

INTERSTATE COMMERCE COMMISSION

WASHINGTON

---

INVESTIGATION NO. 2679

THE PANHANDLE AND SANTA FE RAILWAY COMPANY

REPORT IN RE ACCIDENT

NLAR CLEVELAND, OKLA., ON

FEBRUARY 19, 1945

---

SUMMARY

---

Railroad: Panhandle and Santa Fe  
Date: February 19, 1943  
Location: Cheyenne, Okla.  
Kind of accident: Head-end collision  
Trains involved: Passenger : Mixed  
Train numbers: 63 : 62  
Engine numbers: Gas-electric : 1001  
motor car M-105  
Consist: Motor car : 5 cars  
Estimated speed: 30-40 m. p. h. : 20-30 m. p. h.  
Operation: Timetable and train orders  
Track: Single; 2° curve; level  
Weather: Clear  
Time: About 10:45 a. m.  
Casualties: 2 killed; 6 injured  
Cause: Accident caused by failure to  
obey right-of-track order  
Recommendation: That the Panhandle and Santa Fe  
Railway Company convert power  
units for use of fuel less  
inflammable than gasoline

INTERSTATE COMMERCE COMMISSION

---

INVESTIGATION NO. 2679

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

THE PANHANDLE AND SANTA FE RAILWAY COMPANY

---

April 17, 1943.

---

Accident near Cheyenne, Okla., on February 19, 1943, caused  
by failure to obey right-of-track order.

---

REPORT OF THE COMMISSION<sup>1</sup>

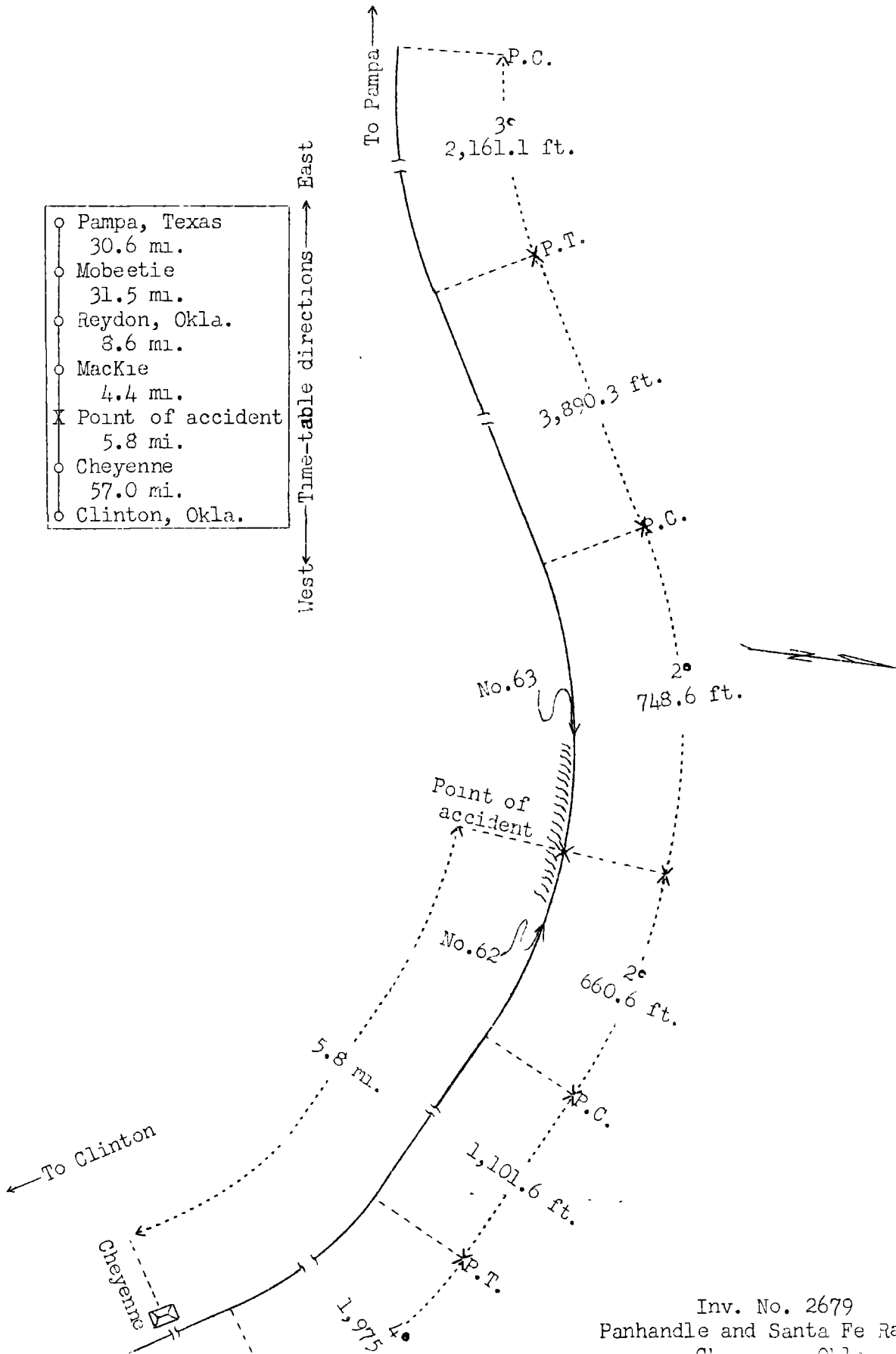
PATTERSON, Commissioner:

