Inv-2180

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

GRAND TRUNK WESTERN RAILROAD

LANSING, MICH.

JUNE 9, 1937

INVESTIGATION NO. 2180

SUMMARY

Inv-2180

Railroad:	Grand Trunk Western
Date:	June 9, 1937.
Location:	Lansing, Mich.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 6301 (Symbol 492)
Engine number:	6301
Consist:	48 cars, caboose
Speed:	25-40 m.p.h.
Track:	Tangent; 0.13 percent descending grade
Time:	2:42 p.m.
Weather:	Cloudy and raining
Casualties:	1 injured
Cause:	Not definitely determined; apparently caused by failure of brake rigging.

July 24, 1937.

To the Commission:

On June 9, 1937, there was a derailment of a freight train on the Grand Trunk Western Railroad at Lansing, Mich., which resulted in the injury of 1 employee.

Location and method of operation

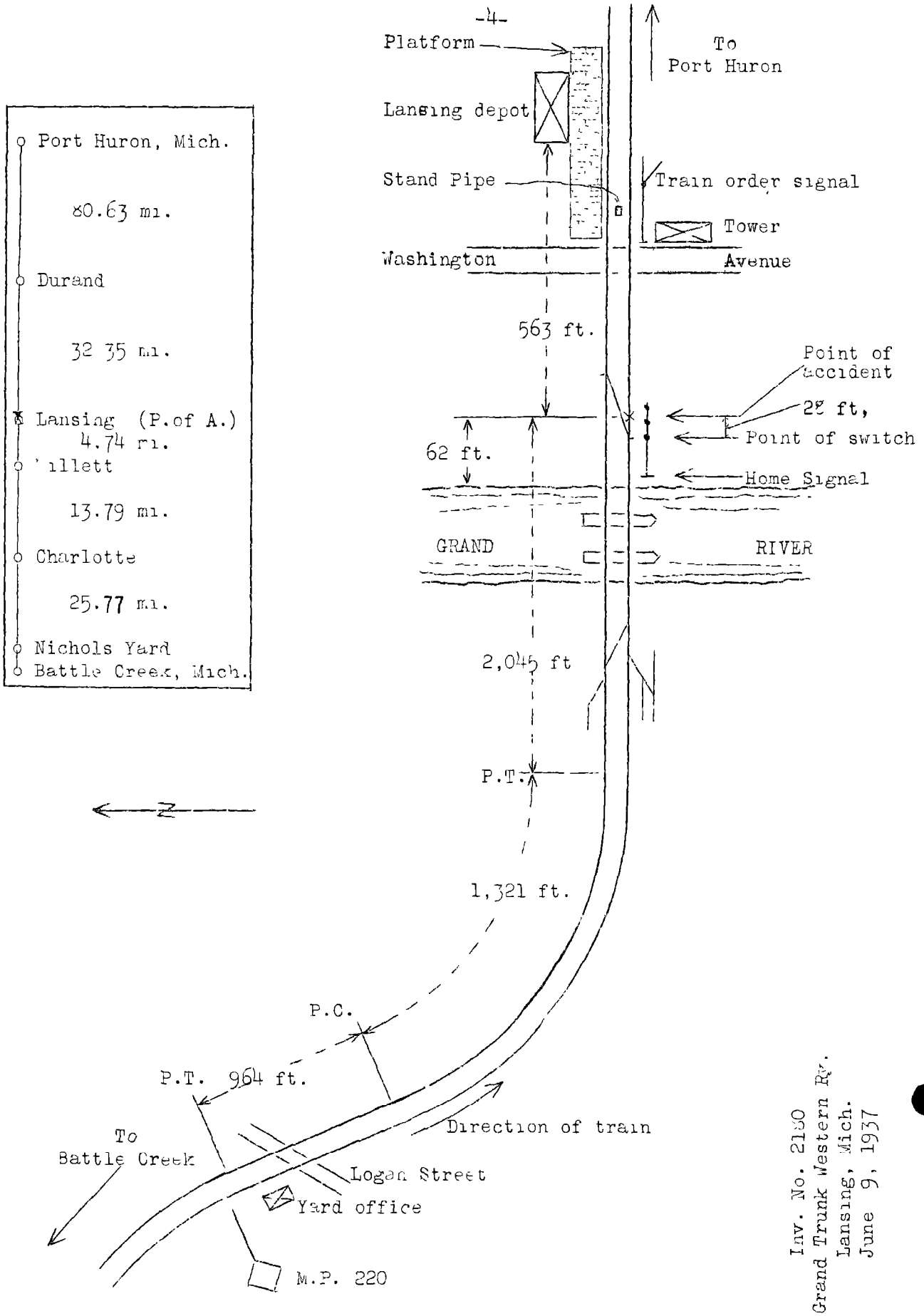
This accident occurred on the Flint Subdivision of the Chicago Division, which extends between Battle Creek and Port Huron, Mich., a distance of 157.28 miles; in the vicinity of the point of accident this is a double-track line over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred on the east-bound main track within the limits of Washington Avenue interlocking plant, at a point 62 feet east of Grand River bridge and 565 feet west of the depot at Lansing. The first marks of derailment were 28 feet 6 inches east of the points of the west switch of a facing-point cross-over connecting the east-bound and west-bound main tracks. Approaching this point from the west there is a 2° 1' curve to the left 1,320 feet in length, and then a tangent which extends 2,046 feet to the initial point of derailment and a considerable distance beyond. The grade is 0.13 percent descending eastward at the point of accident.

