

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2947
THE NEW YORK CENTRAL RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR TERRE COUPEE, IND., ON
NOVEMBER 16, 1945

SUMMARY

Railroad: New York Central

Date: November 16, 1945

Location: Terre Coupee, Ind.

Kind of accident: Derailment and collision

Trains involved: Freight : Passenger

Train numbers: Extra 2858 West : 66

Engine numbers: 2858 : 6002

Consist: 24 cars, cabooses : 15 cars

Speed: 38 m. p. h. : 65 m. p. h.

Operation: Signal indications and automatic train-stop system

Track: Double; tangent; 0.12 percent descending grade eastward

Weather: Clear

Time: 2:58 p. m.

Casualties: 39 injured

Cause: Failure of water-scoop on freight engine to be fully raised after being used, and derailed freight car obstructing adjacent main track immediately in front of approaching train

Recommendation: That the New York Central Railroad Company arrange water-scoops on its locomotives to be operated by a single valve. That it install mechanism which will automatically raise and secure the water-scoops in upper position when they leave the ends of water troughs

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2947

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

THE NEW YORK CENTRAL RAILROAD COMPANY

January 5, 1946.

Accident near Terre Coupee, Ind., on November 16, 1945,
caused by failure of water-scoop on freight engine
to be fully raised after being used, and by a de-
railed freight car obstructing an adjacent main
track immediately in front of an approaching train.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On November 16, 1945, there was a collision between a passenger train and a derailed car of a freight train on the New York Central Railroad near Terre Coupee, Ind., which resulted in the injury of 18 passengers, 5 Pullman employees, 12 dining-car employees and 4 train-service employees. This accident was investigated in conjunction with a representative of the Indiana Public Service Commission.

¹Under 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.

↑ To Elkhart

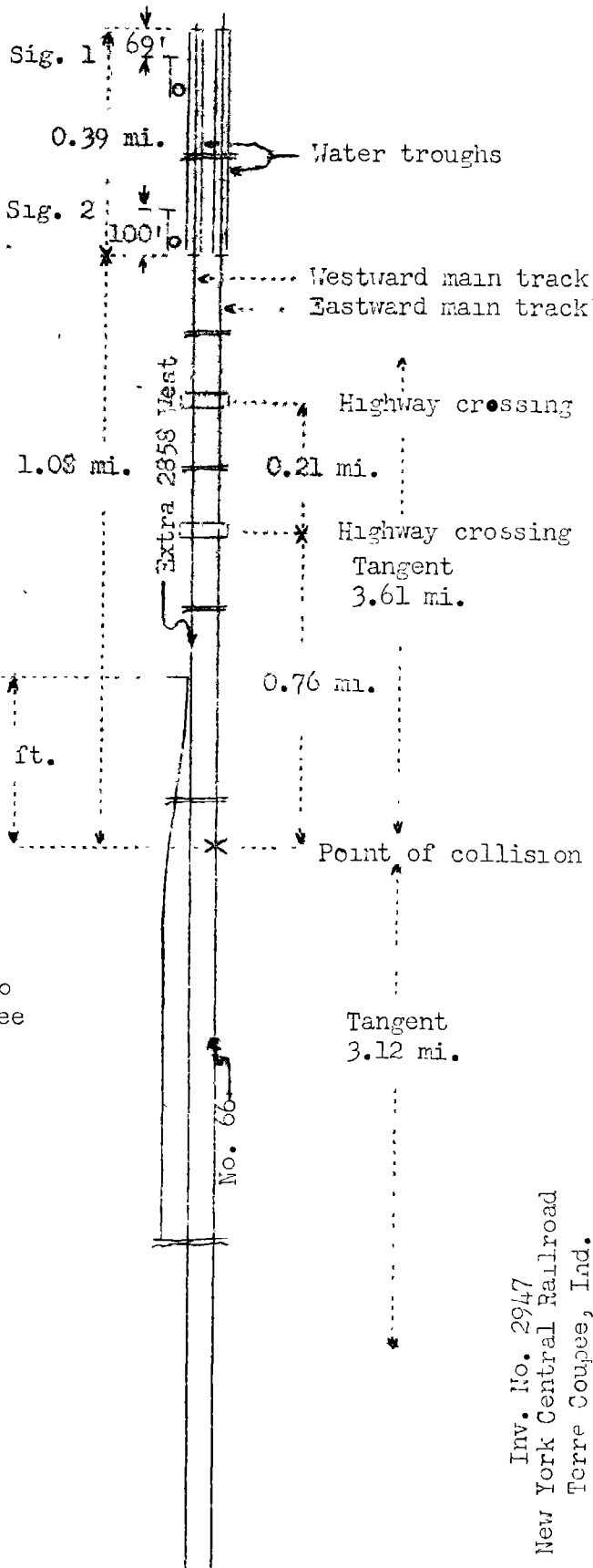
- Elkhart, Ind. 15.09 mi.
- South Bend 9.62 mi.
- X Point of accident 2.07 mi.
- Terre Coupee 1.70 mi.
- New Carlisle, Ind. 65.43 mi.
- Englewood, Ill.

