

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE GRAND TRUNK WESTERN RAILWAY NEAR DURAND, MICH., ON JUNE 5, 1923

JULY 7 1923

To the Commission

On June 5, 1923 there was a derailment of a passenger train on the Grand Trunk Western Railway near Durand, Mich., resulting in the death of 2 passengers, 1 news agent, and 2 employees, and the injury of 25 passengers and 2 employees.

LOCATION AND METHOD OF OPERATION

This accident occurred on that part of the Detroit division extending between Durand and Grand Haven, Mich., a distance of 121.30 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 just east of a highway crossing, at a point 685 feet west of the west yard-limit board at Durand. The track is tangent for a considerable distance in each direction from the point of accident, while the grade is 0.6 per cent ascending for eastbound trains. The track is laid with 80-pound rails, 28 feet in length, with an average of 16 oak, white cedar, and tamarack ties to the rail length, single spiked, and poorly ballasted; no tie plates are used. Under the rules, the speed of passenger trains is limited to 50 miles an hour. The weather was clear at the time of the accident, which occurred at about 9:34 a. m.

DESCRIPTION

Eastbound passenger train extra 5030, a Knights Templars special, en route from Grand Rapids to Flint, Mich., consisted of one baggage car and eight coaches, hauled by engine 5030, and was in charge of Conductor Stevenson and Engineman Pearsall. The first three cars were of wooden construction, while the remainder were of steel-underframe construction. This train left Grand Rapids, 90.51 miles from Durand, at 7:36 a. m., on time, under a special schedule issued on train order No. 155, Form 31, passed Vernon, 3.1 miles from

Durand, at 9 30 a m., according to the train sheet, 4 minutes late, and on reaching a point about 1½ miles therefrom was derailed while traveling at a speed variously estimated to have been from 35 to 50 miles an hour.

Engine 5030 was derailed to the right and came to rest on its right side, parallel to the track, badly damaged 362 feet from the initial point of derailment, while the tender was on the opposite side of the track. The first two cars were destroyed, while the third car was derailed to the left coming to rest leaning to the right with its head end resting on the embankment all except two of the remaining cars were derailed but remained upright. Illustration No. 1 is a general view of the wreckage, looking west. The employees killed were the engineman and fireman.

SUMMARY OF EVIDENCE

Road Foreman of Engines Smith stated that he was riding the engine from the time it left Grand Rapids until the accident occurred but noticed nothing unusual prior to the derailment. He said that between Sarnac and Ionia a distance of 8½ miles, he timed the train, and its speed was 60 miles an hour, also that stops were made en route at Ionia, St. Johns, and Owosso Junction, 57, 31 and about 12 miles from Durand respectively, while at various other places the speed was reduced to comply with slow orders. On passing Owosso the speed was reduced to pick up a slow order and in compliance with this order when coming in to Corunna 8½ miles from Durand. Road Foreman of Engines Smith stated that on passing Vernon the speed of extra 5030 was 50 miles an hour or more, and the first knowledge he had of anything wrong was when the engine was derailed. He considered the track good for 60 miles an hour, noticed no unusual rolling or swaying of the engine and was of the opinion the leading engine-truck wheels were the first to be derailed. None of the other members of the crew was aware of anything wrong until the accident occurred. Trainmaster Dunn and Conductor Stevenson were riding in the baggage car while passing Vernon, and at this point the conductor looked out to observe signals, he estimated the speed at this time to have been about 50 miles an hour, while Trainmaster Dunn thought the speed at the time of the derailment was about 45 miles an hour, also saying that while he thought the track was a little rough in this vicinity he did not think the speed was excessive. Assistant Conductor Rice and Brakeman Potter estimated the speed to have been about 40 miles an hour at the time of the accident. The air brakes on extra 5030 had been tested and worked properly en route, and Trainmaster Dunn and Assistant Conductor Rice said they felt an application of the brakes at the time of the accident.