The track is laid with 100-pound rails, 39 feet in length, with 22 treated ties and 6 rail anchors to the rail length, single-spiked and fully tie-plated; it is ballasted with washed gravel to a depth of about 12 inches and is well maintained. An ordinance restricts the speed of all trains to 10 miles per hour within the city limits of Lansing.

The weather was cloudy and it was raining at the time of the accident, which occurred about 2:42 p.m.

Description

Extra 6301 East, (Symbol 492), consisting of 48 cars and a caboose, hauled by engine 6301, and in charge of Conductor Jones and Engineman Sawdey, left Nichols yard, Battle Creek, at 1:38 p.m., passed Millett, the last open office, 39.56 miles beyond, at 2:37 p.m., according to the train sheet, and while approaching the depot at Lansing, was derailed while traveling at a speed estimated to have been between 25 and 40 miles per hour.



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Grand Trunk Western Ry.
Lansing, Mich.
June 9, 1937

Engine 6301, its tender and the first 27 cars in the train remained on the track as did the 8 rear cars and caboose; the rear truck of the 28th car was derailed, but it remained coupled to the forward portion of the train, and stopped 1,050 feet east of the totally derailed cars. The twenty-ninth to fortieth cars, inclusive, were derailed and stopped in various positions on and across both main tracks and the cross-over, all within a distance of 450 feet; the body of the twenty-ninth car, S.F.R.D. 14559, was torn from its trucks and lay on its side across the westward main track and the station platform. During the course of derailment the signal tower located about 6 feet south of the tracks and about 10 feet east of the sidewalk of Washington Avenue was struck and practically demolished. The eastward main track was considerably damaged for a distance of 340 feet. The employee injured was the operator in the tower.

Summary of evidence

Engineman Sawdey stated that during the air brake test which was made before departing from Nichols Yard, all brakes worked properly; no stops were made en route. About 2 miles west of Washington Avenue tower he initiated a brake application which was maintained for about 1-½ miles and which reduced the speed from betwen 50 and 55 miles per hour to about 20 miles per hour. The distant and home interlocking-signals displayed green indications for a through movement on the eastward main track, but the train order board displayed a yellow indication, and as they passed the tower the operator delivered a message. The first indication of anything wrong was an emergency application of the air brakes. At that time all of the slack in the train had been taken up.

Statements of Fireman Simmons and Head Brakeman Dexter were similar to those of Engineman Sawdey; they estimated the speed at about 25 to 30 miles per hour when the air brakes were applied in emergency as a result of the accident.

Conductor Jones stated that he was in the caboose cupola when the accident occurred, at which time the speed was about 30 miles per hour. Prior to the derailment there was no indication of brakes sticking or anything else wrong with the train. After the accident he inspected the track but found no indication of dragging equipment.

