INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3091

MISSOURI-KANSAS-TEXAS RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT ARMSTRONG, OKLA., ON

APRIL 2, 1947

SUMMARY

Railroad:	Missouri-Kansas-Texas	
Date:	April 2, 1947	
Location:	Armstrong, Okla.	
Kind of accident:	Side collision	
Trains involved:	Freight	: Passenger
Train numbers:	Second 71	: 1
Engine numbers:	920	: 377
Consists:	99 cars, caboose	: 14 cars
Estimated speeds:	10 m. p. h.	: 30 m. p. h.
Operation:	Timetable, train orders and automatic block-signal system	
Tracks:	Double; tangent; 0.40 percent descending grade southward	
Weather:	Dense fog	
Time:	7:09 a. m.	
Casualties:	3 killed; 9 injured	
Cause:	Failure to provide adequate protection for inferior train, and failure to operate superior train in accordance with signal indications	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3091

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

MISSOURI-KANSAS-TEXAS RAILROAD COMPANY

May 26, 1947

Accident at Armstrong, Okla., on April 2, 1947, caused by failure to provide adequate protection for the inferior train, and by failure to operate the superior train in accordance with signal indications.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On April 2, 1947, there was a side collision between a freight train and a passenger train on the Missouri-Kansas-Texas Railroad at Armstrong, Okla., which resulted in the death of three train-service employees, and the injury of three passengers, four dining-car employees and two train-service employees.

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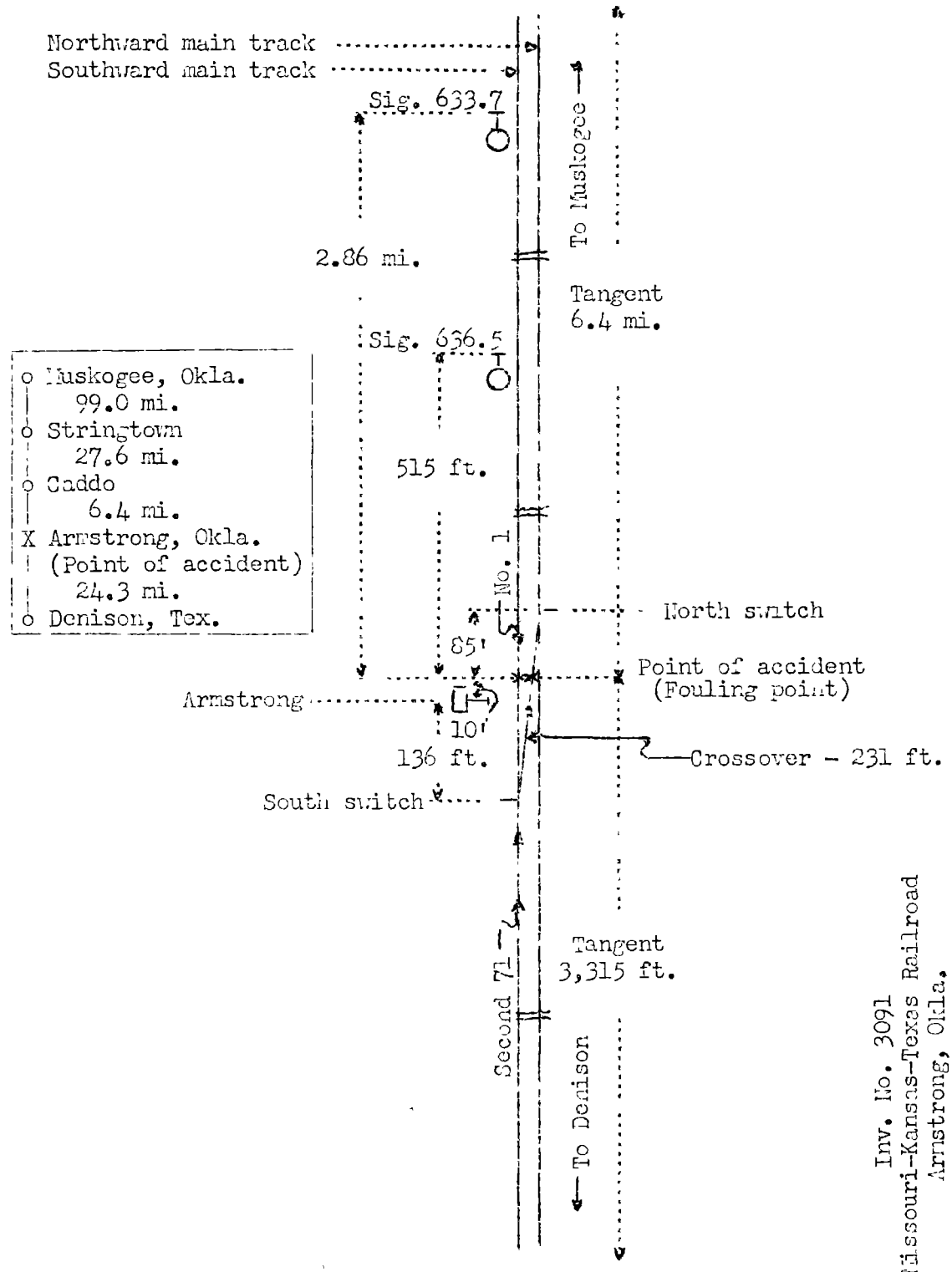
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 3091
Missouri-Kansas-Texas Railroad
Armstrong, Okla.
April 2, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Southern District extending between Muskogee, Okla., and Denison, Tex., 157.3 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 timetable, train orders and an automatic block-signal system. At Armstrong, 133 miles south of Muskogee, a trailing-point crossover 231 feet in length connects the northward and the southward main tracks. The north switch of this crossover is 95 feet north of the station. The accident occurred at the fouling point of the southward main track and the crossover, at a point 85 feet south of the north switch. The main tracks are tangent throughout a distance of 6.4 miles immediately north of the point of accident and 3,315 feet southward. At the point of accident the grade is 0.40 percent descending southward.

