INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3178

CHICAGO, ROCK ISLAND AND PACIFIC
RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT KREMLIN, OKLA., ON

APRIL 14, 1948

SUMMARY

Railroad:	Chicago, Rock Island and Pacific	
Date:	April 14, 1948	
Location:	Kremlin, Okla.	
Kind of accident:	Collision	
Equipment involved:	Passenger train	: Motor-truck
Train number:	309	:
Engine number:	Diesel-electric unit 626	:
Consist:	5 cars	:
Estimated speeds:	79 m. p. h.	: 12 m. p. h.
Operation:	Signal indications	
Track:	Single; tangent; 0.6 percent ascending grade southward	
Highway:	Tangent; crosses track at angle of 78°44'; practically level	
Weather:	Clear	
Time:	2:46 p. m.	
Casualties:	3 killed; 33 injured	
Cause:	Failure to stop motor-truck short of train moving over a highway grade crossing	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3178

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

CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD COMPANY

May 27, 1948

Accident at Kremlin, Okla., on April 14, 1948, caused by failure to stop a motor-truck short of a train moving over a highway grade crossing.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On April 14, 1948, there was a collision between a passenger train on the Chicago, Rock Island and Pacific Railroad and a motor-truck at a highway grade crossing at Kremlin, Okla., and derailed cars of the passenger train struck cars of a freight train standing on an adjacent siding. The accident resulted in the death of 3 passengers, and the injury of 31 passengers, the driver of the motor-truck and 1 train-service employee.

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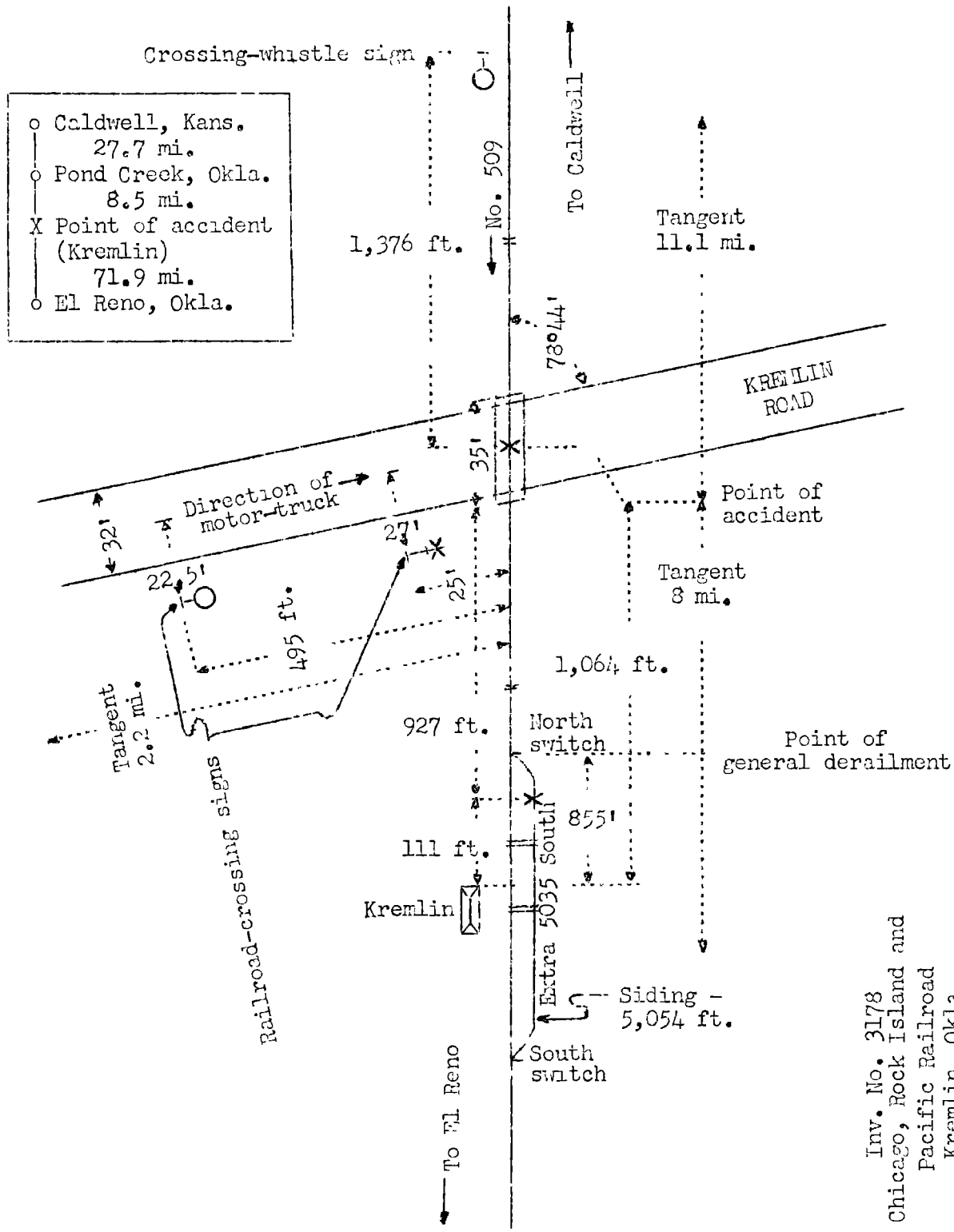
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 3178
Chicago, Rock Island and
Pacific Railroad
Kremlin, Okla.
April 14, 1948

