INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3668

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RAILROAD COMPANY

IN RE ACCIDENT

NEAR BYRON, WIS., ON

NOVEMBER 10, 1955

SUMMARY

Date:	November 10, 1955	
Railroad:	Minneapolis, St. Paul & Sault Ste. Marie	
Location:	Byron, Wis.	
Kind of accident:	Head-end collision	
Trains involved:	Helper locomotive	: Freight
Train numbers:	Extra 2554 West	: 32
Locomotive numbers:	Diesel-electric unit 2554	: Diesel-electric unit 2406
Consist:		: 11 cars, caboos
Speeds:	56 m. p. h.	: 22 m. p. h.
Operation:	Timetable, train orders, and automatic block-signal system	
Track:	Single; 1°30' curve; 1.00 percent ascending grade eastward	
Weather:	Clear	
Time:	7:30 a. m.	
Casualties:	5 injured	
Cause:	Inferior train occupying main track on time of opposing superior train without protection	

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3668

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

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RAILROAD COMPANY

January 19, 1956

Accident near Byron, Wis., on November 10, 1955, caused by an inferior train occupying the main track on the time of an opposing superior train without protection.

REPORT OF THE COMMISSION[1]

CLARKE, Commissioner:

On November 10, 1955, there was a head-end collision between a locomotive and a freight train on the Minneapolis, St. Paul & Sault Ste. Marie Railroad near Byron, Wis., which resulted in the injury of five employees.

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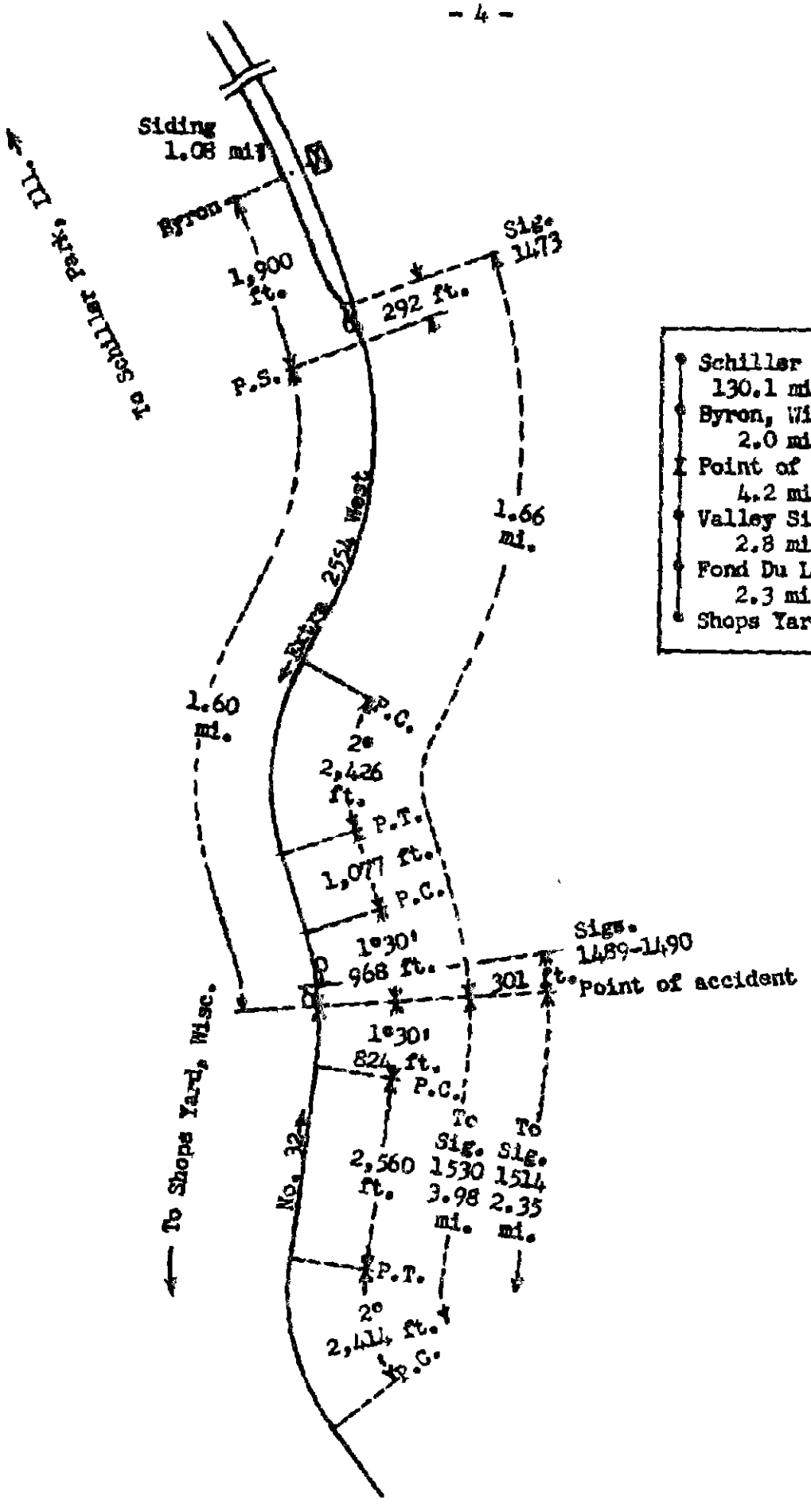
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.