Auxiliary track switch (Point of derailment)

199 ft.

2.07 mi. to Terre Coupee

↓ To Englewood



Inv. No. 2947
 New York Central Railroad
 Terre Coupee, Ind.
 November 16, 1945

Location of Accident and Method of Operation

This accident occurred on that part of the Western Division extending between Englewood, Ill., and Elkhart, Ind., 93.91 miles, a double-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by signal indications and an automatic train-stop system. At a point 2.07 miles east of the station at Terre Coupee, 67.1 miles east of Englewood, there is a facing-point switch which provides entry to an auxiliary track located to the north of the westward main track. The freight train involved was being operated on the westward main track, and the passenger train was on the eastward main track. The derailment of the freight train occurred at the auxiliary-track switch, and the collision occurred 199 feet west of the switch. The main tracks are tangent throughout a distance of 3.12 miles west of the point of accident and 3.61 miles eastward. The grade is 0.12 percent descending eastward.

At the point of accident the distance between the center-lines of the main tracks is 13 feet. The track structure consists of 127-pound rail, 39 feet in length, laid on an average of 24 ties per rail length. It is fully tieplated with double-shoulder tieplates, spiked with 4 spikes per tieplate, provided with an average of 8 rail anchors per rail length, and is ballasted with crushed stone to a depth of 12 inches.

Between points 1.47 and 1.08 miles east of the point of accident, water troughs are located in both main tracks for supplying water to the tenders of engines in motion. Each trough is located in the center of the track, and is 23-1/2 inches in width and 8-3/8 inches in depth. The top of the trough is 1 inch below the level of the tops of the rails. A sloping apron arrangement and a trailer rail are located at the ends of the trough for protection. The trailer rail at the west end of the trough in the westward main track is 105-pound rail, 66 feet in length, and its top surface is 1-11/16 inches below the level of the tops of the rails of the track.

At points 0.97 and 0.21 mile east of the point of accident, the main tracks are crossed at grade by two highways, which intersect the railroad at right angles. The crossings are about 18 feet long. The area between the rails of each track is surfaced with planks, and there are planks outside each rail. The planks are 4 inches thick and 8 inches wide, are secured to 4 by 6-inch stringers by spikes 3/8-inch thick and 12 inches long, and their top surfaces are about level with the tops of the rails. Flangeways 2-1/2 inches in width are provided inside each rail.

Track-trough signal 1 is mounted on a mast 2 feet 9-1/2 inches above the level of the tops of the rails, about 6 feet north of the north rail of the westward main track and 69 feet

west of the east end of the trough. Track-trough signal 2 is mounted on a mast 2 feet 3-1/2 inches above the level of the tops of the rails, about 6 feet north of the westward main track and 100 feet east of the west end of the trough. The involved aspects and corresponding indications of these signals are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>
1	Lunar White	Scoop may be lowered at this point.
2	Blue	Scoop must be raised at this point.

Operating rules read in part as follows:

102a. When a train is disabled or stopped suddenly by an emergency application of the brakes, or by other causes, adjacent tracks as well as tracks of other railroads that are liable to be obstructed must at once be protected until it is ascertained they are safe and clear for the movement of trains.

701. * * *

* * *

When approaching track pans and immediately after passing them, and frequently at other points, trainmen must observe each side of their train.

The forward trainmen of freight trains, and enginemen and firemen when practicable, must be on the lookout for signals from the rear * * * when approaching and passing * * * track pans * * *

Instructions, issued during 1942, governing the operation of water scoops, read in part as follows:

Effective immediately, arrange to keep the cutout cock below the brake valve * * * in a cut-out position until it is necessary to operate the water scoop just before approaching track pans. After the water scoop has been lifted the cut-out cock should again be closed.

* * *

Recent damage to water scoops on different divisions seems to indicate lack of proper understanding or cooperation between the engineer and fireman in handling this important detail of their work. * * * so that a uniform practice in scooping water may be established, it will be the engineer's duty to call to the fireman when to lower and when to raise the water scoop. In addition to giving a verbal signal, a hand signal must be given by the engineer at the time of operating the scoop.

* * *

The maximum authorized speed for passenger trains is 80 miles per hour and for freight trains, 50 miles per hour.

