

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2603
THE MISSOURI PACIFIC RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR MARSHALL JCT., MO , ON
JULY 17, 1942 ,

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SUMMARY

Railroad	Missouri Pacific
Date	July 17, 1942
Location:	Marshall Jct., Mo.
Kind of accident:	Rear-end collision
Trains involved:	Freight · Freight
Train numbers:	Extra 1475 East · 68
Engine numbers:	1475 · 2122
Consist:	110 cars, caboose · 64 cars, caboose
Speed:	Standing · 45 m. p. n.
Operation:	Timetable and train orders
Track:	Single; tangent; 0.26 percent descending grade eastward
Weather:	Clear
Time:	About 10:33 p. m.
Casualties:	3 killed; 3 injured
Cause:	Accident caused by failure to provide adequate flag protection for preceding train
Recommendation:	That the Missouri Pacific Railroad Company establish an adequate block-signal system on the line involved in this accident

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2603

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

THE MISSOURI PACIFIC RAILROAD COMPANY

August 31, 1942.

Accident near Marshall Jct., Mo., on July 17, 1942, caused
by failure to provide adequate flag protection for
preceding train.

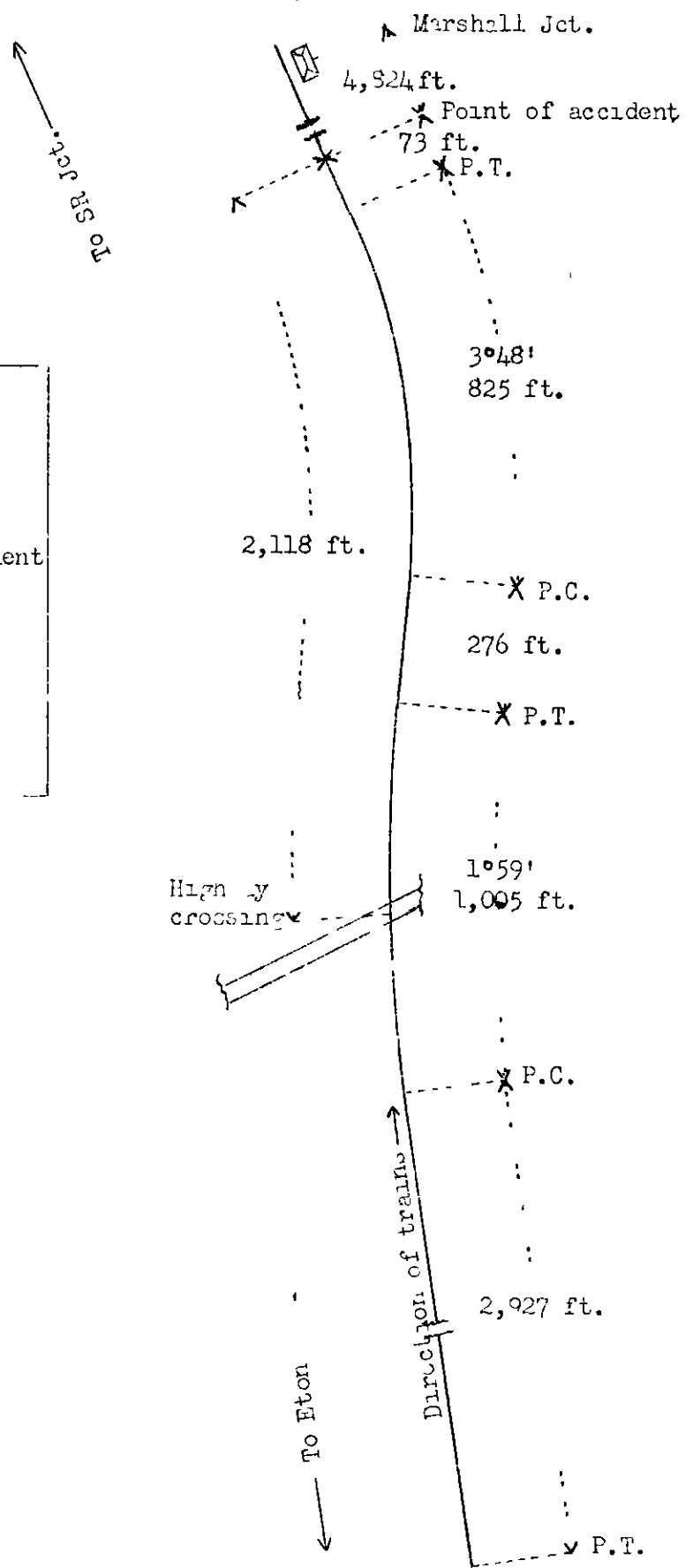
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner.