On February 19, 1943, there was a head-end collision between a passenger train and a mixed train on the Panhandle and Santa Fe Railway near Cheyenne, Okla., which resulted in the death of one passenger and one employee, and the injury of four passengers and four employees.

---

<sup>1</sup>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.

○	Pampa, Texas	30.6 mi.
○	Mobeetie	31.5 mi.
○	Reydon, Okla.	8.6 mi.
○	Mackie	4.4 mi.
X	Point of accident	5.8 mi.
○	Cheyenne	57.0 mi.
○	Clinton, Okla.	



Location of Accident and Method of Operation

This accident occurred on that part of the Plains Division designated as the Clinton District and extending between Clinton, Okla., and Pampa, Texas, 137.9 miles. Time-table directions, which are opposite to compass directions, are used in this report. 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 5.8 miles east of the station at Cheyenne. Approaching from the west there are, in succession, a 4° curve to the left 1,975 feet in length, a tangent 1,101.6 feet and a 2° curve to the left 660.6 feet to the point of accident and 743.3 feet beyond. Approaching from the east there are, in succession, a 3° curve to the left 2,161.1 feet in length, a tangent 3,890.3 feet and the curve on which the collision occurred. At the point of accident the grade is practically level and the track is laid in a cut, the north wall of which rises to a maximum height of 15 feet.

Operating rules read in part as follows:

S-71. A train is superior to another train by right, class or direction.

Right is conferred by train order; class and direction by time-table.

Right is superior to class or direction.

Direction is superior as between trains of the same class.

FORMS OF TRAIN ORDERS.

\* \* \*

S-Form-C. Giving Right Over an Opposing Train.

Examples:

- (1) No 1 Eng 25 has right over No 2 Eng 36 G to Y.

If the second-named train reaches the point last named before the other arrives, it may proceed, keeping clear of the opposing train as many minutes as such train was before required to clear it under the rules. If the first-named train is not between the designated points, the conductor of

the second-named train must inform it of his arrival.

\* \* \*

210. \* \* \*

Enginemen must show train orders and clearance card to fireman and, when practicable, must show them to the brakemen. Brakemen and firemen are required to read orders and, if necessary, must ask for them, reminding conductor and enginemen of their contents when needful.

\* \* \*

Time-table special instructions read in part as follows:

Except as otherwise provided, eastward \* \* \* trains are superior to westward \* \* \* trains of the same class.

The maximum authorized speed for passenger trains is 45 miles per hour, and for mixed trains, 35 miles per hour.