Description of Accident

Extra 2858 West, a west-bound freight train, consisting of engine 2858, 24 cars and a caboose, passed South Bend, the last open office, 9.62 miles east of the point of accident, at 2:44 p. m., took a supply of water while moving over the track trough involved, and was moving on the westward main track at a speed of 38 miles per hour when the rear truck of the tender and the first to seventeenth cars, inclusive, were derailed at a point 2.07 miles east of the station at Terre Coupee. The engine stopped 679 feet west of the point of derailment. Separations occurred between all of the derailed cars. Soon after the derailment occurred, the ninth car, which obstructed the eastward main track, was struck by No. 66.

No. 66, an east-bound first-class passenger train, consisted of engine 6002, one dormitory car, six Pullman sleeping cars, one dining car, six Pullman sleeping cars and one dining car, in the order named. The fourth to seventh cars, inclusive, and the ninth and the thirteenth cars were of lightweight steel construction, and the remainder were of conventional steel construction. This train passed New Carlisle, the last open office, 3.77 miles west of the point of accident, at 2:55 p. m., and while moving on the eastward main track at a speed of 65 miles per hour it collided with the derailed freight car. The engine stopped on its right side 406 feet east of the point of collision and at an angle of 45 degrees to the track. The first ten cars stopped in various positions south of the main tracks and across them. The engine and the first seven cars were badly damaged.

The weather was clear at the time of the accident, which occurred about 2:58 p. m.

The engineer, the fireman and the front brakeman of No. 66, and a traveling fireman, who was on the engine, were injured.

The tender of engine 2858 is rectangular in shape, and has capacity for 15,000 gallons of water and 28 tons of coal. It is equipped with a water-scoop for supplying the cistern with water from troughs while the engine is in motion. Water is supplied in the tender at an average of 2-1/2 gallons per lineal foot of trough. This arrangement consists of a rectangular conduit, which extends upward through the center-line of the cistern to its top, then bends downward so that the flow of water is directed downward into the cistern. A hinged extension, designated as the dipper, is attached to the lower end of the conduit below the frame of the tender and between the trucks. The cross-sectional dimensions of the dipper are 8 inches by 13 inches. The lower portion of the dipper, designated as the mouthpiece, is constructed of 3/16-inch sheet metal. The upper portion is of cast-steel construction. The dipper is provided with a mechanism actuated by air pressure so that the dipper can be lowered into track troughs and raised from them. A coiled counter-balance spring, which is fully compressed and serves as a shock absorber when the dipper is lowered, is attached to the operating mechanism to insure the rapid rising of the dipper, and to hold it in normal position after air has been released from the cylinder. An adjustment bracket and stop bolts restrict the movement of the dipper within prescribed limits. The normal position of the bottom surface of the dipper when not in use is 5-1/2 inches above the tops of the rails, and when in position to scoop water it is 6-1/4 inches below the tops of the rails. A shield protects the mouth of the dipper when it is in normal position. Compressed air is supplied to the operating cylinder by a 3/4-inch pipe from the main reservoir on the engine. This supply pipe is provided with a cut-out cock easily accessible to the engineer when in his usual position in the cab. On the left water leg of the tender, adjacent to the gangway, there is another cut-out cock, and also the operating valve, which has a handle about 6 inches long. The handle of the valve has two operating positions. For lowering the dipper it is placed back of a vertical line and for raising the dipper it is placed in front of the vertical line. The operating valve is provided with a latch to hold it in the desired position, and the cut-out cocks are provided with stops. The water-scoop dipper is both lowered and raised by air pressure, which is supplied alternately to opposite sides of the operating piston by manipulation of the operating valve.

Instructions establish a prescribed sequence of operations by the engineer and the fireman to lower and to raise the scoop. When the engine approaches a track trough the fireman must station himself at the operating valve, then the engineer opens the cut-out cock in the cab and the fireman opens the cut-out cock adjacent to the operating valve. When the engine reaches the signal for taking water the engineer must call the word "down" and give a hand signal. Then the fireman must place the operating valve in position to lower the dipper. When the tender

cistern is filled, or when the engine approaches the leaving signal, the engineer must call the word "up" and give a hand signal. Then the fireman must place the operating valve in position to raise the dipper. About 10 or 15 seconds after air stops exhausting from the operating valve, the cut-out cocks must be closed.

Discussion

As Extra 2858 West was moving on the westward main track at a speed of 38 miles per hour, in territory where the maximum authorized speed was 50 miles per hour, the rear truck of the tender and the first to seventeenth cars, inclusive, became derailed at a point 2.07 miles east of the station at Terre Coupee. The ninth car fouled the eastward main track. The first the members of the crew were aware of anything being wrong was when the brakes became applied in emergency as a result of the derailment.

