040 meet No 57 Eng 6037 at Burton

This train departed from Ionia at 2:34 a. m., 14 minutes late, departed from St. Johns, 13.8 miles west of Burton and the last open office, at 3:05 a. m., 10 minutes late, and stopped on the main track at Burton about 3:20 a. m., with the front of the engine 239 feet west of the east siding-switch. About 8 minutes later the side of the train was struck by derailed equipment of No. 57.

No. 57, a west-bound first-class passenger train, consisted of engine 6037, one baggage car, two express-refrigerator cars, one mail car, two baggage cars, one sleeping car, and one coach, in the order named. The second, third, and fifth cars were of steel underframe construction, and the other cars were of all-steel construction. The crew received copies of train order

No. 205 at Durand. This train departed from Durand at 2:51 a. m., 28 minutes late, departed from Owosso, 5.81 miles east of Burton and the last open office, at 3:20 a. m., 30 minutes late, and while it was entering the siding at Burton at a speed of about 40 miles per hour the engine and tender and the first four cars were derailed at a point 222 feet west of the east siding-switch. Portions of the derailed equipment struck the side of No. 22.

The rear truck of the second car and both trucks of the third car of No. 22 were derailed to the south. Separations occurred between the second and third cars and between the third and fourth cars. The second car stopped approximately in line with the track. The third car stopped with the front end and the rear end 8 feet and 5 feet, respectively, south of the center-line of the main track. The north sides of the engine and tender and the first and the third cars were considerably damaged. The north side and the appurtenances under the floor of the second car were badly damaged and the underframe of this car was bent. The front end of the fourth car was slightly damaged. The engine and tender of No. 57 stopped on their right sides, approximately in line, with the front of the engine on the main track at a point 492 feet west of the east siding-switch and the rear of the tender 55 feet north of the center-line of the main track. Separations occurred between the tender and the first car and between the first and second, second and third, and third and fourth cars. The first car stopped with the front end against the rear of the tender and the rear end against the rear end of the first car of No. 22. The second car stopped with the front end against the rear end of the first car and the rear end about 50 feet north of the main track. The third car stopped with the front end against the rear end of the second car and the rear end against the rear end of the tender of the engine of No. 22. The fourth car stopped approximately in line with the siding, with the front end against the rear end of the third car. None of the derailed cars overturned. The engine and tender and all of the derailed cars were badly damaged.

The engineer and the fireman of No. 57 were killed. The fireman of No. 22 and the brakeman and the baggageman of No. 57 were injured.

The weather was clear at the time of the accident, which occurred at 3:28 a. m.

Engine 6037 is of the 4-8-2 type. The total weight in working order is 354,110 pounds, distributed as follows: engine-truck wheels, 58,930 pounds; driving wheels, 235,300 pounds; and trailing-truck wheels, 59,800 pounds. The specified diameters of the engine-truck wheels, the driving wheels, and the trailing-truck wheels are, respectively, 33 inches, 73 inches, and 43 inches. The driving wheelbase is 19 feet 6 inches long, the total wheelbase is 41 feet 9 inches, and the total length of the engine and tender, coupled, is 92 feet 1-1/2 inches. The tender is of the Vanderbilt type and is equipped with two 6-wheel trucks. Its capacity is 13,500 gallons of water and 18 tons of coal. The total weight when fully loaded is 250,000 pounds. At the time of the accident the engine was making its first trip after completion of a monthly inspection. The engine was not equipped with a speed-recording device.

Discussion

Train order No. 205 established Burton as the meeting point between No. 22 and No. 57. Under the rules No. 57, the inferior train, was required to enter the siding at the east switch, and No. 22 was required to stop clear of this switch unless No. 57 was into clear on the siding. Surviving members of the crews of both trains so understood.

After No. 22 stopped at Burton the engineer dimmed the headlight and the brakeman proceeded to the east siding-switch and lined the switch for entry to the siding. The brakeman remained in the vicinity of the switch. Both of these employees observed that there appeared to be no light in the switch lamp. A short time after No. 22 stopped, the headlight of No. 57 became visible. The brakeman said he heard the engineer of No. 57 sound the grade-crossing whistle signal for a rail-highway grade crossing located about 1-1/2 miles east of the east siding-switch at Burton. About the same time the headlight of No. 57, which had been lighted brightly, was dimmed. The brakeman said that as No. 57 approached the switch the sound of the exhaust indicated that the speed of the train was not being reduced. He walked toward the approaching train and gave stop signals, and he had reached a point about 40 feet east of the switch when No. 57 passed him. He said that his signals were not acknowledged and that there was no change in the sound of the exhaust between the time he first heard it and the time the front of the train entered the siding. He said there was no indication that the engineer of No. 57 had made a brake application until after the engine had passed the switch. At

that time sparks began to fly from the wheels of the train. The derailment occurred almost immediately afterward. The engineer of No. 22 said that the headlight of No. 57 was dimmed when No. 57 was a considerable distance east of the siding switch, and that it was extinguished when No. 57 reached a point 400 or 500 feet east of the switch. Because he thought it would be difficult for the employees on the engine of No. 57 to locate the switch while looking toward a headlight, the engineer of No. 22 immediately extinguished the headlight of his engine. He then became aware that No. 57 was approaching at a speed at which it could not enter the siding safely. He alighted from the engine immediately before the collision occurred. He said that sparks flying from the wheels after the engine of No. 57 entered the siding indicated that the brakes were applied at that time. Neither the engineer nor the brakeman could estimate the speed at which No. 57 entered the siding. The fireman of No. 22 was injured in the accident, and he was not questioned during this investigation. The conductor, who was at the rear of the train, was not aware that anything was wrong until the collision occurred.

