

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE  
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE  
INTERNATIONAL GREAT NORTHERN RAILROAD, MISSOURI  
PACIFIC SYSTEM, NEAR NECHES, TEXAS, ON DECEMBER 23,  
1928.

February 26, 1929.

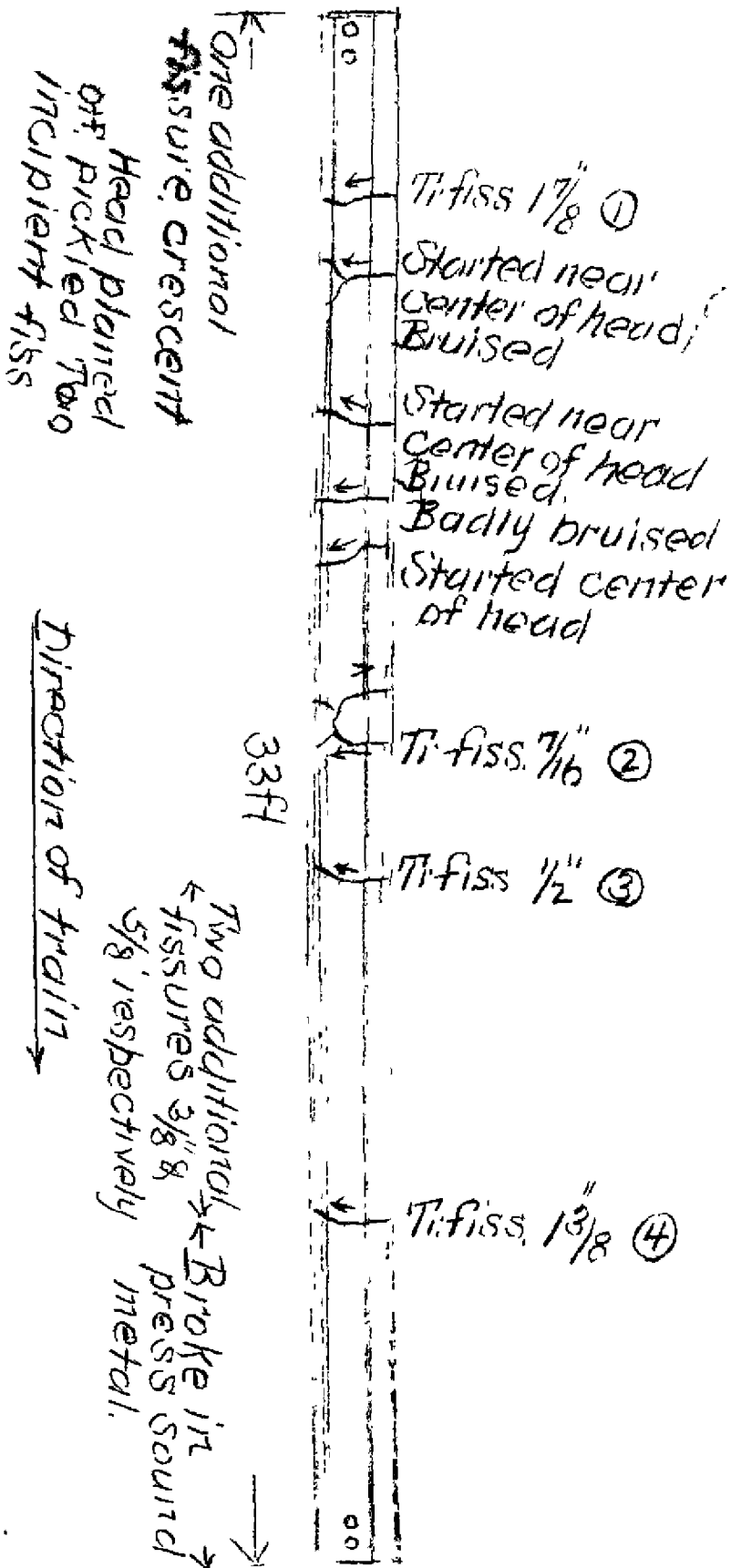
To the Commission:

On December 23, 1928, there was a derailment of a passenger train on the International Great Northern Railroad, Missouri Pacific System, near Neches, Texas, which resulted in the death of 1 passenger, and the injury of 56 passengers, 2 Pullman porters and 3 employees of the railroad.

