

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE ST. LOUIS SOUTHWESTERN RAILWAY COMPANY
OF TEXAS NEAR TRINIDAD, TEX., ON JULY 7, 1933.

August 31, 1933.

To the Commission:

On July 7, 1933, there was a derailment of a freight train on the St. Louis Southwestern Railway of Texas near Trinidad, Tex., which resulted in the death of 2 trespassers and the injury of 3 trespassers.

Location and method of operation

This accident occurred on the Tyler Sub-division of the Texas Division which extends between Tyler and Waco, Texas, a distance of 130.2 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The accident occurred at a point 1.48 miles north of the station at Trinidad; approaching this point from the north the track is tangent for a distance of 4,226 feet, followed by a 2° curve to the right 1,083 feet in length, then tangent track for a distance of 3,776 feet, a $2^{\circ}48'$ curve to the left 416 feet in length, followed by 3,630 feet of tangent, the accident occurring at the leaving end of the last-mentioned curve. The grade for southbound trains is generally descending, the maximum gradient being 1.5 per cent, although it is level for a distance of 2,200 feet to the point of accident.

The track is laid with 85-pound rails, 39 feet in length, with an average of 24 treated red oak ties to the rail length, fully tieplated, single-spiked and ballasted with washed gravel to a depth of 10 inches; the track is well maintained. The speed for freight trains is restricted in this territory to 35 miles per hour with a 5 mile per hour variation being allowed.

In the vicinity of the point of accident there were several trestle bridges and the initial derailment occurred just north of bridge 581 while the final derailment occurred on bridge 582, a distance of 2,190 feet beyond. Bridge 582 is a wooden bridge, 430 feet in length, consisting of 34 frame bents with 14-foot panels and 12 ties to the panel. It stood 17 feet from the ground at its highest point. The bridge was in good condition.

The weather was clear at the time of the accident, which occurred about 7:10 a.m.

Description

South-bound freight train extra 809 consisted of 72 cars and a caboose, hauled by engine 809, and was in charge of Conductor Shaw and Engineman Edington. This train departed from Tyler, 52.15 miles north of Trinidad, at 4:45 a.m., according to the train sheet, and was derailed on approaching Trinidad while traveling at a speed estimated to have been between 35 and 40 miles per hour.

Fifteen cars were derailed. The first car to be derailed was NATX tank car 1539, the fifteenth car in the train; this car traveled a distance of 2,190 feet before it became entirely derailed. The following fourteen cars stopped in various positions on the ground on both sides of bridge 582 and were badly damaged. The front portion of the train stopped with the front end of the engine approximately 965 feet south of the south end of the bridge. The bridge was destroyed for a distance of about 300 feet.

Summary of evidence

Engineman Edington said that on rounding the curve about 1/4 mile north of the point of accident he looked back over his train and saw nothing wrong; the train was drifting at a speed of about 35 miles per hour and the first he knew of anything wrong was when he felt a lurch as the engine was leaving bridge 582 and the air brakes applied in emergency. Engineman Edington stated that the air brakes had been tested at Tyler and functioned properly en route.

Fireman Pecot stated that when the engine was passing over bridge 581 he looked back over 45 or 50 cars and saw nothing wrong at that time and he felt no lurch of the engine until the air brakes applied in emergency. Head Brakeman Sanders, who was riding in the cab behind the fireman, stated that when he looked back as the train was rounding the curve on which the accident occurred he saw a great deal of dust flying from under the train but it did not appear to be out of the ordinary.

Conductor Shaw, who was riding on the left side of the cupola of the caboose, stated that as the train was passing over bridge 581 he noticed a great deal of dust flying from under the train; he reached for the conductor's brake valve but before he could apply the brakes the train broke in two. Conductor Shaw had watched the train on rounding curves en route and when the stop was made at Murchison, about 23 miles north of Trinidad, to pick up a car he inspected the train for about three-fourths its length as it pulled by him and boarded the train about fifteen cars from the caboose. The statements of Rear Brakeman Franklin corroborated those of the conductor, and he further stated that on passing through Malakoff, about 3 $\frac{1}{2}$ miles from the point of accident, he received a "highball" from the section foreman.

Section Foreman Bradley stated that when extra 809 passed through Malakoff, he and his men were at the tool house and they watched the equipment of that train as it passed and did not note anything out of the ordinary. He arrived at the scene of the accident about 7:30 a.m., and found a flange mark on the right rail and a rail anchor broken on the gauge side of the left rail; following these marks were flange marks on the inside of the left rail and outside of the right rail for a distance of about 12 ties; the marks were then in about the center of the track and on the right guard rail. These marks continued across bridge 581 and up to the point of final derailment. The marks were about $5\frac{1}{2}$ inches in width and indicated that the derailed wheels had been dragging sideways on the track.

Division Engineer Nall arrived at the scene of the accident about noon and his examination of the track revealed the first mark of derailment to be a faint flange mark extending diagonally across the ball of the right rail a distance of 22 feet 10 inches, followed by the marks as described by the section foreman. Twenty-one panels of bridge 582 were knocked down. After examining the trucks of tank car NATX 1539 Division Engineer Nall was of the opinion that the side bearings were down on the left front side and right rear side which did not permit the trucks to take the curve, as they were held in a rigid position, causing the wheel to crowd the rail on the outside of the curve and the flange to climb the ball of the rail. The steel center sill of the front truck bore a wheel mark; the left front bearing and the right rear bearing were worn smooth while the opposite bearings showed no signs of wear; the left side of the front bolster was broken and had wood from bridge ties and guard rails driven into it, indicating that the front of the car was down at the time it struck bridge 582. A piece of flange 14 inches in length was broken off of one of the wheels, apparently breaking off when the cars piled up. Inspection of the track showed it to be in good condition. Measurements were taken for 17 rail-lengths north of the point of accident and the alinement and surface were in good condition and the gauge and elevation were uniform.