The switches of the crossover are hand operated. Switch indicators of the semaphore type are located immediately adjacent to the switch-stand of each crossover switch. In the immediate vicinity of the crossover the distance between the centerlines of the main tracks is 14 feet. There is no siding between Stringtown and Calera, 34 miles north and 9.8 miles south of Armstrong.

Automatic signals 633.7 and 636.5, governing south-bound movements on the southward main track, are, respectively, 2.86 miles and 515 feet north of the point of accident. These signals are of the one-unit, three-indication, color-light type, and are approach lighted. The centers of the aspects are 13 feet 7 inches above the level of the tops of the rails and 11 feet 7 inches west of the centerline of the southward main track. The involved aspects and corresponding indications are as follows:

Signal	Aspect	Indication
633.7	Yellow	Reduce Speed to 25 Miles Per Hour Prepared to Stop at Next Signal.
636.5	Red over letter "P"	STOP

The controlling circuits are so arranged that when a train is occupying the southward main track in the block extending between signal 636.5 and the next signal southward, or when a switch of the crossover is lined for movement through the crossover, signal 633.7 displays proceed-prepared-to-stop-at-next-signal, and signal 636.5 displays stop.

The switch indicators of the crossover switches are equipped with push buttons. The push buttons must be actuated before an aspect indicating track occupancy can be displayed by the switch indicators. The control circuit of the switch indicator at the north crossover switch is so arranged that if a train is occupying the southward main track within a distance of 3.4 miles immediately north of the crossover, the semaphore arm of the indicator will be displayed in horizontal position.

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 to be reduced.

* * *

SIGNAL RULES

* * *

9. Night signals are to be displayed from sunset to sunrise. When weather or other conditions obscure day signals, night signals must be used in addition.

11. A train finding a fusee burning on or near its track must stop and extinguish the fusee and then proceed at restricted speed to the next clear block signal or in the absence of block signals to the next siding shown on the time-table.

15. The explosion of two torpedoes is a signal to reduce speed and look out for a train ahead or obstruction for one mile.

* * *

19. The following signals will be displayed, one on each side of the rear of every train, as

markers, to indicate the rear of the train: By day, standard marker lamps (not lighted). By night, green lights to the front and side and red lights to the rear; except when the train is clear of the main track, when green lights must be displayed to the front, side and rear.

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

35. The following signals will be used by flagman:

* * *

Night Signals-- A red light, a white light, torpedoes and fusees.

72. Trains of the first class are superior to those of the second; trains of the second class are superior to those of the third; and so on.

* * *

86. Unless otherwise provided, an inferior train must clear a superior train in the same direction not less than ten minutes, except that where automatic block signals are in service, inferior trains will clear the time of superior trains in time to avoid delay by block signal indications.