Flagman York stated that when passing Logan Street, about 4,000 feet west of the point of accident, he had received signals from the yardmaster on one side of the train and from

another employee on the opposite side of the train which indicated that everything was all right in the train.

Yardmaster Basso and Car Checker Harmon corroborated the statement of Flagman York concerning signals given at Logan Street. They estimated the speed to have been about 30 miles per hour at that time, and said that they saw nothing wrong with the running gear, no sparks flying and no evidence of hot boxes or heated wheels.

Car Inspectors Cornell, Dale, Foster, Fox, Mather and Tubbs, at Nichols yard, Battle Creek, made statements to the effect that the train was thoroughly inspected on its arrival at that point. The piston travel was adjusted on five cars, and one defective car was set out, after which a test of the air brakes was made. When the train departed, a running inspection was also made and no defects were noted. Apprentice Signalman Hughes stated that he was in the tool house at Grand River bridge when he noticed Extra 6301, approaching at a speed of about 35 or 40 miles per hour; when about two-thirds of the train had passed he saw sparks flying from the guard rail of the bridge, but he could not see anything dragging, and before he could give warning signals to the crew the derailment had occurred. He went to the damaged tower, and examined the levers which he found in normal position. Later on he looked at the cross-over switch points and found them about halfway open.

Signal Maintainer Trimble stated that he examined the position of all levers in the tower about 5 minutes after the accident and found them lined for the main line; later on he looked at the switch points and found them entirely over in reverse position. He said it was not possible for the operator to change the line-up after a train entered the circuit, unless he restored the signal lever to normal position and operated a 2-minute electric time-release.

Signal Maintainer Reinhard examined the cross-over switch and switch operating mechanism on the eastward track about 10 or 15 minutes after the accident and found the switch points about half open and the mechanical lock unlocked. The switch on the westward track was in normal position. Before 10 a.m. on the day of the accident he had inspected the switches and switch operating mechanism at Washington Avenue, and found everything in good condition, with no adjustments necessary. He also checked the operation of the switches, and found them satisfactory. He further stated that no irregular operation of signals or switches has occurred while he has been maintaining this interlocking plant.

Operator Beebe stated that the cross-over switches could not be operated when a train was in the circuit, and it was impossible for him to have operated these switches accidentally.

Supervisor of Signals Coleman stated that he arrived at the scene of the accident within 2 hours after its occurrence, and found the apparatus in the lower part of the tower piled up and badly broken, while that in the upper part was not damaged, and the signal and switch levers were in normal position. Three signals were knocked down and the underground wires leading from the tower were damaged as a result of the accident.

Car Foreman Harrington stated that he inspected all of the trucks of the derailed cars and found all brakes, brake hangers and brake pins in place, but some of the bottom rods were bent and one was broken; he did not make an individual record of each car. He found a broken wheel which he thought belonged to S.F.R.D. 24082, the thirty-first car in the train and the fourth car to be derailed; all pieces of this broken wheel were found, except one, and all of these broken pieces were recovered east of Washington Avenue, which is located about 300 feet east of the initial point of derailment. There was no indication of the wheel having been hot, and the flanges and contours were good on all wheels examined. He thought that if a broken wheel had caused the derailment at the cross-over switch the broken pieces would have been scattered along the track from that point.

At the time of the arrival of the Commission's inspectors at Lansing on June 12, all of the cars had been removed from the scene of the accident, and all but eight had been forwarded to destination. These eight cars had been removed to Battle Creek shop where an inspection was made which disclosed that only three had defects which might have had some relation to the cause of the accident.

The leading truck at the east, or A-end, of the twenty-ninth car, S.F.R.D. 14559 was damaged as follows:

2 Andrews truck frames bent.
1 Spring plank angle broken off at side frame, and bent.
Both brake beam safety supports torn off, bent, and scarred.
" " " sections bent, and truss rods broken.
" " " fulcrums broken.
Both of the third-point brake beam supports broken.
Bottom rod bent, and scarred.
Brake lever bent, and scarred.
Truck side bearings bent, and broken.

2 Pieces of track rail projected endwise through the forward side of the cast steel truck bolster, and broken off. (The pieces of rail remained in the bolster.)