Location and method of operation

This accident occurred on the Longview District of the Palestine Division, which extends between Longview Junction and Palestine, Texas, a distance of 81.3 miles, and 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 approximately 2 miles north of Neches; approaching this point from the north the track is tangent for a distance of 644.6 feet, followed by a  $3^{\circ} 1'$  curve to the right 1,893.7 feet in length, the accident occurring on this curve at a point 648 feet from its northern end. The grade at the point of accident is 0.24 per cent ascending for southbound trains. The track is laid with 85-pound rails, 33 feet in length, with an average of 20 treated ties to the rail-length, single-spiked and tie-plated, and is ballasted with about 14 inches of gravel and crushed stone. The curve on which the accident occurred has an elevation of 4 inches. The track is maintained in good condition.

The weather was clear at the time of the accident, which occurred at about 5.25 p.m.



Broken rail 85lbs OH Tennessee 8540A SCE 6-1919 B90522  
 Accident on the International-Great Northern Railroad.  
 near Meches Texas Dec 23 1928

### Description.

Southbound passenger train No. 1 consisted of 1 combination baggage car and coach, 1 coach, 1 chair car, 1 dining car and 10 Pullman sleeping cars, all of steel construction, hauled by engine 6614, and was in charge of Conductor Gillespie and Engineman O'Connor. This train departed from Jacksonville, 12.07 miles north of the point of accident, at 5.06 p.m., 4 hours and 53 minutes late, and was approaching Neches when it was derailed by a broken rail while traveling at a speed estimated to have been between 40 and 55 miles per hour.

The engine and first two cars were not derailed and came to a stop 1,325 feet from the point of accident. The next eight cars were entirely derailed and the following car was partly derailed, the first three of these cars overturned and came to rest on their right sides, while the next five cars were partly overturned. All of the eight cars which were entirely derailed came to rest on the east side of the track, with the head end of the leading car 765 feet south of the initial point of derailment; the first 10 cars were considerably damaged and the 11th car sustained slight damage.

### Summary of evidence

Engineman O'Connor stated that at the time the engine passed the point of accident he noticed nothing unusual and his first intimation of anything wrong was when the air brakes were applied as a result of the accident. The maximum speed permitted is 55 miles per hour and he estimated the speed at the time of the accident as between 50 and 55 miles per hour. Some time afterwards he examined the track but on account of darkness he did not ascertain the cause of the accident, although the baggageman informed him it was caused by a broken rail. He further stated that from his experience in passing over broken rails he believed he would have felt it had the rail been broken when the engine passed over it.

Fireman Fitzgerald stated that when the engine passed the point of accident he heard what he termed a "click", he did not think this was due to a broken rail although he intended to call the engineman's attention to it, but the derailment occurred before he could do so. He thought the speed of his train was about 55 miles per hour at the time.

The members of the train crew also were unaware of anything wrong prior to the accident. Baggage man Johnson stated that he was riding in the forward end of the baggage car when he heard a sound which appeared as if a tender truck had encountered a low place in the track and had become derailed; this was followed immediately by a jolt of the baggage car and this led him to believe it had encountered a broken rail. Train Auditor Howard stated that he was riding in the rear of the first car at the time of the accident and from the sound, and also from the action of the rear truck of the car in dropping slightly and then raising again, he decided it was caused by a broken rail. The statements of Conductor Gillespie, who was riding in the 10th car, and Brakeman Hickman, who was riding in the last car, were to the effect that they were both standing up at the time of the accident and that the sudden jolt caused them to be thrown. These employees estimated the speed at from 40 to 50 miles per hour, while none of them examined the track after the accident to determine its cause.

According to the statements of the members of the crew of northbound train No. 26, the last train to pass the point of accident prior to the derailment, they noticed nothing wrong with the track in that vicinity.