Report No. 3663
Minneapolis, St. Paul &
Sault Ste. Marie Railroad
Near Byron, Wisc.
November 10, 1955

Location of Accident and Method of Operation

This accident occurred on that part of the Stevens Point Division extending between Shops Yard, near Fond du Lac, Wis., and Schiller Park, Ill., 141.4 miles. In the vicinity of the point of accident this is a single-track line, over which trains are operated by timetable, train orders, and an automatic block-signal system. At Byron, Wis., 11.3 miles east of Shops Yard, a siding 1.08 miles in length parallels the main track on the north. The west siding-switch is 1,900 feet west of the station. The accident occurred on the main track at a point 1.60 miles west of the west siding-switch at Byron. From the west there are, in succession, a 2° curve to the right 2,414 feet in length, a tangent 2,560 feet, and a 1°30' curve to the left 824 feet to the point of accident and 968 feet eastward. From the east there are, in succession, a 2° curve to the left 2,426 feet in length, a tangent 1,077 feet, and the curve on which the accident occurred. Between points approximately 2 miles west and 1.5 miles east of the point of accident the grade varies between 0.50 percent and 1.05 percent ascending eastward, and it is 1.00 percent ascending eastward at that point.

Automatic signals 1530, 1514, and 1490, governing east-bound movements, and automatic signals 1473 and 1489, governing west-bound movements, are located, respectively, 3.98 miles west, 2.35 miles west, 301 feet east, 1.66 miles east, and 301 feet east of the point of accident. These signals are of the searchlight type and are continuously lighted. Signals 1514 and 1490 are each equipped with a permissive marker, which consists of a yellow metallic plate attached to the mast and to the right of the number plate as viewed from an approaching train. The aspects applicable to this investigation and the corresponding indications and names as follows:

Signal	Aspect	Indication	Name
1530	Yellow over red	Proceed prepared to stop at next signal. Train exceeding medium speed must at once reduce to that speed	Approach signal
1514) 1490)	Red over permissive marker	Proceed at restricted speed without stopping	Permissive signal

Signal	Aspect	Indication	Name
1473	Red over red	Stop	Stop signal
1489	Red over number plate	Stop, then proceed at restricted speed	Stop and proceed signal

The control circuits are arranged on the absolute-permissive-block principle to permit following movements between sidings and to provide siding-to-siding protection for opposing movements. The most restrictive indication of the leaving signals at adjacent sidings is Stop. The most restrictive indication of the intermediate signals is Stop-then-proceed-at-restricted-speed, except when modified by a permissive marker to Proceed-at-restricted-speed-without-stopping. Signals 1514, 1490 and 1489 are intermediate signals. When an east-bound train enters the block at signal 1530 at the east end of Valley Siding, 3.98 miles west of the point of accident, on a signal indication more favorable than Stop, signal 1473, located 292 feet east of the west siding-switch at Byron, and all intermediate westward signals display their most restrictive aspects. When the block of either signal 1514 or signal 1490 is occupied by an east-bound train, the first eastward signal to the rear of the train indicates Proceed-at-restricted-speed-without-stopping and the second signal indicates Approach.

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

DEFINITIONS

Medium Speed.--A speed not exceeding thirty (30) miles per hour.

34. All members of train and engine crews must, when practicable, communicate to each other by its name, the indication of each signal affecting the movement of their train or engine.