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 not less than 3/4-mile from rear of the standing train, then return 5 poles towards the rear of the standing train to take his position while waiting to give the approaching train stop signals, provided the engineman on the approaching train can see the flagman's stop signals not less than one mile from the standing train. When curves, obscure conditions or descending grade require place the torpedoes as much farther than 3/4-mile as necessary.

* * *

In case a train approaches before the flagman reaches the required distance, he must place two torpedoes on the rail and continue towards the approaching train giving stop signals.

* * *

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 fusees must be thrown off a proper intervals.

When day signals cannot be plainly seen, owing to weather or other conditions, night signals must also be used.

* * *

343. Letters shown on metal discs or stenciled on signal masts govern when the signal is at stop and does not clear promptly:

* * *

"P" Proceed without flagman preceding the train, not exceed ten (10) miles per hour, and where view is obscured within 750 feet by curves, weather condition, or otherwise, will not exceed five (5) miles per hour expecting to find train in block, broken rail, switch not properly set, car within fouling point on siding.

FORMS OF TRAIN ORDERS

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TIME ORDERS

* * *

(4) Nos. 1 and 3 wait N 9 59 a. m.
P 10 30 a. m.
R 10 55 a. m., etc.

The train, or trains, named must not pass the designated points before the times given. Other trains receiving the order are required to run with respect to the time specified at the designated points or any intermediate station where schedule time is earlier than the time specified in the order as before required to run with respect to the schedule time of the train, or trains, named.

* * *

Train-order instructions restricted the speed of passenger trains moving in the vicinity of the point of accident on the southward main track to 50 miles per hour, and freight trains to 35 miles per hour.

Description of Accident

Train order No. 22, addressed to No. 1 and Second 71 at Stringtown, 34 miles north of Armstrong, read in part, as follows:

NO 1 Engine 377 Wait
* * *
Caddo 658 am
* * *

Caddo is 6.4 miles north of Armstrong.

Second 71, a south-bound third-class freight train, consisting of engine 920, 99 cars and a caboose, departed from Stringtown, the last open office, at 5:15 a. m., 6 hours 28 minutes late, passed Caddo at 6:41 a. m., stopped on the southward main track at Armstrong about 6:54 a. m., with the rear end standing immediately south of the south crossover switch. About 15 minutes later, while Second 71 was moving northward through this crossover en route to the northward main track at an estimated speed of 10 miles per hour, the right side of the engine was struck by No. 1 at the fouling point of the southward main track and the crossover.

No. 1, a south-bound first-class passenger train, consisted of engine 377, one baggage-mail car, one passenger-baggage car, one coach, one sleeping car, one coach, one dining car, five sleeping cars, one lounge car and two sleeping cars, in the order named. All cars were of steel construction. This train passed Stringtown at 6:35 a. m., 46 minutes late, passed Caddo at 6:58 a. m., passed signal 633.7, which displayed proceed-prepared-to-stop-at-next signal, passed signal 636.5,

which displayed stop-and-proceed, and while moving at an estimated speed of 30 miles per hour it struck the engine of Second 71 at a point 515 feet south of signal 636.5.

The engine and tender of Second 71 were derailed and stopped on their left sides, in the vicinity of the crossover, east of the northward main track and parallel to it, and were badly damaged. The engine of No. 1 was derailed, then it struck a water-treating tower immediately adjacent to the southward main track, and stopped on its left side about 35 feet west of the southward main track and at an angle of 20 degrees to it, with the front end 225 feet south of the point of accident. The cab was demolished, steam pipes within the cab were broken, and the engine was badly damaged otherwise. The tender stopped at the rear of the engine and at an angle of 45 degrees to it, with the rear end about 10 feet west of the southward main track. The first car stopped on its left side on the northward main track and in line with it, with the front end 275 feet south of the point of accident. The second to fifth cars, inclusive, remained coupled and upright, and stopped with the front of the second car 300 feet south of the point of accident and 30 feet west of the southward main track, and the rear of the fifth car stopped 40 feet north of the point of accident and on the roadbed of the southward main track. The first to fourth cars, inclusive, were badly damaged, and the sixth and twelfth cars were slightly damaged.

The engineer and the fireman of No. 1, and the conductor of Second 71 were killed. The engineer and the fireman of Second 71 were injured.

There was a dense fog at the time of the accident, which occurred about 7:09 a. m.