Location of Accident and Method of Operation

This accident occurred on that part of the Oklahoma Division extending between Caldwell, Kans., and El Reno, Okla., 108.1 miles, a single-track line, over which trains are operated by signal indications. At Kremlin, 38.2 miles south of Caldwell, a siding 5,054 feet in length parallels the main track on the east. The distance between the centerline of the main track and the siding is 14 feet. The north switch of the siding is 855 feet north of the station. The collision between the motor-truck and the passenger train occurred at a point 1,064 feet north of the station, where the railroad is crossed at grade by Kremlin Road, the general derailment occurred at the turnout of the north siding-switch, and the collision between the passenger-train cars and the cars of the freight train on the siding occurred 927 feet south of the grade crossing and 111 feet north of the station. The main track is tangent throughout a distance of 11.1 miles immediately north of the grade crossing and 8 miles southward. The grade is 0.6 percent ascending southward.

Kremlin Road intersects the railroad at an angle of 78°44', and is surfaced with a mixture of sand and gravel to a width of 32 feet. The road is tangent throughout a distance of 2.2 miles immediately west of the crossing and a considerable distance eastward. The grade is practically level. A drainage ditch is located about 18 feet 9 inches west of the centerline of the main track and parallel to it. A concrete culvert 40 feet in length is about 3 feet below the top surface of the road and in line with the drainage ditch. The crossing is 32 feet wide. Timbers 4 inches thick by 8 inches wide and 35 feet long are laid on each side of each rail, and the remaining area between the rails consists of an asphaltum mixture. Flangeways 2-1/2 inches wide are provided. The surface of the crossing is level with the tops of the rails.

A circular railroad-crossing sign 2.5 feet in diameter is located to the right of the direction of east-bound traffic, 22.5 feet south of the centerline of Kremlin Road and 495 feet west of the centerline of the main track. This sign is mounted on a mast 3 feet 9 inches above the level of the road, and bears two diagonal lines intersecting at right angles, and the letters "R.R." in black on a yellow background. The letters and the lines are outlined by colorless reflector buttons. A standard cross-buck railroad-crossing sign destroyed in the accident was located to the right of east-bound traffic

about 27 feet south of the centerline of the road, and 25 feet west of the centerline of the main track. This sign was mounted on a mast 11 feet above the level of the top of the road, and bore the words "RAILROAD CROSSING" in black letters outlined by colorless reflector buttons on a white background. A sign bearing the numeral and letters "1-TRACK" in white outlined by reflector buttons on a black background was mounted below the cross-buck sign and about 8 feet above the level of the top of the road. A crossing-whistle sign for south-bound trains is located 1,376 feet north of the crossing.