On July 17, 1942, there was a rear-end collision between two freight trains on the Missouri Pacific Railroad near Marshall Jct., Mo., which resulted in the death of three train-service employees and the injury of three Pullman employees. This accident was investigated in conjunction with a representative of the Missouri 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.

○	SR Jct., Mo.	1.43 mi.
○	Cole, Mo.	72.79 mi.
○	Marshall Jct.	0.90 mi.
✕	Point of accident	12.16 mi.
○	Malta Bend	9.34 mi.
○	Waverly	23.06 mi.
○	Myrick	28.60 mi.
○	Eton, Mo.	



Inv. No. 2603
 Missouri Pacific Railroad
 Marshall Jct., Mo.
 July 17, 1942

Location of Accident and Method of Operation.

This accident occurred on that part of the Eastern Division designated as the River Subdivision and extending between Eton and SR Jct., Mo., a distance of 148.28 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders. There is no block system in use. The accident occurred on the main track at a point 4,824 feet west of the station at Marshall Jct. As the point of accident is approached from the west there are, in succession, a tangent 2,927 feet in length, a 1°59' curve to the right 1,005 feet, a tangent 276 feet, a 3°48' curve to the left 825 feet and a tangent 73 feet to the point of accident. At the point of accident the grade for east-bound trains is 0.26 percent descending.

Operating rules read in part as follows:

DEFINITIONS.

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or anything that may require the speed of a train or engine to be reduced.

11. A train finding a fusee burning on or near its track must stop and extinguish the fusee. Train may then proceed at restricted speed.

14. Engine Whistle Signals.

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

* * *

(d) — — — — Flagman may return from south or west, as prescribed by Rule 99.

* * *

35. The following signals will be used by flagmen.

* * *

Night signals - A red light,
Torpedoes and
Fusees.

85. * * * extra trains may pass and run ahead of second and third class trains and extra trains. * * *

* * *

91. Unless some form of block signal is used.

Trains in the same direction must keep not less than five minutes apart, except in closing up at stations.

* * *

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, placing two torpedoes, and when necessary, in addition, displaying lighted fuses.

When recalled and safety to the train will permit, he may return.

When the conditions require, he will leave the torpedoes and a lighted fuse.

* * *

When a train is moving under circumstances in which it may be overtaken by another train, the flagman must take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fuses must be thrown off at proper intervals.

In the vicinity of the point of accident the maximum authorized speed for freight trains is 45 miles per hour.

Description of Accident

Extra 1475 East, an east-bound freight train, consisted of engine 1475, 48 loaded and 48 empty freight cars, 14 Pullman tourist cars and a caboos, in the order named. All the Pullman cars were of steel construction. This train departed from Eton, 74.06 miles west of Marshall Jct., at 5:54 p. m., according to the dispatcher's record of movement of trains, departed from Waverly, 22.4 miles west of Marshall Jct. and the last open office, at 9:29 p. m., and stopped on the main track at Marsnall Jct. at 10:23 p. m., with the caboos standing at a point 4,824 feet west of the station. About 10 minutes later the rear end of this train was struck by No. 68.