Section Foreman Bishop, in charge of the section on which the accident occurred, stated that the last work performed in the vicinity of the point of accident was about 10 days prior to its occurrence, and that he inspected the track on December 22; he checked the elevation of the curve on which the accident occurred, which was found to be 4 inches. He arrived at the scene of accident shortly after it occurred and upon examining the track a broken rail was found, the break being about 48 inches from a joint. He did not find anything north of this point that would have contributed to the accident. Roadmaster Kadernoschka stated that he arrived at the point of accident at about 9.45 p.m. and found a rail broken into several pieces. A piece 4 feet 1 inch in length, at the receiving end of the rail, remained spiked to the ties and showed no evidence of having been disturbed. He examined the broken end of this piece and noticed what he thought was a fissure. Division Engineer Beacon said he examined the rail at the scene of the accident and found it broken into 14 pieces. All of the fractures appeared to be clean breaks except the first one, near the receiving end of the rail, which showed a flaw in the ball near the gauge side. Several of the pieces showed flange marks on the head of the rail but no

marks appeared on either side of the web, while the battered condition of the ends of these pieces indicated that some of the equipment passed over this rail after it had broken and before the final derailment occurred. Mr. Beacon was of the opinion that the initial break occurred under the engine and that the heavy strain placed on the remainder of the rail broke it into several pieces.

Examination of the track disclosed a broken rail on the east side of the track. There was a piece at the receiving end of this rail, 4 feet in length, remaining in the track securely attached with angle bars and spiked to two ties. The remainder of this rail consisting of 10 additional pieces, and all of the tie plates but one, had been torn out of the track. An examination of the track for nearly one-half mile northward did not develop anything that would have contributed to the cause of the accident. An inspection of engine 6614 also failed to develop any defects that could have contributed to its cause.

This accident was caused by a broken rail. An investigation into the reason for the failure of this rail was conducted by Mr. James E. Howard, engineer-physicist, whose report immediately follows:

#### Report of the Engineer-Physicist

The rail which broke and caused this accident was rolled by the Tennessee Coal, Iron & Railroad Company in the month of June, 1919, and laid in November, 1919. It was, therefore, in the track nine years and one month.

The rail was branded: O. H. Tennessee 8540  
A.S.C.E. 6-1919 B 90522.

The examination of the fragments of the rail showed that it broke by reason of the presence of transverse fissures. Four transverse fissures were displayed at the time of the accident. The first fissure was located 4 feet from the receiving end of the rail and had a diameter of  $1 \frac{7}{8}$  inches. The other transverse fissures measured  $\frac{7}{16}$ ,  $1 \frac{1}{2}$ , and  $1 \frac{3}{8}$  inches in diameter, respectively.

At Palestine, Tex., three of the longer fragments were tested to destruction in a hydraulic press. The fragment at the receiving end of the rail displayed one additional fissure, crescent shaped. It was a transverse

fissure in an early stage of development. The fragment second from the leaving end of the rail displayed two more fissures having diameters of  $3/8$  and  $5/8$  inches, respectively. Up to this stage the rail was shown to have had seven well defined transverse fissures.

The receiving ends of three of the small fragments were considerably bruised, destroying evidence of the type of fracture which they represented. One other fracture started near the center of the head. It had a starring effect, indicating the incipient point of rupture was near the center of the head. A starring effect, or fracture having a nucleus near the center of the head does not indicate, necessarily, that an embryonic transverse fissure had its locus at that point. The center of the starring is the point where the fracture had its origin. It may be located in some part of the head or in some part of the base, according to the direction in which the rail is broken as a beam, base or head up.

A short fragment of the broken rail, second from the receiving end, as examined for structural condition of the metal in the central core of the head. The top of the head was planed off to a depth of  $5/8$  inch and pickled in hot hydrochloric acid. Two incipient transverse fissures located in close proximity to each other were displayed, about 0.3 inch each in crosswise extent. Evidence was lacking of any shattered core or shrinkage cracks in the middle of the head.

Respectfully submitted,

W. P. BORLAND,

Director.