

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
SOUTHERN RAILWAY NEAR HOT SPRINGS, N. C., ON
SEPTEMBER 27, 1918.

Nov. 28, 1918.

On September 27, 1918, there was a derailment of a freight train on the Southern Railway near Hot Springs, N. C., which resulted in the death of two employees. After investigation of this accident the Chief of the Bureau of Safety reports as follows:

The accident occurred on that part of the Knoxville Division which extends between Morristown, Tenn., and Asheville, N. C., a distance of 87.4 miles. This is a single-track line over which trains are operated by time table, train orders and a manual block system. The maximum speed of freight trains is 30 miles an hour except in territory where speed is restricted by speed limit boards, or bulletins.

The train involved in this accident was westbound freight train 2nd No. 85 consisting of engine 6021, 9 loaded and 10 empty cars and a caboose in charge of Conductor Williams and Engineer McGill. It left Asheville at 6.10 a.m., 3 hours and 40 minutes late; arrived at Sandy Bottom, N. C., 33.1 miles west of Asheville, at 8.25 a.m., and was delayed at this point 37 minutes meeting trains No. 36 and No. 82. It departed from Sandy Bottom at 9.03 a.m., 4 hours and 20 minutes late, and, at 9.17 a.m., while running at a speed estimated at 15 or 20 miles an hour, was derailed 1.7 miles east of Hot Springs.

Approaching the point of derailment from the east, beginning at Mile Post 7-177, a point 3.8 miles west of Sandy Bot-

tion, there is a tangent 600.8 feet in length followed by a 11-degree curve to the right 1301.9 feet in length extending through a rock cut with vertical sides, which has a speed restriction of 15 miles an hour for freight and 35 miles an hour for passenger trains. This curve is followed by a tangent 557.1 feet in length to a 10-degree curve to the left 890 feet in length. At a point 151 feet west of the beginning of this curve the derailment occurred. The track in this vicinity follows the French Broad River, having a descending water grade for westbound trains.

The track is laid with 85 pound rails, 33 feet in length on 12 inches of crushed stone and chat ballast with twenty oak ties to the rail. Tie plates are used on both tangents and curves, being single spiked on tangents and double spiked on curves. Close inspection of the track one-half mile east of the point of derailment developed that the elevation, alignment and general upkeep of the track was good.

Engine 5021 is a 2-10⁻²/Santa Fe type. Its weight is 667,000 pounds. Weight of tender loaded is 171,000 pounds, and weight on drivers is 394,400 pounds. Rigid driving wheel base is 20'7". This engine was built in 1917. A mechanical examination with particular reference to track, lateral, wheels, gauge, flanges, tender axle bearings and splash-bars in operation, develops that at the time of the derailment the engine was in good condition. The weather at the time was clear.

The first indication of derailment was the right rail outside of curve broken at practically a middle point. The westward or leaving section of broken rail, together with the two connect-

ing west rails were torn loose from ties, badly bent and found lying under the engine and cars. The third west rail remained on ties. The derailed engine and following car broke the main off ties, sliding the track to the left about three feet out of line.

The engineer and fireman were killed. The engine, its tender and the front car turned over to the right, slid along and came to rest on right side, parallel with and fouling the main track. The distance from point of broken rail to front of engine pilot was 119 feet. The second car was not derailed. The third and fourth cars were derailed to the right and came to rest in an upright position. The fifth and sixth cars turned over to the left. The seventh car was derailed to the left, but was not overturned. The eighth car had its forward truck derailed. The remaining cars were left upright on the track. The engine was only slightly damaged, the derailed cars were considerably damaged, the fourth car from the engine being destroyed.

Conductor Williams of freight No. 85 stated that the average speed of his train between Asheville and the point of derailment was 20 miles an hour; at the time of the derailment the train was moving at about 16 miles an hour, having reduced its speed about one-half mile east of the scene of the accident on account of a speed board restricting its rate to 15 miles, and the conductor, since reducing at this board, not having had time to increase his speed materially. Conductor Williams further stated that he was riding in the caboose when an emergency

application of the air brakes was made. This was the first indication he had that anything was wrong. He stated that he is uncertain as to what caused the accident. He saw the broken rail, but does not know whether it was the cause of the derailment or whether the rail was broken in the wreck. The engineer, fireman, brakeman and a student fireman were riding on the engine at the time of the accident. The engineer and fireman were killed instantly but the brakeman and student fireman were uninjured. Conductor Williams also stated that after the derailment he examined the engine and cars and found no defects that could have caused the derailment.