No. 68, an east-bound second-class freight train, consisted of engine 2122, 1 auxiliary water car, 60 loaded and 3 empty cars and a caboos. At Kansas City, 88.61 miles west of Marsnall Jct., a terminal air-brake test was made and the brakes functioned properly at all points where used en route. This train departed from Eton at 8:38 p. m., according to the dispatcher's

record of movement of trains, 1 hour 36 minutes late, departed from Waverly at 10:07 p. m., 1 hour 32 minutes late, and while moving at an estimated speed of 45 miles per hour it collided with the rear end of Extra 1475.

In the vicinity of the point of accident the track is laid in a cut. Because of the cut, track curvature immediately west of the point of accident and trees and dense vegetation adjacent to the track, from the right side of an east-bound engine the view of lighted markers at the point where the accident occurred is restricted to a distance of about 200 feet, and from the left side, to 495 feet.

The force of the impact demolished the superstructure of the caboose of Extra 1475 East and drove its trucks and steel underframe under the first Pullman car ahead of the caboose. The rear end of the first Pullman car ahead of the caboose was telescoped a distance of 35 feet and it stopped on the wreckage of the caboose. The second rear car was badly damaged, and the third and fourth rear cars were slightly damaged. The frame and driving-wheel assembly of engine 2122, of No. 68, stopped with its front end standing 95 feet east of the point of accident. The Nos. 2 and 3 pairs of driving wheels were derailed. The impact ruptured the front and the back flue sheets, an explosion followed, and the boiler was torn loose and stopped, bottom up and in reverse direction, with its front end 190 feet west of the front end of the frame, practically parallel to the track and 36 feet north of it. The smoke-box-door ring was thrown 120 feet east of the east end of the engine frame. The tender was damaged but not derailed. The auxiliary water car and the first 22 cars of No. 68 were derailed and stopped in various positions across the track and on each side of it. Of these cars, 14 were destroyed. The wreckage was contained within a distance of 400 feet. The front truck of the twenty-third car was derailed.

The weather was clear at the time of the accident, which occurred about 10:33 p. m.

The train-service employees killed were the engineer, the fireman and the front brakeman of No. 68.

Data

Tests disclosed that a lighted fusee placed at a point 2,000 feet west of the point of accident could be seen from the cab of an east-bound engine throughout a distance of 3,520 feet westward. The reflection of a lighted fusee at a point 275 feet west of the point of accident could be seen from a point 1,500 feet westward.

During the 30-day period preceding the day of the accident, the average daily movement in the vicinity of the point of accident was 13.5 trains.

Discussion

The rules governing operation on the line involved provide that when a train is moving under circumstances in which it may be overtaken by another train the flagman must take such action as may be necessary to insure full protection. At night, lighted fusees must be thrown off at proper intervals. 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. When a crew finds a lighted fusee on the track or near it, the train must stop and may then proceed prepared to stop short of a train or obstruction. All surviving members of both crews involved understood these requirements.

As Extra 1475 was approaching Marsnall Jct., the speed was 30 or 35 miles per hour. Because a meeting point had been established at Marsnall Jct. between Extra 1475 East and Extra 40 West, the speed was gradually reduced and this train stopped on the main track at Marsnall Jct. at 10:23 p. m., with the rear end standing 4,824 feet west of the station. About 10:35 p. m. its rear end was struck by No. 68.

As No. 68 was approaching the point where the accident occurred, the speed was about 45 miles per hour. The conductor and the flagman were maintaining a lookout ahead from the cupola of the caboose. The flagman thought the engine was about 1,200 feet west of the point where the accident occurred when he observed that the brake-pipe pressure, as indicated by the caboose gauge, had dropped to zero, but immediately afterward there was a series of hard bumps and the train stopped abruptly.