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

14. Engine Whistle Signals.

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

Sound.	Indication.
* * *	
(1) __ __ o _____	Approaching public crossings at grade. To be prolonged or repeated until crossing is occupied by engine or car. * * *
* * *	

30. * * * the engine bell must be rung * * * while approaching and passing public crossings at grade, * * *

Time-table special instructions read in part as follows:

Headlight on Rocket trains must be burning dimly during daylight hours.

The maximum authorized speed for the passenger train was 80 miles per hour.

Description of Accident

No. 509, a south-bound first-class passenger train designated as the Texas Rocket, consisted of Diesel-electric unit 626, one baggage-mail car, one dining car, two coaches and one coach-observation-parlor car, in the order named.

The first and second cars were of conventional all-steel construction, and the remainder of the cars were of light-weight high-tensile-steel construction. This train passed Pond Creek, the last open office, 8.5 miles north of Kremlin, at 2:40 p. m., 29 minutes late, and while moving over a highway grade crossing at Kremlin at a speed of 79 miles per hour the third car was struck by an east-bound motor-truck. The rear truck of the third car of No. 509 was derailed at a point 51 feet south of the crossing, and the wheels continued in line with the track a distance of 158 feet to the turnout of the north siding-switch, where all wheels of the fourth and fifth cars were derailed. No separation occurred between any of the units of the train. The rear end of the third car, and the fourth and fifth cars were dragged between the main track and the siding a distance of 744 feet to the point where these cars struck the caboose and the rear 15 cars of Extra 5035 South, a 94-car freight train which was standing on the siding. No. 509 stopped with the front and the rear ends, respectively, 1,886 and 1,417 feet south of the grade crossing. The third car stopped at an angle of 10 degrees to the track, with the rear end leaning against the front end of the eightieth car of the freight train. The fourth and fifth cars leaned to the east at an angle of about 15 degrees and against the eightieth to eighty-fourth cars, inclusive, of the freight train.

The equipment of No. 509 was provided with tightlock couplers, except at the rear end of the rear car.

The motor-truck involved was owned by the Mullinex Construction Company, Oklahoma City, Okla. The driver, who was the sole occupant, held Oklahoma 1947 chauffeur's license No. C150422. The motor-truck was a 1944 K-8 International model L-5-H-6, and bore Oklahoma license No. 110T776. It was equipped with power-driven tandem axles at the rear, dual wheels at each end of each rear axle, single wheels on the front axle, and was provided with a steel-canopy cab. Canvas curtains containing two celluloid windows were arranged on each side of the cab and above the side doors. All wheels of the motor-truck were provided with vacuum-type brakes. The body of the truck was of the dump-type, 10 feet 3 inches long, 7 feet 7 inches wide and 3 feet 1 inch high. The total length of the motor-truck was 20 feet 10 inches. At the time of the accident the motor-truck was loaded with 21,600 pounds of wet sand. The total weight of the truck and lading was 36,900 pounds. This vehicle was engaged in hauling road-building material, and was en route to a point a short distance east of the crossing involved.

The force of the impact turned the truck on its right side, south of Kremlin Road and at an angle of 45 degrees to it, with the front end on the roadbed of the railroad and 43 feet south of the centerline of the crossing, and the rear end about 28 feet south of the centerline of the road.

