INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3615

CHICAGO, MILWAUKEE, ST PAUL AND PACIFIC RAILROAD COMPANY

IN RE ACCIDENT

NEAR WADSWORTH, ILL , ON

FEBRUARY 13, 1955

SUMMARY

Date:	February 13, 1955
Railroad	Chicago, Milwaukee, St. Paul and Pacific
Location:	Wadsworth, Ill.
Kind of accident·	Derailment
Train involved	Passenger
Train number.	17
Engine number:	Diesel-electric units 900, 97B, and 98B
Consist:	12 cars
Speed:	85 m. p. h.
Operation.	Timetable, train orders, and automatic block-signal and cab-signal system
Tracks	Double; tangent; 0.02 percent ascending grade westward
Weather:	Clear
Time.	12 01 a. m.
Casualties:	20 injured
Cause·	Broken journal

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3615

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

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD COMPANY

April 4, 1955

61-A

Accident near Wadsworth, Ill., on February 13, 1955, caused by a broken journal.

REPORT OF THE COMMISSION[1]

CLARKE, Commissioner:

On February 13, 1955, there was a derailment of a passenger train on the Chicago, Milwaukee, St. Paul and Pacific Railroad near Wadsworth, Ill., which resulted in the injury of 19 passengers and 1 dining-car employee.

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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 Clarke for consideration and disposition.

Chicago, Milwaukee, St. Paul and Pacific Railroad
Wadsworth, Ill.
Report No. 3615
February 15, 1955

Location of Accident and Method of Operation

This accident occurred on that part of the Milwaukee Division extending between Western Avenue, Chicago, Ill., and Milwaukee, Wis., 82.1 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by timetable, train orders, and an automatic block-signal and cab-signal system. Within interlocking limits at Wadsworth, 40.0 miles west of Western Avenue, the main tracks are connected by a facing-point crossover and a trailing-point crossover. West of these crossovers a siding 1.49 miles in length parallels the westward main track on the north. The interlocking station is located immediately south of the main tracks. The east switch of the facing-point crossover, the west switch of the trailing-point crossover, and the east siding-switch are, respectively, 178 feet east, 542 feet west, and 566 feet west of the interlocking station. The initial derailment occurred on the westward main track at a point 1.76 miles east of the interlocking station at Wadsworth, and the general derailment occurred 65 feet west of the east switch of the facing-point crossover and 114 feet east of the interlocking station. From the east there are, in succession, a tangent 1.13 miles to the initial point of derailment and 1,449 feet westward, a 1° curve to the right 2,812 feet, and a tangent 4,897 feet to the point of general derailment and a considerable distance westward. The grade for west-bound trains is 0.02 percent ascending at the initial point of derailment and level at the point of general derailment.

In the vicinity of the initial point of derailment the track structure consists of 132-pound rail, 39 feet in length, laid new in 1952 on an average of 24 treated ties per rail length. In the vicinity of the point of general derailment it consists of 131-pound rail of the same length, laid new in 1937. It is fully tieplated with double-shoulder canted tieplates, spiked with two rail-holding spikes and two plate-holding spikes per tieplate, and is provided with 6-hole 36-inch joint bars and an average of 10 rail anchors per rail. It is ballasted with gravel to a depth of 24 inches below the bottoms of the ties.

A dragging-equipment detector is located in the westward main track about 10.84 miles east of the initial point of derailment.

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

626. Signalmen must, as far as practicable, observe all passing trains and note whether they are complete and in order, should there be any indication of conditions endangering the train, or any other train, the signalman must take such measures for the protection of trains as may be practicable.

713. Employes must, so far as practicable, observe passing trains for defects such as * * * hot journals, indications of fire * * * Should there be any indication of conditions endangering the train, they will signal crews of such trains, calling attention to dangerous conditions * * *

When passing other trains and interlocking, block * * * or other stations * * * train and engine crews on moving trains must be on the lookout for signals. * * *

812. In departing from stations, and at every opportunity on the road, trainmen must carefully inspect their trains for * * * possible defects of the running gear, giving special attention to hot journals, sticking brakes, and sliding wheels. If train is moving when defect is discovered, train should be stopped. * * *

When practicable, while train is moving, frequent inspection must be made of track from rear of train.