The wheels of this truck were all single-plate, cast-iron wheels, weight 700 pounds, with cast dates of 1931 and 1935, and were in good condition. The brake beams were A.R.A. No. 2. The truck from the B-end of the car was in good condition, and no defects were found; it was used under another car in the movement from Lansing to Battle Creek. The 33rd car was found to have one wheel with about 16 inches of the flange broken off. This was a clean, new break on the opposite side from the wheel tread, and evidently had resulted from the derailment.

The thirty-first car, S.F.R.D. 24082, was found to have a broken wheel and a badly bent axle. This wheel was a practically new, single-plate, cast-iron wheel bearing the date February 22, 1937; it was broken in seven pieces, all fractures being new with no indications of flaws or defects. Both the broken wheel and the bent axle on which it had been mounted, plainly showed heavy abrasions where they had come into violent contact with other objects. Chemical analysis made in the laboratory at Albany on June 16, 1937, showed the content of this broken wheel to be as follows:

	Wheel Rim #1	Wheel Plate #2	Wheel Hub #3
Silicon	0.55	0.55	0.55
Phosphorus	0.305	0.309	0.316
Sulphur	0.171	0.171	0.171
Manganese	0.530	0.546	0.551
Combined carbon	1.98	0.65	0.90
Total "	3.54	3.38	3.52

Note: Sulphur content in all cases was slightly over specification by three hundredths of one percent. Other determinations are normal to A.A.R. specifications for cast iron. Determinations for combined carbon are usually taken from drillings in plate and this determination is normal. Increased combined carbon shown on wheel rim test is normal for drillings taken under chill.

An inspection of the track in the vicinity of the point of accident disclosed several slight scrape marks along the top of the guard rails of the bridge located just west of the interlocking plant, but no marks were found west of the bridge.

The south point of the west cross-over switch was slightly damaged, and the tie rods between the points were bent. Flange marks appeared on the ties along the north side of both rails of the eastward main track, beginning at a point 28 feet 6 inches east of the points of the west cross-over switch and extending to the point where the track was torn up, and there were indications of scraping on the top of the north main-track rail close to the initial point of derailment.

Discussion

The evidence indicates that prior to leaving Nichols Yard Extra 6301 had been carefully inspected. Approaching Lansing interlocking plant the east-bound distant and home signals were displaying clear indications but as the train order signal was displayed, indicating train orders for delivery, the speed was reduced from about 50 miles per hour to about 20 miles per hour. When about two-thirds of the train had passed over the bridge just west of the interlocking plant sparks were seen coming from the guard rails under a car still on the bridge, and the derailment occurred within a very short distance. Apparently S.F.R.D. 14569, the twenty-ninth car in the train, was the first to become derailed. That this is true is borne out by the manner in which its trucks demolished the road bed, and by the pieces of rail projected through the cast steel truck bolster of the leading truck. After the accident the condition of the lead truck of this car was such that it was impossible to determine which part failed prior to, and which parts were broken after the derailment occurred, but some of the broken parts could have and evidently did contact the guard rails of the bridge and strike the cross-over switch. The condition of the rear truck of the twenty-eighth car indicates that its derailment was due to the action of the twenty-ninth car during the course of the derailment. Any possibility that the broken wheel on S.F.R.D. 24082, the thirty-first car in the train, might have caused the derailment is eliminated by the fact that the three preceding cars were derailed and had plowed up the track, and also by the fact that all of the small pieces of the wheel were found near the wheel itself. Immediately after the derailment the west end of the cross-over switch was found partially opened while the east end was in normal position, tests made after the accident showed that the destruction of the circuits during the derailment could have resulted in momentary contacts between the various control wires that would unlock the switch mechanism, and this would permit the pressure between the switch points and the stock rails to open the points. Twenty-eight cars passed safely over this switch, and statements of employees of the signal department were to the effect that it

is impossible to change the route while a train is in the circuit. Slack action in the train is definitely eliminated as a cause of this accident since the engine had been working steam for a distance of about 25 car lengths at the time of the derailment.

Conclusion

The cause of this derailment was not definitely determined, but it is thought that some part of the brake rigging on the twenty-ninth car broke and fell across the north main-track rail and acted as a derail.

Respectfully submitted,

W. J. PATTERSON,

Director.