

INVESTIGATION OF ACCIDENT INVOLVING DERAILED PASSENGER TRAIN
ON TEXAS & PACIFIC RAILWAY, NEAR CAMPS, TEXAS, ON
DECEMBER 16, 1918.

January 29, 1919.

On December 16, 1918, there was a derailment of a passenger train on the Texas & Pacific Railway, near Camps, Texas, which resulted in the death of 1 employee and injury of 7 passengers. After investigation the Chief of the Bureau of Safety reports as follows:

The Dallas sub-division of the Eastern division on which this accident occurred extends between Longview Junction and Fort Worth, Texas, a distance of 156 miles. It is a single-track line over which train movements are governed by time table, train orders transmitted by telephone and a manual block signal system.

The train involved was westbound passenger train No. 24, en route from New Orleans, La., to Sweetwater, Texas. This train, consisting of GMDA engine 784, 1 baggage car of wooden construction, 1 combination baggage and mail car of steel construction, 2 coaches of steel construction and 3 steel underframe Pullman sleepers, in the order named, left Marshall, Texas, about 3.30 a.m., one hour and five minutes late, in charge of Conductor Richards and Engineman Hansen. It arrived at Longview Junction, the last open train order office east of the point of derailment, at 4.05 a.m., fifty-five minutes late. After doing station work and taking water the train departed about 4.14 a.m., and at about 4.30 a.m., while running at a speed estimated to have been between 45

and 50 miles an hour, was derailed 1.57 miles west of Camps, Texas.

The engine and tender turned over on its left side in a five-foot cut and came to rest lying against the bank, clear of and parallel with the track. The fireman was caught under the engine tender and killed when the engine turned over. The first and second cars coupled came to rest against the other bank in practically upright position, parallel with and on the north side of the track. The head end of the first coach remained coupled and the coach stopped in upright position with its front end north of and its rear end slightly south of the track. The second coach stopped in an upright position, derailed, but on the roadbed and in general line with the track, its head end coupled to the coach ahead, but its rear end north of the track and uncoupled from the sleeping car behind it. The engine, the tender and first four cars were considerably damaged. The first sleeping car was derailed as was the front truck of the second. These two cars were slightly damaged. The third Pullman remained on the tracks and was undamaged.

Approaching the scene of accident from the east beginning at Camps, the track is tangent for 5500 feet, then there is a 1-degree curve to the right about 1700 feet long, followed by several miles of tangent track. The derailment occurred about 1100 feet west of the east end of this straight track. Bridge 98.6 is located about 310 feet east of the point of derailment. At the point of derailment the track

is on an 8-foot fill, and the grade is slightly ascending for westbound trains.

The track is laid with 33-foot, 65-pound rails, broken joints, 4-hole angle bars, is single-spiked inside and out and there are about 20 oak ties under each rail. Tie plates are used only on treated red oak ties.

At a joint 50 feet west of the bridge there was a churn hole under the north rail; at a joint 66 feet west of the bridge there was another churn hole under the south rail; and ^{at} joints 150 and 181 feet respectively from the bridge there were churn-holes under the north rail.

The first indication of derailment was a flange mark on the ties about six inches inside of and near the middle of the north or right rail at a point 310 feet west of bridge 98.6. Beginning at a point 202 feet west of the bridge the track was spread, the south rail being forced outward a maximum of $\frac{1}{2}$ inch for a distance of about 36 feet. On the opposite side of the track 246 feet from the bridge, the north rail was forced outward a maximum of 1 inch for a distance of about 31 feet. Then on the opposite side 271 feet from the bridge, the south rail was forced outward a maximum of 1 inch for a distance of about 39 feet. At this point the wheel dropped inside the north rail and the south rail was shoved out, the west end of this rail being pushed outward almost to the end of the ties. From this point to the head end of the overturned engine, a distance of about 460 feet, the track was entirely demolished.