73. Extra trains are inferior to regular trains.

S-83. A train must not leave its initial station on any subdivision * * * until it has been ascertained whether all trains due, which are superior, have arrived or left.

S-87. An inferior train must keep out of the way of opposing superior trains and failing to clear the main track by the time required by rule must be protected as prescribed by Rule 99.

* * *

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 * * *

* * *

The front of the train must be protected in the same way when necessary by the forward brakeman, fireman, or other competent employee.

Timetable special instructions read in part as follows:

Where automatic block * * * rules and signal indications require movements at restricted speed, such movements must be made prepared to stop short of train, obstruction, or switch not properly lined and on the lookout for broken rail or anything that may require the speed of a train to be reduced; but not exceeding 15 MPH or as much slower as necessary, and where conditions require, the movement must be controlled so stop can be made in time to avoid accident.

The maximum authorized speed for freight trains and locomotives without cars is 55 miles per hour.

Description of Accident

The crew of locomotive 2554, a Diesel-electric unit of the road-switcher type assigned to helper service, went on duty at Shops Yard at 2:55 a. m. After this locomotive assisted an east-bound freight train from Shops Yard to Byron and returned to Shops Yard, members of the crew received copies of train order No. 14 reading as follows:

AFTER HELPING NO. 24 TO BYRON
ENG 2554 RUN EXTRA BYRON TO
SHOPS YARD

The helper locomotive was then coupled to the rear end of the caboose of No. 24, an east-bound second-class freight train, and

assisted this train from Shops Yard. The train departed at 6:52 a. m., 52 minutes late. At Bryon the helper locomotive was detached from the moving train, and it stopped on the main track in the vicinity of the clearance point at the west end of the siding, west of signal 1473. It immediately departed westward as Extra 2554 West, passed signal 1489, which indicated Stop-then-proceed-at-restricted-speed, and while moving at a speed of 56 miles per hour it collided with No. 32 at a point 1.60 miles west of the west siding-switch.

No. 32, an east-bound third-class freight train, consisted of Diesel-electric unit 2406, 11 cars, and a caboose. This train departed from Shops Yard at 7:05 a. m., 45 minutes late, passed signal 1530, which indicated Approach, passed signal 1514, which indicated Proceed-at-restricted-speed-without-stopping, and while moving at a speed of 22 miles per hour it collided with Extra 2554 West.

The front truck of locomotive 2554 was derailed. It stopped approximately in line with the track. The front end of the locomotive was considerably damaged. The front truck of the locomotive, the first car, and the rear truck of the second car of No. 32 were derailed and stopped approximately in line with the track. The locomotive was considerably damaged, the first car was destroyed, and the second car was somewhat damaged.

The engineer, the fireman, and the conductor of Extra 2554 West, and the engineer and the fireman of No. 32 were injured.

The weather was clear at the time of the accident, which occurred about 7:30 a. m.

Discussion

The crew of helper locomotive 2554 consisted of an engineer, a fireman, and a conductor. After they went on duty at Shops Yard the conductor delivered a register check to the enginemen. This locomotive assisted an east-bound freight train which departed at 3.21 a. m. It was detached at Bryon and returned to Shops Yard about 4:30 a. m. It was then coupled to the rear of the caboose of No. 24, and copies of train order No. 14 were delivered to the engineer and the conductor. The conductor said that he did not again check the train register. When No. 24 departed from Shops Yard the fireman was operating locomotive 2554 under supervision of the engineer, who was seated with the conductor on the left side of the control compartment. The helper

locomotive, which was headed westward and moving in backward motion, was detached from the moving train as the rear end closely approached the west end of the siding at Byron. It stopped in the vicinity of the clearance point east of the west siding-switch. The members of the crew of the locomotive said that they overlooked the schedule of No. 32. None of these employees saw the aspect displayed by signal 1473 before the locomotive departed as Extra 2554 West. The fireman said that his attention was concentrated on operating the locomotive and that the locomotive had stopped at a point west of the signal where the aspect was not visible to him. The conductor and the engineer said that they were under the impression that the fireman had observed the aspect of signal 1473 before the westward movement was started.