Roadmaster Swittenberg arrived at the scene of the accident about 8:40 a.m., and on being told by the conductor that he thought the accident was caused by a broken flange he sent a man back as far as Athens, 13 miles northward, to search for pieces of broken flange; however, none were found north of bridge 582 and later he learned that part of a broken flange had been found under the bridge, and he formed the opinion that the broken flange was not the cause of the accident. Roadmaster Swittenberg rode in the caboose of a freight train on July 3 and on motor trains on July 5 and he noticed no irregularities in the track.

Car inspectors Bevis and Culwell stated that they inspected the equipment of extra 809 before its departure from Tyler yard and found nothing wrong and the air brakes worked properly.

General Locomotive Inspector Fagan arrived at the scene of the accident about noontime and after observing the marks on the track he examined the front truck of NATX tank car 1539. The front pair of wheels of this truck showed that one new wheel had been recently applied, and the left rear wheel had 18 inches of flange broken off. There was no indication of loose wheels, no broken bolts or arch bars and no evidence of heated wheels or journals. He then examined the front end of the car; the right side bearing had oil on it but it appeared to be rusted and had not been working in contact with the truck bearing. The left front upper bearing had been running in contact and was either worn or bent, although this bending could have been done as a result of the derailment. The truck side bearings were in about the same condition as their mates on the car. General Locomotive Inspector Fagan was of the opinion that the car had a tendency to remain on the left front side bearing and this tendency became more pronounced as the car was loaded; this permitted approximately 5/8 inch side bearing clearance on the right side, and as this car entered the short left curve on which the accident occurred, he thought that it caused the front end of the car to go over in excess of the 5/8 inch side bearing clearance on the right side and as it straightened back on leaving the curve it did so with enough force to cause the wheel flange to mount the rail. He gauged the wheels of the rear truck and while he found some flange wear it had not reached the gauge limit.

Superintendent Hazlewood stated that to determine conclusively that the rigidity of the truck resulted from the fact that the car was down on the side bearings, a further inspection was made of the equipment at the scene of the accident. He was accompanied by other officials of the railroad company and the Commission's inspectors, and the following facts were noted:

The car involved, the fifteenth car in the train, was NATX 1539, a tank car without sills, having a weight of 30,000 pounds and a capacity of 10,224 gallons. At the time of the accident it was loaded with 9,877 gallons of fuel oil, which brought the oil about half way up in the dome of the car. The car was equipped with arch-bar type trucks with friction type side bearings. None of the column bolts or journal bolts were missing or in a defective condition; no wheels appeared to be loose and the wheels gauged the proper distance from flange to flange. A piece of flange 18 inches in length was broken off from the left rear wheel of the front truck, which apparently

did not contribute to the cause of the derailment as the piece of flange was found under bridge 582. The side bearings were made of pressed steel, of rectangular shape and were slotted in the center nearly the full length. The car showed evidence of having been riding entirely on the left bearings and the left rear truck bearing showed an old break of long standing nearly all the way around the top or that part which contacted the body bearing. One very small place in the broken out section appeared to be a new break; both ends of this truck bearing were broken off, leaving just the side walls, and inside of the bearing on the truck there were signs of recent rubbing caused by the bottom of the body bearing fitting down inside of the truck bearing; corresponding marks were on the body bearing which mated this one. This apparently locked these two bearings in one position, as the car went around the left curve on which the derailment occurred, and prevented the car body easing back into a centrally balanced position as the car passed from the curve to tangent track, thereby lifting the weight from the right side of the trucks and permitting the right front wheel of the front truck to climb the outside rail.

The first mark of derailment was found on the right or west rail at a point approximately 100 feet north of the leaving end of the curve; this mark was a flange mark running diagonally across the ball of the rail for a distance of 22 feet 10 inches; the next mark of derailment was a rail anchor torn out of place on the gauge side of the left rail, appearing about 2 feet north of the point where the right wheel dropped on the outside of that rail, cutting a spike head off; from that point the ties were marked and badly damaged in the center of the track and on the extreme outer ends of the ties on the right side of the track; these marks continued across bridge 581 and to the north end of bridge 582 where the bridge started to collapse. The marks were very heavy and measured about $5\frac{1}{2}$ inches in width, from which it appeared that the truck had turned under the car and was dragging sideways.

The speed tape of engine 809 on the day of the accident indicated just previous to the derailment the speed was decreasing and was about 41 or 42 miles per hour at the time of the derailment. A subsequent test showed that the speed tape registered two miles per hour higher than the speed actually made.

Conclusions

This accident was apparently caused by a defective condition in the side bearings of NATX tank car 1539.

The investigation developed that one pair of wheels of the front truck of the car involved was derailed as the car passed from curve to tangent track, which apparently was caused by the car resting heavily on the left side bearings. The rear left truck bearing was found to be in such condition that it permitted the body bearing to fit down into the side walls and become locked in that position, thus preventing the car from returning to an even balance on leaving the curve on which the accident occurred.

Respectfully submitted,

W. P. BORLAND,

Director.