Description of Accident

No. 63, a west-bound second-class passenger train, consisted of gas-electric motor car M-105. At Pampa, 30.9 miles east of Cheyenne, the crew received copies of a clearance card and, among others, copies of train order No. 216, reading as follows:

No 33 Eng M 105 has right over  
No 62 Eng 1001 Pampa to Cheyenne

This train departed from Pampa at 8:43 a. m., according to the dispatcher's record of movement of trains, 52 minutes late, departed from Reydon, 13.3 miles east of Cheyenne and the last open office, at 10:24 a. m., 57 minutes late, and while moving at an estimated speed of 30 to 40 miles per hour it collided with No. 62 at a point 5.8 miles east of Cheyenne. The brakes had functioned properly en route.

No. 62, an east-bound second-class mixed train, consisted of engine 1001, two loaded and two empty freight cars, and one coach of steel-underframe construction, in the order named. At Clinton, 57 miles west of Cheyenne, the crew received copies of a clearance card and, among others, copies of train order No. 216. After a terminal air-brake test was made, this train departed from Clinton at 6:50 a. m., according to the dispatcher's record of movement of trains, on time,

departed from Cheyenne, the last open office, at 10:32 a. m., 39 minutes late, and while moving at an estimated speed of 20 to 30 miles per hour it collided with No. 63. There was no condition of engine 1001 that distracted the attention of the enginemen or obscured their vision.

From an engine moving in either direction, in the vicinity of the point of accident, the view of an engine approaching in the opposite direction is restricted to a distance of about 475 feet, because of track curvature and the wall of the cut.

The force of the impact moved motor car M-105 backward 263 feet. The front end was demolished a distance of about 15 feet. The engine was torn loose from its base and shoved about 15 feet into the baggage compartment. The fuel tanks were ruptured, gasoline became ignited and the car was destroyed. The engine of No. 62 stopped 138 feet beyond the point of accident. The engine truck and the first pair of driving wheels were derailed. The engine truck, both main-frame rails in front of the cylinders and the front deck casting were broken, the smokebox was crushed inward, the engine was damaged by fire, the tender cistern was loosened from its frame, and the last car was slightly damaged.

It was clear at the time of the accident, which occurred about 10:45 a. m.

The employee killed was the engineer of No. 63. The employees injured were the conductor and the brakeman of No. 63, and the engineer and the conductor of No. 62.

#### Data

During the 30-day period preceding the day of the accident, the average daily movement in the vicinity of the point of accident was 1.73 trains.

#### Mechanical Data

According to data furnished by the railroad, gas-electric motor car M-105 was built in 1913. It was of conventional, all-steel, plate, girder, post and sill construction. The side-sheets and the end body-sheets were of steel 3/16 inch thick. The end-sills and the side-sills were of 7-inch channel construction, and the steel weighed 9-3/4 pounds per foot. The center-sills were constructed of 7-inch I-beams, and the steel weighed 15 pounds per foot. The cross-members, the needle-beams and the sway braces were of steel and of heavy construction. The end-posts consisted of steel T-beams 2 inches by 2 inches by 1/4 inch. The car was 69 feet 9 inches in length, weighed 107,580 pounds, and was divided into an

engine compartment, a baggage compartment and a passenger compartment. The floors of the baggage and the passenger compartments consisted of two courses of wood and had a total thickness of 1-5/8 inches. The floor of the engine compartment was of 1/8-inch steel plates. The car was powered by a 275-horsepower gasoline motor and electric generator, the base of which was fastened to a 1/2-inch steel floor plate by sixteen 5/8-inch steel bolts, which had a resistance to shear of 48,000 pounds per square inch. Fuel was supplied from three tanks having a total capacity of 325 gallons. The first tank had a capacity of 150 gallons and was located about 20 feet to the rear of the front end and about 1 foot inward from the left side. The second tank had a capacity of 102 gallons and was located immediately to the rear of the first. The third tank had a capacity of 73 gallons and was located about 19 feet from the front end and 1 foot inward from the right side. These tanks were connected in series. The car was provided with schedule AVMS brake equipment having a safety-control feature. The control station was located in the engine compartment at the right of the engine.

#### Discussion

The rules governing operation on this line provide that a train may be made superior to other trains by a right-of-track order. Superiority by right gives precedence over superiority by class or direction.