* * *

927. Enginemen must frequently look back, especially while rounding curves, to observe the condition of the train.

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The maximum authorized speed for passenger trains in the vicinity of the point of accident is 90 miles per hour.

Description of Accident

No. 17, a west-bound first-class passenger train, consisted of Diesel-electric units 900, 978, and 988, coupled in multiple-unit control, one baggage car, one baggage-dormitory car, four coaches, one dining car, three sleeping cars, one coach, and one sleeping car, in the order named. All cars were of lightweight steel construction, and all

except the twelfth were equipped with tightlock couplers. This train passed Rondout, 8.84 miles east of the point of accident and the last open office, at 11:53 p. m., 19 minutes late. While it was moving at a speed of 85 miles per hour the rear truck of the fifth car was derailed at a point 1.76 miles east of Wadsworth, and while moving at a speed of 82 miles per hour the sixth to the twelfth cars, inclusive, were derailed at a point 65 feet west of the east switch of the facing-point crossover at Wadsworth.

None of the derailed equipment overturned. Separations occurred at each end of the ninth car and between the eleventh and twelfth cars. The locomotive and the first eight cars stopped with the front of the locomotive 3,719 feet west of the point of general derailment. The fifth, sixth, and seventh cars stopped approximately in line with the track. The rear end of the eighth car was 25 feet north of the westward main track. The ninth car stopped 1,327 feet west of the point of general derailment, with the front and the rear ends, respectively, 60 feet and 23 feet north of the westward main track. The tenth and eleventh cars stopped with the tenth car immediately north of the ninth car and approximately parallel to it, and the rear end of the eleventh car on the track structure of the siding. The twelfth car stopped 35 feet north of the westward main track and parallel to it. The rear end was 1,100 feet west of the point of general derailment. All of the derailed cars were considerably damaged. Fuel tanks under the dining car, the seventh car of the train, were punctured during the derailment, and escaping propane gas became ignited. The dining car and the sixth and eighth cars, which had been damaged in the derailment, were further damaged by fire.

The weather was clear at the time of the accident, which occurred about 12:01 a. m.

The fifth car, C.M.St.P.& P. 494, an all-welded lightweight steel coach, was built in the shops of the carrier at Milwaukee, Wis., in June, 1947. It is 85 feet long between pulling faces of the couplers and is provided with a vestibule at one end. Its light weight is 113,800 pounds. It is provided with two four-wheel trucks spaced 59 feet 6 inches between truck-centers. The trucks have a wheelbase of 7 feet and are equipped with 5-1/2-inch by 10-inch journals and multiple-wear 36-inch steel wheels. The journals are equipped with roller bearings. Helical springs are provided on truck equalizers and at the bolsters.

Discussion

As No. 17 was approaching the point where the accident occurred the engineer and the fireman were maintaining a lookout ahead from their respective positions in the control compartment at the front of the locomotive. The conductor, the assistant conductor, and the baggageman were in the second car, the front brakeman was in the fifth car, and the flagman was in the rear car. The brakes of this train had been tested and had functioned properly when used en route. The headlight was lighted brightly. Prior to the time of the accident the locomotive and the cars had been riding smoothly. The front brakeman said that when the train was approximately 3/4 mile east of Wadsworth he heard ballast striking the underside of the car. He started toward the conductor's valve, but because of the irregular movements of the car he was unable to reach the valve before the general derailment occurred. Immediately after the locomotive passed the interlocking station at Wadsworth the brakes became applied in emergency as a result of the derailment. According to the tape of the speed-recording device, the train was moving at a speed of 85 miles per hour at the initial point of derailment and 82 miles per hour at the point where the general derailment occurred.