As Extra 2554 West was approaching the point where the accident occurred the speed was about 56 miles per hour, as indicated by the tape of the speed-recording device. The enginemen and the conductor were maintaining a lookout ahead from their respective positions in the control compartment. The headlight was lighted brightly. The brakes of this locomotive had been tested and had functioned properly when used. The fireman said that he was sounding the grade-crossing whistle signal for a highway crossing located 1,039 feet east of signal 1489 when the engineer and the conductor simultaneously called the red aspect of the signal. He said that he immediately applied the independent brake but could not recall whether he moved the automatic brake valve to emergency position. A few seconds later the engineer saw the opposing train and called a warning. The collision occurred before the speed of the locomotive had been materially reduced.

As No. 32 was approaching the point where the accident occurred the enginemen and the front brakeman were maintaining a lookout ahead from their respective positions in the control compartment of the locomotive. The conductor and the flagman were in the caboose. The headlight was lighted. The brakes of this train had been tested and had functioned properly when used. Signal 1530 indicated Approach, and the speed of the train was reduced by a service application in compliance with this indication. The employees on the locomotive said that when signal 1514 came into view it was displaying its most restrictive aspect. Members of the crew on the locomotive estimated that after passing this signal the speed was about 15 miles per hour. The engineer said that he had some difficulty in adjusting the throttle to maintain the proper speed on the adverse grade and this resulted in minor variations in the speed. The fireman said that signal 1490 was displaying its most restrictive aspect when it came into view, and he called the indication when the locomotive was approximately 1,200 to 1,500 feet west of the signal. Soon

afterward, when his train was approximately 600 feet west of the signal, he saw the headlight and classification lights of the approaching locomotive and called a warning. The engineer immediately closed the throttle, made an emergency application of the brakes, and opened the sander valve. The collision occurred before the speed of the train had been materially reduced.

Examination of the equipment at the scene of the accident disclosed that on each locomotive the automatic brake valve was in emergency position and the independent brake valve was in release position. The reverser of locomotive 2554 was in position for backward movement, and the throttle was in No. 1 position. The throttle of the locomotive of No. 32 was in idle position. Examination of the tapes of the speed-recording devices disclosed that immediately before the accident occurred Extra 2554 West was moving at a speed of 56 miles per hour and No. 32 was moving at a speed of 22 miles per hour. The tapes indicate that the collision occurred before the emergency application of the brakes appreciably reduced the speed of either train.

After the accident occurred the signals involved were found to be displaying the proper aspects. The signal apparatus involved was inspected and no defective condition was found. When tested the signal system functioned as intended. In observations made after the accident occurred it was found that signal 1489 is visible from the fireman's position in the control compartment of a west-bound locomotive throughout a distance of 3,064 feet. From the engineer's position it is visible a distance of 2,398 feet. Signal 1490 is visible from the fireman's position in the control compartment of an east-bound locomotive throughout a distance of 2,563 feet immediately west of that signal.

The rules of this carrier provide that an inferior train must keep out of the way of opposing superior trains and failing to clear the main track by the time required by rule must be protected as prescribed by rule No. 99. They also provide that when a signal indication requires movement at restricted speed the speed of a train must be restricted to 15 miles per hour and must be so controlled that the train can be stopped short of another train or an obstruction. No. 32 is due to leave Shops Yard at 6:20 a. m. and Valley Siding at 6:35 a. m. In the instance case the crew of Extra 2554 West, the inferior train, overlooked the schedule of No. 32, and Extra 2554 West departed from Byron about 50 minutes after No. 32 was due to leave Valley Siding, the last station west of Bryon at which schedule time for No. 32 is shown. The train then overran signal 1489, which indicated Stop-then-proceed-at-restricted-speed, and collided with No. 32 west of that signal.

Because Extra 2554 West departed west-bound from a point west of signal 1473, the siding-to-siding protection for opposing movements, which the signal system was designed to provide, was nullified. Signal 1514 displayed its most restrictive aspect for the movement of No. 32, indicating that No. 32 passed this signal before the rear end of No. 24 passed signal 1490 and before the helper locomotive was detached from the rear end of that train. The control circuits of the signal system are so designed that after No. 32 passed signal 1530 at Valley Siding, signal 1473 could not display an aspect to proceed. If the helper locomotive had been moved eastward to a point from which the aspect displayed by signal 1473 was visible to members of the crew, protection for the opposing movements would have been provided by the signal system.

Cause

This accident was caused by an inferior train occupying the main track on the time of an opposing superior train without protection.

Dated at Washington, D. C., this nineteenth day of January, 1956.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,

Secretary.