Waymon Tallent stated that at the time of the derailment he was riding in the cupola of the caboose opposite the conductor; that nothing was said about high speed; that the train was moving at about its usual speed, an average of 20 to 25 miles an hour; that it slowed down before taking the curve just east of the point of derailment and the next thing he noticed was when the brakes went into emergency; and that he believes the derailment was caused by the broken rail.

Head Brakeman Seymour stated that he was riding on the engine, standing in the gangway behind the fireman's seat box, at the time of the accident. He estimated the speed at 15 or 16 miles an hour and thinks his train was running no faster than it usually did over this track. He stated that the first indication he had that the engine was off the track was when it began jumping up and down; that the engineer immediately applied the brakes; that the engine ran for about 60 feet and then turned

over; that after the engine turned over it slid along the ground and dug out a big hole; and that he knew of no defect in the engine that could have caused the derailment.

Student Fireman Bolin stated that he was riding in the fireman's seat; that the train was running about 15 miles an hour and suddenly he heard something pop, which was the rail breaking under the engine, and the engine left the track. It rolled along on the end of the ties and then turned over.

Mrs. Sproule, who lived in a cabin about 35 or 40 feet distant from the track and almost opposite the point of derailment, stated that she was standing on her porch when the engine turned over. She said that she heard something pop, looked around to see what it was, and saw the engine turn over. She stated that the train was running faster than any of the other trains did.

Section Foreman Holt stated that he had a regular track-walker who goes over the track twice a day, that in addition to this he himself passed over this portion of the track in a lever car at about 8.30 a.m., on the day of the accident, gave the track a very close inspection and found it in good condition; that at the time of the derailment he was at Mile Post, about 1½ miles east; that he saw Trl No. 35 pass, at which time it appeared to be running about 30 miles an hour; that he believes the rail was broken under the engine and that the derailment was caused by too high a rate of speed.

Superintendent Smith stated that he passed over the track in question in a motor car on the day previous to the derailment

and found no defects; that he considered the condition of the track was safe; that he believes the broken rail was the cause of the accident and that he does not know what caused the rail to break as his examination of the rail developed no flaw or defect, and the break was a square one; he had had no difficulty on account of the long wheel base of engines of the type of engine 511, but he believed this engine was running ⁱⁿ excess of the maximum speed prescribed for this portion of track, that it came around the curve too fast and went onto the rail too hard and this caused it to break.

Assistant Roadmaster Moore stated that on the first and second days before the accident in question he passed over this particular portion of track in a motor car on an inspection trip; that he found the general condition of the track good and found no defects. He said the derailment occurred on a 10-degree curve and that he believed the engine was running a little faster than the usual speed, that it gave a thrust against the rail and broke through. The track, he said, was in good alignment and surfaces the afternoon before the derailment. He also stated that when he reached the scene of the accident, about 1.40 p.m. he found no wheel marks between the rails; half of the broken rail was still in its permanent location and the remainder of the rail was lying about three feet from the ends of the ties paralleling the track. He could see the broken end and it looked as though the engine had run only a very short distance, 4 to 6 or 7 ties, and believes that when it broke through the rail, the engine being in a cramped condition on a 10-degree curve, it would

naturally straighten itself and that this is reasonable for its gain, off the ends of the ties so quickly.

From the evidence of the train crew the speed of train No. 85 was reduced to that required over this section of track. The evidence further indicates that there was no material increase in speed of the train after passing out of restricted territory. A mechanical examination of the engine revealed no defect that could have caused the derailment. It is believed that the cause of this accident was a broken rail. An inspection of the broken rail disclosed that it was a 33rd rail 85th ASCE section, first quality, rolled April, 1914, open hearth process. The break as far as it could be ascertained appeared entirely fresh and bore no indications of defect in construction to the naked eye. The condition of the rail was good, with no visible signs of wear that had taken place and the cause of it in the track. The record of this rail shows that it was placed in the track June 20, 1915, on the outside of a 14-degree curve to replace another rail taken out, and prior to this time it had been in the main track on the Asheville Division for about four years.

At the time of the accident the crew of train No. 85 had been on duty 4 hours and 32 minutes after about 14 hours off duty.

A.H.C.