Discussion

Second 71, a south-bound third-class train, stopped on the southward main track at Armstrong about 6:54 a. m. About 15 minutes later, while this train was moving northward through the crossover to the northward main track to clear for No. 1, a south-bound first-class train, the engine of Second 71 was struck by No. 1 at the fouling point of the southward main track and the crossover.

The flagman said that when Second 71 was approaching Armstrong the conductor dropped a lighted 10-minute fusee from the caboose to the southward main track at a point about 1-1/2 miles north of the crossover. When Second 71 stopped on the southward main track the caboose and the engine were, respectively, 300 feet and 5,000 feet south of the south crossover switch.

At that time the enginemen were on the engine, the front brakeman was proceeding southward to provide flag protection against north-bound trains, and the conductor and the flagman were in the vicinity of the crossover switches. Before the switches were lined for the back-up movement through the crossover no attempt was made by any member of the crew of Second 71 to actuate the switch indicators to determine if a train was occupying either main track within the control circuits of the indicators. The conductor lined the south crossover switch and the flagman lined the north crossover switch. The flagman said that when the back-up movement through the crossover was started he boarded the north platform of the caboose. Soon afterward he dropped a lighted 10-minute fusee on the southward main track in the immediate vicinity of signal 636.5, located 430 feet north of the north crossover switch. Throughout the movement of his train through the crossover and on the northward main track, he was holding a lighted fusee. Another fusee was displayed on the west side at the rear of the caboose. Both markers were lighted and displayed red toward the north. When the caboose was about 4,000 feet north of the crossover the flagman saw the reflection of the headlight of No. 1 through the dense fog, which restricted visibility to a distance of about 300 feet, and he was giving stop signals with a lighted fusee from the north platform of the caboose when the engine of No. 1 passed the caboose. These signals were not acknowledged, and as the engine of No. 1 passed the caboose he observed the fireman seated on the left side of the engine. The flagman said that after he saw the headlight there was insufficient time to flag No. 1 from the ground. The driver of a south-bound truck moving at a speed of 45 miles per hour on a highway which parallels the railroad on the west said that he observed lighted fusees displayed at the rear of Second 71 when the engine of No. 1 was approaching the location of the caboose. The truck driver did not see any indication that the brakes of No. 1 were applied. After the accident the remains of a freshly burned fusee were found in the vicinity of the point where the flagman said a fusee was dropped from the caboose of Second 71 when that train was preparing to stop at Armstrong. An interval of at least 18 minutes elapsed from the time this fusee was dropped until No. 1 passed the location of the fusee, and it is evident that it had been consumed at the time No. 1 was approaching that point. The flagman of Second 71 said that he was not instructed by the conductor to provide further protection for their train, and indicated that the conductor desired him to remain on the caboose during the back-up movement. However, the flagman understood that under the existing weather conditions the rules required that proper flag protection be furnished at least 3/4 mile north of the crossover.

Under the rules governing movement in automatic block-signal territory an inferior train is required to be clear of the main track in time to avoid the display of restrictive block-signal indications for a following superior train. If an inferior train fails to clear the main track by the time required, flag protection must be provided. In the present case, No. 1 was superior to Second 71 by class, and, since Second 71 was not clear of the southward main track by the required time, flag protection was required to be furnished against No. 1.

As No. 1 was approaching Armstrong the members of the train crew were in various locations throughout the cars of the train. The first they knew of anything being wrong was when they felt an application of the brakes several seconds before the accident occurred. The conductor estimated the speed as about 30 miles per hour when the collision occurred. The enginemen of No. 1 were killed. The brakes of No. 1 had been tested and had functioned properly en route. Under the conditions present, signal 633.7, located 2.76 miles north of signal 636.5, should have displayed a proceed-prepared-to-stop-at-next-signal indication, and signal 636.5 should have displayed a stop-then-proceed indication for No. 1. The speed of a train operating under a proceed-prepared-to-stop-at-next-signal indication is required to be reduced immediately to not exceeding 25 miles per hour, and the train must be so operated that it can be stopped short of a signal displaying a stop-then-proceed indication. After a train stops short of a signal displaying a stop-then-proceed indication, it may proceed but must be prepared to stop short of a preceding train, an obstruction or a switch not properly lined. In tests after the accident, signals 633.7 and 636.5 functioned properly, and they were displaying proper indications immediately after the accident occurred.

Cause

It is found that this accident was caused by failure to provide adequate protection for the inferior train, and by failure to operate the superior train in accordance with signal indications.

Dated at Washington, D. C., this twenty-sixth day of May, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.