Engineman Hansen stated that he was thoroughly familiar with all track conditions, speed restrictions and track locations that are not considered good for the maximum speed of 50 miles an hour for passenger trains. He stated that his train was travelling about 45 miles an hour, when about two or three car lengths west of the bridge the engine suddenly gave down and went on the ties. He had his hand on the brake valve at the time and at once pulled it down. The brakes took hold immediately. He looked over at the fireman and saw him shut off the firing valve. By that time the engine was reeling, so that he was unable to close the throttle. The engine travelled for more than 100 yards and then turned over to the left. He said that after the engine turned over he crawled out and stood on the ground and tried to reach into the engine and close the throttle, but it was seven or eight minutes before he succeeded in shutting it off. He stated that he considers this portion of track the best on the division, and that he had no slow orders covering the track between Longview Junction and the point of the derailment. He further said that he thought the drivers dropped between the rails and the engine truck kept the engine straight. After the accident he went back to where the derailment occurred and found flange marks south of the north rail, but no flange marks south of the south rail, which would indicate that the wheel dropped inside of the north rail. The south rail was standing up and did not look as if it had been turned over. He did not notice any flange marks on the outside of

the rail, which should have been there if a pair of wheels had jumped off. At the first joint west of where this mark was found on the ties, the plates were broken on the south rail, and the rail just west of this rail was displaced. The performance of the engine did not indicate that it had run over anything, and the engineman stated that he knows of no defect of the engine that would cause it to leave the track.

Conductor Richards stated that the train was travelling about 45 miles an hour, running as smoothly as possible when suddenly it seemed as if the train had run off the rails and was travelling on the ties. It bumped along for 10 or 15 seconds and came to a stop. It was after daybreak when he went back and examined the track at the point of derailment. He saw marks on the ties and just west of that he found a break in the rail. He had no slow orders and the train was making about its usual speed. He saw nothing about the track or engine which he thinks could have caused the derailment.

Fireman Perkins stated that he was riding on the rear of the train in the smoker of the sleeping car at the time of the derailment. The train was travelling about 40 or 45 miles an hour, when he felt the brakes applied in emergency, then several jars and the train came to a sudden stop. Prior to the emergency application he had noticed nothing unusual during the trip.

Section Foreman Morgan, of section 146 on which the accident occurred, stated that on December 14, he twice passed over the portion of track upon which the derailment

occurred and on that date he worked both east and west of the point of derailment, but did not work between bridge 98.6 and the scene of the accident. He said that as he rode over it he examined the track but noticed no low places and saw no defects in it. He stated that the gauge, surface and line of the track was in perfect condition when he gauged it two weeks prior to the accident. Section Foreman Morgan has had about 23 years experience in track maintenance work, 15 years as section foreman. He had been in charge of this section about 5 months. His section comprises 7 miles of main track and about 2 miles of siding; has a normal force of 8 men, but had only 3 men on Saturday preceding the derailment.

Section foreman Harris, of the Longview section, stated that he arrived at the scene of the accident about 7 a.m. and immediately went to work. The oil was burning in the engine and he shoveled dirt in there and put the fire out. He noticed the track a little spread east of the point of derailment, but found no indication of cars having been derailed at the spread places.

Wrecking Foreman Kemp stated that it was necessary for track men to gauge and spike the track between bridge 98.6 and the rear end of the wrecked train in order for him to go over it with the wrecker. He also said that the gauge was as much as 1 inch wide and the south rail opposite the wheel marks on the ties was displaced, the west end of this rail being shoved out almost to the end of the ties.

District Roadmaster Merriweather stated that he passed over this track on the rear of a train on December 13 and 14th, and is positive that at that time it was not out of line. He said that there had been no trouble maintaining this track and no slow orders since the last time the bridge was rebuilt. He stated that at a point 102 feet east of the first wheel mark on the ties he found the south rail spread out one inch wide, forty-seven feet east of the first wheel mark, north side, $3/4$ inch wide, twenty-two feet from the first wheel mark, south side, 1 inch wide. The south rail under the west end of the second sleeping car was shoved out at the west end, but was standing up straight. The east end of this rail was located at about the point where the track began to spread when the wheel dropped off inside the north rail. The rail back of that was turned over and broken out of the joint, but was not bent or twisted any. The maximum variation in cross level of track at joints and centers from point of derailment eastward for a distance of 231 feet was $1/2$ inch. He stated that there is an average of about five inches of ballast under this track, but at the point of derailment there are about seven inches. It is not box dressed track, nor is it skeleton track as the ballast comes to within about two inches of the top of the ties and the shoulders slope out about 12 inches from the end of the ties. He also stated that conditions at the point of the derailment indicate spread track caused, he thinks, by some sudden side thrust.