The third, fourth and fifth cars of No. 509 were raked and damaged on their left sides as a result of colliding with the cars of the freight train on the siding. The rear vestibule of the third car was collapsed, and the side sheets below the windows were torn throughout a distance of 10 feet immediately ahead of the rear vestibule. The side sheets above the windows were torn throughout a distance of 5 feet ahead of the vestibule. The front vestibule of the fourth car, the side sheets below the windows and between the vestibules, the rear vestibule, the left side sill, the seats on the left side, and the flooring inward to the center sills were torn away by the collision. The center sills, the body bolsters and the crossbearers were bent. The battery boxes, the air-conditioning fuel-supply system and other appurtenances below the body of the car were badly damaged. The front end of the fifth car, the side sheets below the windows throughout the length of the car, the seats on the left side, the flooring on the left side inward to the center sills, and the front body bolster and crossbearer on the left side were torn away. There was considerable damage on the left side to appurtenances below the body of the car. The interior finish and the fittings of the fourth and the fifth cars were totally destroyed by fire. The bodies of these cars were warped as a result of intense heat. The fatalities and injuries occurred in these cars. The caboose of Extra 5035 South was overturned to the left and demolished, and the right sides of the rear 15 cars were considerably damaged. The eightieth to eighty-third cars, inclusive, were considerably damaged by fire.

The Diesel-electric unit and the cars of No. 509 were provided with HSC brake equipment. The train-brake system is arranged for either electro-pneumatic straight-air-brake control, or automatic air-brake control. The brake valve on the Diesel-electric unit is so arranged that an emergency application can be obtained by moving the brake-valve handle to the extreme right of the quadrant, regardless of which brake system is in use.

The fourth car of No. 509, C.R.I.& P. 323, a coach, was 85 feet long between the pulling faces of the couplers, had seating capacity for 68 persons, contained two washrooms at each end of the car, and had a vestibule at each end. Its lightweight was 130,100 pounds. This car was constructed of lightweight low-alloy high-tensile steel. It was built in 1947 and meets the specifications made standard in 1945 by the Association of American Railroads.

The air-conditioning system of this car was provided with an internal-combustion engine powered by industrial propane gas. The fuel supply system was contained in cabinets suspended below the body of the car on each side at a point about midway between the trucks. Each cabinet was designed to contain four cylindrical tanks filled with propane, placed at right angles to the centerline of the car and parallel to the floor of the body of the car, together with the related manifolds, regulators, and valves to control the flow of gas. The fuel cylinders were 42 inches in length by 16 inches in diameter, and had capacity for 23.6 gallons of liquid propane at a pressure of 125 pounds per square inch. Each tank was provided at the top with a valve and connector assembly guarded by a collar, which was constructed of sheet steel 3/16-inch thick, 7-5/16 inches in diameter and 6 inches high, and welded to the tank. The outlet valve assembly of each tank was provided with a slug check valve of the spring-loaded type, arranged to operate automatically to stop the flow of fuel from a tank if a break occurred in the fuel line when the cylinder valve was in open position.

Propane gas escaped through an 11/32-inch aperture and became ignited. The flame projected outward against the cylindrical portion of a tank car on the siding, then was directed into the fourth car of No. 509. The high temperature produced by this flame quickly ignited the interior finishings and fixtures of both the fourth and fifth cars.

The fifth car of No. 509, C.R.I.& P. 453, a coach-observation-parlor car, of lightweight low-alloy high-tensile-steel construction, was built during 1937. It was 79 feet 1/4-inch long between pulling faces of the couplers, and had seating capacity for 48 persons. There was no vestibule or side door at the front end, and the rear end was of rounded contour without means of egress or ingress. Its lightweight was 93,400 pounds. The air-conditioning system was of the mechanical-driven type.

The flagman of No. 509 was injured.

The weather was clear at the time of the accident, which occurred about 2:46 p. m.

During the 30-day period preceding the day of the accident, the average daily movement of trains over the crossing was 14.76. During the 24-hour period beginning at 12:01 a. m., April 17, 1948, 451 automobiles, 4 buses and 39 trucks passed over the crossing.