As No. 66 was approaching the point where the accident occurred, the speed was 79 miles per hour in territory where the maximum authorized speed was 80 miles per hour. The engine-men and a traveling fireman were maintaining a lookout ahead. When the engine was about 1,400 feet west of the point of accident, the engineer saw, simultaneously, the derailed car obstructing the eastward main track, which had shifted southward about 3 feet, and a lighted fusee being displayed from the left side of the cab of the engine of Extra 2858. The engineer of No. 66 immediately moved the brake valve to emergency position and closed the throttle. The speed was about 65 miles per hour at the time of the collision. The brakes of this train had been tested and had functioned properly en route.

Under the rules, the members of the crew of Extra 2858 were required to protect adjacent tracks in both directions when the train was stopped by an emergency application of the brakes. Extra 2858 had just stopped when No. 66 was about 1,400 feet distant. As soon as the brake application was observed, the fireman of Extra 2858 dropped a lighted fusee upon the eastward main track and held another lighted fusee out the left window in an attempt to provide flag protection for No. 66.

After the accident, examination of the tender of engine 2858 disclosed that the water-scoop dipper was torn loose on its left side but remained suspended on the right side. Four planks from highway crossings were securely driven into the dipper. Those planks were 4 inches thick and 8 inches wide. One was 18 feet 2 inches in length, two were 10 feet 7 inches in length, and the fourth was 10 feet 5 inches. The ends of two of these planks were on the brake beams of the front truck. Other pieces of plank were found on the brake beams of the rear truck. Examination of the auxiliary-track switch, which was located at a turnout to the right, disclosed that the No. 1

switch rod was bent and the right switch-point was wedged open by a piece of plank. The derailment occurred at this switch-point. Examination of the grade crossings located 0.72 and 0.93 mile east of the switch disclosed that 4 planks had been removed from one crossing and 2 planks from the other crossing. Examination of the water trough and the westward main track disclosed scraping marks on the leaving portion of the trailer rail at the west end of the water trough, and the tops of the ties were gouged intermittently from the track trough westward to the first grade crossing.

The engineer of Extra 2858 said that when the engine approached the east end of the track trough he opened the cut-out cock in the air-supply pipe to the water-scoop dipper, and the fireman placed himself at the operating valve in readiness to move the valve when so instructed. When the engine reached signal 1, the engineer called the word "down", and when the engine was near the west end of the track trough he called the word "out". At this time the engineer was facing forward. Soon afterward he thought he heard the air exhaust from the valve, and closed the cut-out cock in the cab. The fireman said that after the engineer opened the cut-out cock in the cab, he opened the top indicator cock on the water leg, opened the cut-out cock near the operating valve and then faced the engineer. When the engineer called "down", the fireman placed the valve in position to lower the dipper. After the engine had traversed about two-thirds of the length of the track trough, water appeared at the top indicator cock, which indicated that the cistern had been filled. Then the fireman placed the operating valve in position to raise the dipper, and at that time the engineer called the word "out". The exhaust of air from the valve was weaker than usual and of longer duration. The fireman thought that an interval of about 15 seconds elapsed before he closed the cut-out cock on the water leg. After the engine passed over the track trough none of the crew on the engine observed any unusual condition or noise until the derailment occurred. Both engineers were familiar with the instructions for operating water scoops and were experienced in their use.

Engine 2858 was last inspected at the enginehouse at Elkhart about 10:30 a. m. on the day of the accident. At that time the water-scoop operating valve was oiled, several bolts were tightened, and the dipper operated as intended. The engineer and the fireman tested the operation of the water-scoop dipper before the engine departed from the enginehouse at Elkhart, and the dipper functioned properly. After the accident, the operating valve was in position for the dipper to be in normal position and both cut-out cocks were closed. In tests after the accident, no defective condition which would have prevented the proper operation of the dipper mechanism was found. The dipper moved from lowered position to normal position in a period of 3

seconds after the operating valve was moved. However, these tests demonstrated that if one of the cut-out cocks was closed before the operating valve was moved to the position for the dipper to be raised, the dipper would not be raised fully to normal position but would stop with the bottom surface about level with the tops of the rails. The shield which protects the mouth of the dipper from debris was undamaged. This indicates that the dipper was in a lowered position when it struck the crossing planks. The use of three valves instead of one for operation of the water scoop was a contributing factor to the cause of this accident.

Cause

It is found that this accident was caused by failure of water-scoop on freight engine to be fully raised after being used, and by a derailed freight car obstructing an adjacent main track immediately in front of an approaching train.

Recommendation

It is recommended that the New York Central Railroad Company arrange water-scoops on its locomotives to be operated by a single valve. It is further recommended that it install mechanism which will automatically raise and secure the water-scoops in upper position when they leave the ends of water troughs.

Dated at Washington, D. C., this fifth day of January, 1946.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.