General Roadmaster Bettle stated that when he examined the track after the accident he noticed about half way

between the front and rear ends of the second sleeping car in the train there were flange marks on the ties just inside the north rail about 6 or 7 inches and opposite that point 3 or 4 ties back there were marks on the nuts on the inside of the joint. The rail on the south side east of the first wheel mark was forced out 1 inch at the wheel mark and back east 39 feet it was in line. On the north side the rail was forced out from a point about 33 feet back of the first wheel mark for a distance of 33 feet, then for a space of 8 feet the gauge was perfect. From that point east for a distance of 36 feet the south rail was spread about $\frac{1}{4}$ inch. When he passed over this portion of track about a week prior to the derailment, he found it in good condition. After the accident he examined it especially in the space between the bridge and the point of accident, 310 feet, and there were not more than two or three ties at the most that would be taken out under the present practise. He stated that he does not know what caused the accident, but thinks it must have been some very heavy pressure brought to bear very suddenly, and he does not think the condition of the track had anything to do with the accident.

Engine 784 was a heavy freight engine leased from the Galveston, Harrisburg & San Antonio Railroad. It was of the Mikado Calumet type 2-8-2, having a weight of 207,900 pounds on drivers and a total weight, excluding tender, of 260,700 pounds. Its driving wheel base was 16 feet 6 inches and the total wheel base, including tender, was 69 feet 9 and

3/8 inches. The tender was of the Vanderbilt type, having capacity for 9,000 gallons of water, 3,000 gallons of fuel oil and a total loaded weight of 156,000 pounds.

An inspection of the engine after the accident showed its mechanical condition to be good. The wheels, flanges and treads were all gauged and found to be within the limits prescribed by the Master Car Builders' rules. The flanges and treads were uniformly worn, but not to any great extent. The lateral of none of the drivers exceeded $\frac{1}{4}$ inch and on trailers and truck did not exceed $9/16$ inch. The right main driver was found loose and had shifted on axle about one inch and moved outward about $\frac{1}{4}$ inch. It is believed that the loose driver was a result of the accident and not the cause of it. Gauging each pair of drivers from inside of each tire to inside of each tire on the mate wheel, the minimum measurement on any one was found to be 53 inches and the width of each tire was approximately 5 and $9/16$ inches. The gauges taken showed that on the narrowest pair of drivers the measurement from throat of flange to outside face of tire on mate wheel was 50 inches and as the gauge of the truck at its widest point near point of accident was $57\frac{1}{2}$ inches, it is apparent that had the loose driver spread the track before derailment, the spread would not have been sufficient to allow any of the drivers to drop between the rails. It is moreover believed that when the engine lay on its left side, as the weight of the driver and main rod was on this driving box, and as the engine continued to run for some

time after it turned over, excessive friction was produced, which may have defaced the box, overheated the hub of the driver and caused it to shift on the axle.

The weight of the derailed engine is only 44,000 pounds less than that of the heaviest engines in general use on this division. These heavier engines were restricted to a speed of 30 miles an hour, as compared to 50 miles an hour for engines of the class involved in the derailment. Six days after this derailment a bulletin was posted on this division reducing the maximum speed of this type of engine when in passenger service from 50 to 40 miles an hour.

The investigation did not determine absolutely the cause of the derailment, but it is believed to have been high speed of a heavy engine over irregular track.

The small number of fatalities is probably due to the heavy steel and steel underframe equipment of the train.

The train and engine crew were all experienced men and had been on duty about 1 hour and 15 minutes at the time the derailment occurred, after periods off duty ranging from 18 hours and 35 minutes to four days.

A.E.C.