Examination of the track structure after the accident disclosed no track condition which could have caused or contributed to the cause of the accident. Light scraping marks were found on the ties outside the south rail beginning at a point approximately 2 miles east of the interlocking station at Wadsworth. These marks continued westward a distance of about 1,500 feet to a farm crossing. A plank outside the south rail in this crossing had been struck and dislodged. Marks on a rail anchor and a track bolt on the gage side of the north rail indicated that a wheel had become derailed inside that rail at a point 1.76 miles east of the interlocking station. The ties were flange marked beginning at a point 47 feet west of the initial point of derailment. The first flange marks were 16-7/8 inches inside the north rail, and other flange marks beginning at a point 124 feet west of the initial marks of derailment indicated that a second pair of wheels had become derailed. These wheels continued in line with the track to the east switch of the facing-point crossover at the interlocking. The derailed wheels were deflected to the left at this turnout, and the general derailment occurred 65 feet west of the switch.

Examination of the equipment after the accident disclosed that the left front journal of the rear truck of C.M.St.P.& P. 494, the fifth car, had broken and the stub of the journal had been in contact with parts of the journal box. The stub of the journal had then worked free of the box and the truck had dropped sufficiently to bring the truck equalizer in contact with the track structure outside the south rail. After the fracture occurred the concentration of weight upon the companion journal had caused the right wheel to act as a fulcrum and the left wheel was raised above the rail. As a result, the right wheel dropped inside the north rail, and soon afterward the truck slewed in such manner that the rear wheels became derailed. When the failed journal was examined immediately after the accident occurred it was cool, and the journal box and bearing showed no indications of having been overheated. The bearing components were unbroken. They were well lubricated. There was oil in the journal box, and oil was spilled on the ground adjacent to the box at the point where the truck stopped.

The tubular axle involved was manufactured by the Standard Forging Company at Indiana Harbor, Ind., on July 16, 1946. The heat number was 24035.

The journal was equipped with a double-cone two-row roller bearing lubricated by oil. The bearing had been pressed on the journal at 20 tons pressure. The journal was broken vertically at the base of the fillet. Examination of the fracture face disclosed that the fracture had progressed through approximately 75 percent of the cross-sectional area before ultimate failure occurred. Heavy discoloration of a portion of the fracture indicated that the original fracture had progressed to a depth of about 3/8 inch before progressing rapidly to the point at which failure occurred. The failure of this axle apparently originated in tool marks located in the fillet between the journal and the dust guard seat. Apparently these tool marks were sufficient to act as stress concentration points for high shock stresses that evidently had occurred at some time and which eventually caused circumferential cracks to develop and progress through the axle. Markings on the axle indicated that it had received magnetic particle tests in February, 1948; October, 1949, July, 1950, February, 1951, and July, 1953. No defective condition was found at the time of these tests. Records of the carrier disclosed that the axle was applied to the car at the carrier's Western Avenue Coach Yard, Chicago, Ill., on December 6, 1954. At this time the bearing was inspected and the lateral clearance adjusted. The oil level was last inspected at this point on February 12, 1955.

According to the report of the engineer of tests of the carrier, a chemical analysis of the failed axle disclosed that the chemical composition was in accordance with the carrier's specifications. The physical characteristics of the material were tested and were found to be within the specifications of the carrier in all respects.

The equipment of No. 17 was inspected by members of the mechanical force of the carrier at the Western Avenue Coach Yard on February 12, 1955, after it had arrived at Chicago in an east-bound train. No defective condition was found. The equipment was again inspected by a car inspector immediately prior to the departure of the train from Chicago Union Station at 11:15 p. m., and no exceptions were taken. The engineer and the fireman said that they made frequent observations of the equipment en route and they observed no defective condition. The fireman said that there was no indication of a defective condition when he observed the equipment from the rear of the train at a point approximately 24 miles west of Chicago. Visibility was materially restricted by snow and steam blowing along the running gear of the cars. No defective condition was observed by an operator and a car inspector who inspected the equipment as the train passed Rondout about 8 minutes before the accident occurred.

Cause

This accident was caused by a broken journal.

Dated at Washington, D. C., this fourth day of April, 1955.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,

Secretary.