The crew of No. 57 received copies of several train orders, including train order No. 205, at Durand. This crew consisted of the enginemen, the conductor, the baggageman, and one brakeman. With the exception of the baggageman, all of these employees were in the station when the train orders were delivered. Each of them read the orders. It was customary for the train dispatcher to arrange for No. 22 to take the siding at the meeting point with No. 57, and the conductor and the brakeman said that before the enginemen left the station there was some discussion as to why the dispatcher had not arranged for No. 22 to take the siding at Burton on this occasion. They were positive that both the engineer and the fireman understood that train order No. 205 required No. 57 to take the siding. After station work at Durand was completed the train proceeded to Owosso, where the first car of the train was set off. After the engine was re-coupled to the train the brakes were tested by a car inspector and were found to function properly. The conductor and the brakeman said that the engineer made a running test of the brakes soon after the train departed from the station. These employees said that they both proceeded to the rear vestibule of the rear car when the train was in the vicinity of a rail-highway grade crossing located 2.80 miles east of the east siding-switch at Burton. Immediately after the train passed the crossing the brakeman sounded the signal prescribed by rule No. 16 (1) on the communicating signal system. Both employees said that the engineer immediately made a running test of the brakes. They

accepted this action as an acknowledgment of the signal. Neither of them heard the sound of the engine whistle, but they said that it frequently is impossible to hear the whistle from the rear vestibule of the rear car and they did not consider the absence of a whistle signal unusual. The conductor thought that the speed was between 40 and 45 miles per hour at this time. The brakeman was unable to estimate the speed. After the engineer made the brake application both of these employes entered the rear car. The conductor said that the brakes were applied a second time as the train approached Burton and he assumed that the engineer was making a normal reduction in speed preparatory to entering the siding. He thought that the derailment occurred about 30 seconds after the brakes became applied. The brakeman said that when he thought the train should be approaching the siding switch he stepped to the rear vestibule. The brakes became applied several seconds after he entered the vestibule, and he thought the derailment occurred about 10 seconds later. The baggageman, who was in the fifth car, said that the brakes were applied and released in the vicinity of the crossing east of Burton, and that they were not again applied until several seconds before the derailment occurred. Two mail clerks who were in the fourth car thought that the brakes were applied either immediately before or immediately after the car in which they were riding entered the siding. The enginemen were killed in the accident, and it could not be determined why the speed of the train was not properly controlled. The switch lamp at the east siding-switch was examined several hours after the accident occurred. The lamp was found to be lighted, but the inside of the lamp was coated with soot to the extent that the light was not clearly visible through the lenses.

The fact that No. 57 customarily held the main track at the meeting point with No. 22 and the probability that, after the headlight of No. 57 became extinguished, the enginemen of No. 57 could not determine the position of the switch, because of the condition of the switch lamp, may have had considerable bearing on the failure of the engineer to control the speed properly. The positions of the controls of the engine at the time of the accident could not be determined, because of damage to the cab and appliances and the boiler head.

The statements of the witnesses and the surviving members of the crew of No. 57 indicate that No. 57 entered the siding at a speed which would cause the engine to roll and thrust laterally. Examination of the track after the accident occurred disclosed that apparently a wheel was forced across the south rail of the siding as a result of a lateral thrust combined with a rocking motion of the engine. Throughout a distance of

265 feet immediately east of the point of accident the track was displaced from normal alinement. Between a point 40 feet east of the switch and a point on the siding 84 feet west of the switch the track was shifted to the south a distance of about 1 inch. Between the latter point and a point 225 feet west of the switch the track was shifted to the north a distance of 3 to 4 inches. Beginning at a point 216 feet west of the switch there were marks which indicated that a flange or flanges had been bearing heavily against the south rail of the siding. The metal in the top of this rail had flowed and formed a 5/32-inch lip on the gage side of the head. Between points 216 feet and 218 feet west of the switch this lip was cut away and a cut 1/2 inch in depth extended into the head a distance of 1/4 inch. Throughout the next 3 feet 9 inches there were light flange marks on the gage side of the head. West of these marks the lip was cut away throughout a distance of 10 inches, and the head of the rail bore marks indicating that a wheel had crossed the rail. Beginning at a point 225 feet west of the switch the track was torn out throughout a distance of 305 feet.

Cause

It is found that this accident was caused by a train approaching a meeting point and entering a turnout at an excessive rate of speed.

Dated at Washington, D. C., this seventeenth day of November, 1952.

By the Commission, Commissioner Patterson.

(SEAL)

GEORGE W. LAIRD,

Acting Secretary.