Discussion

No. 509 was approaching the crossing at a speed of 79 miles per hour, as indicated by the speedometer with which the Diesel-electric unit was equipped, in territory where the maximum authorized speed for this train was 80 miles per hour. The headlight was lighted dimly and the bell was ringing. The enginemen were maintaining a lookout ahead from the control compartment at the front end of the Diesel-electric unit, the conductor was in the third car and the flagman was in the fourth car. The automatic-brake system and the electro-pneumatic straight-air-brake system had been tested and had functioned properly en route. The engineer said that when his train was about 1 mile north of the crossing he sounded one long blast on the pneumatic horn for the station signal, then, when the engine reached a point about 1,400 feet north of the crossing, he sounded the grade-crossing signal. The last blast of this signal was prolonged until the engine had passed over the crossing. The enginemen said that throughout a distance of about 1/2 mile immediately north of the crossing they observed a motor-truck moving on Kremlin Road and approaching the crossing from the west. The speed of the motor-truck did not appear to be excessive, and they thought it would stop short of the crossing. When the engine passed over the crossing the motor-truck was about 50 feet west of the crossing. Immediately afterward the engineer felt a surge of the train and placed the brake valve in emergency position, but the derailment of the rear two cars and the collision with the cars of the freight train on the siding occurred before the train could be stopped.

Examination after the accident disclosed that the motor-truck struck the third car at a point 37 feet back of the front end, then struck the rear truck of this car. The rear truck became derailed at a point 51 feet south of the center-line of the crossing. The wheels of this truck continued in line with the main track a distance of 158 feet to the turnout of the north siding-switch, where the derailment of the fourth and fifth cars occurred. Wheel marks on the surface of the road, and identified as having been made by the motor-truck, indicated that the motor-truck was in the right-hand lane of traffic at a point 500 feet west of the crossing, then it gradually veered to the right shoulder and left the road at a point 59 feet west of the crossing, struck the south end of the culvert located 12 feet west of the track, and collided with No. 509 at a point 26 feet south of the centerline of the crossing.

The investigation disclosed that during a 7-day period preceding the day of the accident a number of trucks had been engaged in hauling material for resurfacing Kremlin Road. The truck involved in the accident was one of this number. These trucks had averaged 10 round trips daily over the crossing involved. The crossing was protected by advance railroad-crossing signs and standard cross-buck signs. The construction company did not provide a flagman to warn drivers of the approach of trains. The driver of the motor-truck was a driver of 20 years' experience, and had been in the employ of the Mullinex Construction Company during a period of 41 days. The driver said that he was familiar with the characteristics of the crossing, and that he had been operating motor-trucks over this crossing an average of about 10 round trips daily during a period of 7 days immediately prior to the day of the accident. He said that as the motor-truck was approaching the crossing on the trip when the accident occurred, the canvas side curtains were in place, the speed was about 12 miles per hour and he was maintaining a lookout. He looked to the north, but did not see the approaching train until the motor-truck was a short distance west of the crossing, then he saw the Diesel-electric unit enter upon the crossing. At that time the crossing whistle-signal was being sounded. He steered the motor-truck to the right and off the road in an attempt to avert the accident. The driver said that the motor-truck was in excellent operating condition and that the brakes operated satisfactorily. The manager of the construction company said that a motor-truck similar to the one involved and having the same loaded weight could be stopped from a speed of 12 miles per hour in a distance of 40 feet. Examination after the accident disclosed that the small celluloid windows in the canvas curtains were streaked with red-colored mud, and that this condition impaired visibility to a considerable extent.

The laws of the state of Oklahoma governing operation of motor vehicles do not require motor-trucks engaged in hauling non-flammable commodities to stop before entering upon a railroad grade crossing. Observation disclosed that throughout a distance of 1,100 feet immediately west of the crossing a driver of a motor-truck, similar to the one involved, has an unrestricted view of an approaching train, particularly a lighted headlight, throughout a distance of 2.5 miles immediately north of the crossing. At the time the accident occurred the sun was in the west, and visibility was not impaired by weather conditions.

Cause

It is found that this accident was caused by failure to stop a motor-truck short of a train moving over a highway grade crossing.

Dated at Washington, D. C., this twenty-seventh day of May, 1948.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.