Under the rules, when Extra 1475 was moving at reduced speed in preparing to stop at Marsnall Jct. the flagman was required to drop lighted fusees at intervals to provide protection for his train. After Extra 1475 stopped at Marsnall Jct., the flagman was required to proceed to the rear a sufficient distance to provide adequate protection. According to the statements of the conductor and the flagman, as the rear end of their train passed over a road crossing located 2,118 feet west of the point where the accident occurred the speed was 20 or 25 miles per hour and a lighted 10-minute fusee was dropped on the right side of the track. When Extra 1475 stopped, the engine whistle was sounded for the flagman to protect the rear of the train. The flagman immediately proceeded westward and within a period of 3 or 4 minutes had reached a point about 1,000 feet west of the rear end of his train when he heard an engine whistle sounded in the vicinity of Marsnall Jct. He said the tone of this whistle was similar to the tone of the one on engine 1475, and it sounded four blasts, which is the signal for the flagman to return from the west; however, there was an irregularity in the spacing of the blasts. At that time there was no indication

of an approaching train. He placed two torpedoes on the rail, left a lighted fusee and returned toward his train. When he reached a point about 600 feet west of his caboose, the conductor ran toward him and told him that he had not been recalled, and the flagman started to go back again. The conductor said that the spacing of the blasts was irregular and the tone of the whistle slightly different from that of engine 1475. Soon after he instructed the flagman to protect the train again, the conductor heard the explosion of torpedoes and observed the reflection of the headlight of No. 68 as it was rounding the curve. The conductor gave stop signals with a lighted fusee from a point about 375 feet to the rear of his train, but the distance was insufficient for No. 68 to stop short of Extra 1475. The flagman was about 600 feet to the rear of his train and first observed No. 68 at a distance of about 650 feet. Before he could light a fusee, No. 68 passed him at a speed of 45 miles per hour, and at that time the brakes were not applied. The flagman said that if he had not misunderstood the engine whistle signal he would have proceeded about 6,300 feet westward, placed two torpedoes and then returned to a point about 2,100 feet west of his train and remained there until he was recalled, and thereby could have provided sufficient protection. Since all members of the crew on the engine of No. 68 were killed in the accident, it could not be determined when they first became aware of the preceding train. Several residents in the vicinity heard the engine whistle of No. 68 sounded for the road crossing shortly before the collision occurred. At the time the brakes of No. 68 became applied, the conductor of that train observed the reflection of a fusee about 1,200 feet west of the point where the accident occurred. The brakes of No. 68 had been tested and had functioned properly en route.

In the vicinity of the point of accident there is no restriction to prevent a following freight train from proceeding at the maximum authorized speed of 45 miles per hour. The rules require that flag protection be provided a sufficient distance for following trains to stop from their maximum authorized speed short of a preceding train. The investigation disclosed that engineers of east-bound freight trains use a distance of about 1 mile for stopping at Marshall Jct., from a speed of 45 miles per hour, by a service brake-pipe reduction, and a distance of 2,200 to 2,400 feet is required for stopping a freight train from a speed of 45 miles per hour by an emergency application of the brakes. The superintendent said flagmen are instructed that if the engine-whistle signal is sounded to recall the flagman before he reaches a sufficient distance to insure full protection the signal is to be disregarded until he reaches the required distance and places torpedoes and a lighted fusee. The investigation disclosed that during the 10-minute interval which the flagman had at his disposal, he could have

proceeded to a point where adequate flag protection would have been provided.

In the territory involved, trains are operated by timetable and train orders only. On the sub-division involved, this carrier operates trains by an automatic block-signal system between CR Jct. and SR Jct., a distance of 49.25 miles. The western end of this installation is located 24.97 miles east of Marsnall Jct. If an adequate block system had been in use in the territory involved in this accident, this accident would have been averted.

Cause

It is found that this accident was caused by failure to provide adequate flag protection for the preceding train.

Recommendation

It is recommended that the Missouri Pacific Railroad Company establish an adequate block-signal system on the line involved in this accident.

Dated at Washington, D. C., this thirty-first day of August, 1942.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.