No. 62, an east-bound train, and No. 63, a west-bound train, were of the same class, and No. 63 was inferior by direction. The crews of both trains held copies of train order No. 216, which gave No. 63 right over No. 62 between Pampa and Cheyenne, a distance of 80.9 miles. No. 63 was due to leave Mackie, the first siding east of Cheyenne, at 9:39 a. m. and Cheyenne at 9:53 a. m. Train order No. 216 required No. 62 to clear at Mackie not later than 9:33 a. m., and it proceeded to that point for No. 63. No. 62 departed from Cheyenne at 10:32 a. m., 53 minutes after No. 63 was due to leave Mackie, and collided with No. 63 about 10:45 a. m. at a point 4.4 miles west of Mackie.

No. 63 passed Mackie about 10:36 a. m. The crew consisted of the conductor, who was at the rear of the motor car, the brakeman, who was in the baggage compartment, and the engineer, who was in the control compartment. As this train was approaching the point where the accident occurred the speed was about 40 miles per hour. The conductor and the brakeman said the first they were aware of anything being wrong was when the brakes were applied in emergency, and the collision followed immediately afterward. Since the engineer was killed in the accident, it could not be determined when he first saw the approaching train. The



brakes had functioned properly en route.

As No. 62 was approaching the point where the accident occurred, the speed was 30 or 35 miles per hour, the throttle was open, and the engineers were maintaining a lookout ahead. As this train moved on the curve to the left, the fireman observed No. 63 at a distance of about 300 feet and called a warning to the engineer, who immediately moved the brake valve to emergency position, closed the throttle and moved the reverse lever to position for backward motion. The engineer was first able to see No. 63 when the trains were about 100 feet apart. He said the speed of his train was reduced to about 20 miles per hour at the time of the collision. The remainder of the crew said the first they were aware of the approach of No. 63 was when the brakes were applied in emergency. The engineer, the fireman and the conductor said they read train order No. 216 at Clinton, 57 miles west of Cheyenne, about 6:30 a. m. and they understood the order to confer on No. 63 right over No. 62 between Pampa and Mobeetie, 50.3 miles east of Cheyenne. They said the order was clear and legible. The reason for their misunderstanding was that No. 63 usually received an order conferring right over No. 62 between Pampa and Mobeetie. The front brakeman and the flagman had a proper understanding of the order. They understood that No. 62 could not proceed beyond Cheyenne for No. 63 unless it was authorized to do so by another train order; however, they did not question other members of the crew with respect to the authority for No. 62 to proceed beyond Cheyenne. The investigation disclosed that after No. 62 departed from Clinton no member of the crew read the order or commented to other members about its requirements. The rules require that firemen must remind engineers of the contents of train orders, and brakemen must remind conductors. If the members of the crew who misunderstood train order No. 216 had read it again, or if the members of the crew who understood its contents had directed attention to its provisions, No. 62 would not have proceeded beyond Cheyenne before the arrival of No. 63, and this accident would not have occurred. If the block system had been in use on this line the error which led to this accident would have been discovered and the accident would have been prevented.

The investigation disclosed that about 225 gallons of gasoline remained in the fuel tanks at the time of the collision. In previous reports the Commission has directed attention to the hazard to passengers and employees when there is a quantity of gasoline on a car carrying passengers, and the disastrous consequences when gasoline becomes ignited as a result of an accident of this character. In two such accidents during the past 5 years 44 persons were killed and 22 injured, and most of these casualties were

caused by burning gasoline. In the present case it appears that none of the fatalities resulted from burning gasoline. However, had any person been trapped in the motor car death would have resulted from fire and gases. According to the evidence, this carrier has made no plans to convert gas-electric motor cars to a type using fuel less volatile than gasoline. In view of the hazards involved in the use of gasoline on equipment of this character, conversion to a type of equipment using other fuel should be promptly effected.

Cause

It is found that this accident was caused by failure to obey a right-of-track order.

Recommendation

It is recommended that the Panhandle and Santa Fe Railway Company convert power units for use of fuel less inflammable than gasoline.

Dated at Washington, D. C., this seventeenth day of April, 1943.

By the Commission, Commissioner Patterson.

(SEAL)

W. I. BARTLE,  
Secretary.