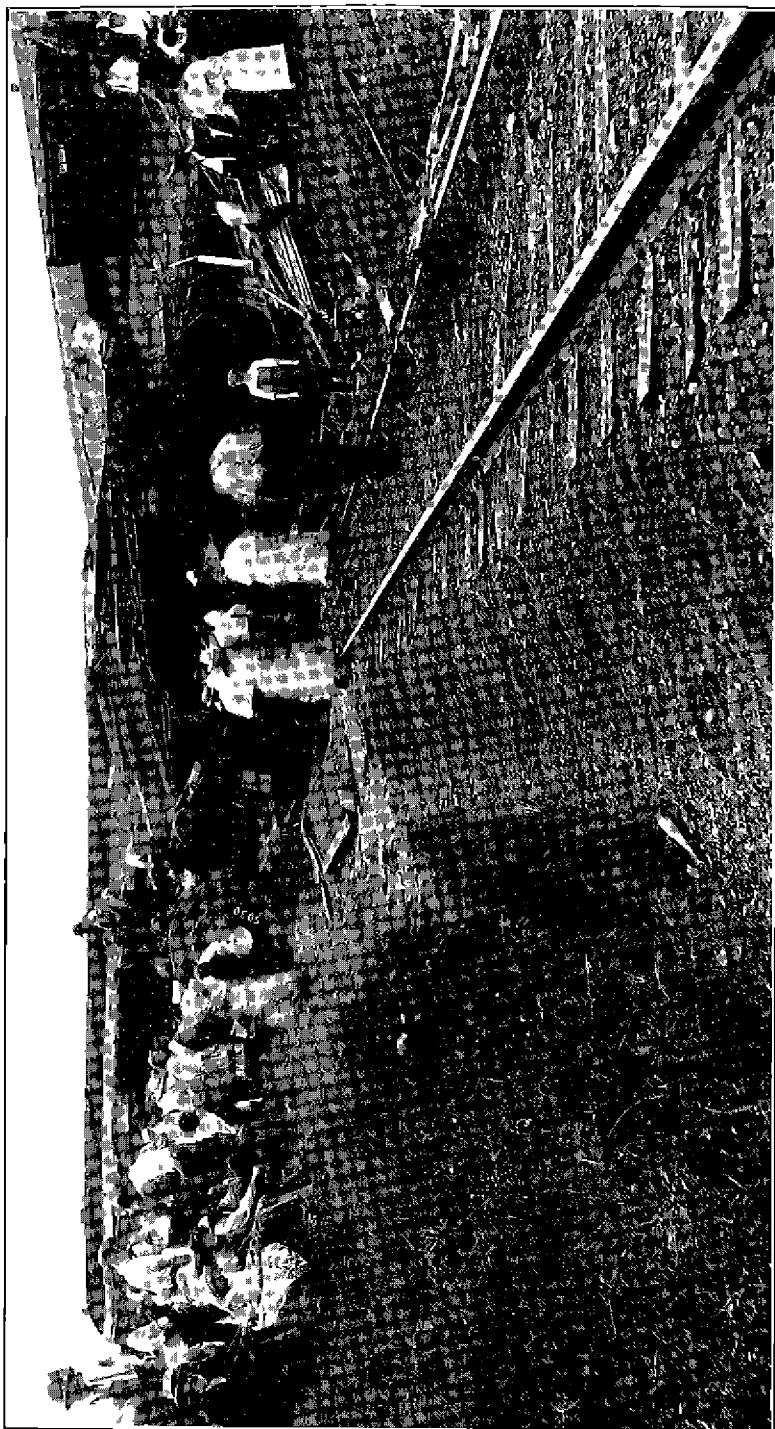


FIG No 1 —General view of wreckage looking west

Track Supervisor Dodge stated that he went over this portion of the track on June 2, and at that time found the track to be in good condition, although he afterwards said that while he did not consider the track west of the point of accident to be a good piece of track he would consider it to be safe. He stated that in December, 1922, when he took charge of this territory, shims were placed under the rails in this vicinity to eliminate low spots, at which time the ground was frozen and since that time there had been no opportunity to raise these ties and spike them properly, owing to so much other work. He also said there were a few broken ties in the track, and that other ties had been cut half in two to seat the rail properly, owing to the track heaving in winter or when changing the rail about 3 000 ties had been ordered for use in replacing defective ties. Supervisor Dodge thought the track was safe for a speed of 45 miles an hour and that the accident was not caused by track conditions.

Section Foreman Fleming, who has charge of about 5½ miles of track in the vicinity of the point of accident, stated he went over the section of track where the accident occurred on the afternoon of the day prior to the accident and at that time it was in good condition in every respect.

Inspection disclosed that at the point of accident and approximately 8 feet from the receiving end of the first rail involved there were wheel-flange marks on the gauge side of the web of the south rail, this rail remained intact at its receiving end, but was gradually twisted to such an extent that the leaving end lay flat on its side. The next rail was turned over, but remained connected to the first rail, while the third rail joint was broken and from this point on, for a considerable distance, the track was torn up and the rails and ties bunched. The splice bars were battered and bolts were broken on the gauge side of the north rails opposite the two south rails which turned over, apparently caused by the wheel flanges of the derailed north wheels of the engine truck, as the retaining-ring rivet heads were burned off the left front wheel, and a somewhat similar condition existed on the left rear wheel of this truck. The wheels on the right side of this truck were not damaged.

The track was poorly maintained and generally in poor condition. At a point 112 feet west of the point of accident two rails on the south side of the track were found to be spread, owing to soft and defective ties, and had been reinforced with tie-plates braced against the outsides of the rails and spiked to the ties. This condition is shown by illustration No. 2. The gauge as a whole however, was reasonably good. The ties were badly rail cut, while many of them were broken and decayed as many as 20 consecutive ties were found, many of them cut 3 inches deep, and including 4 consecutive broken ties under one rail while within half a mile

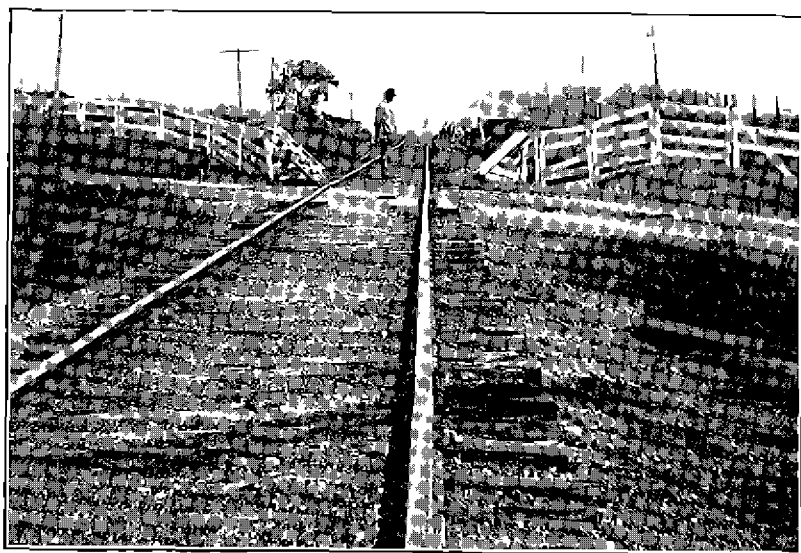


FIG No 2 -Right rail spread just west of point of accident

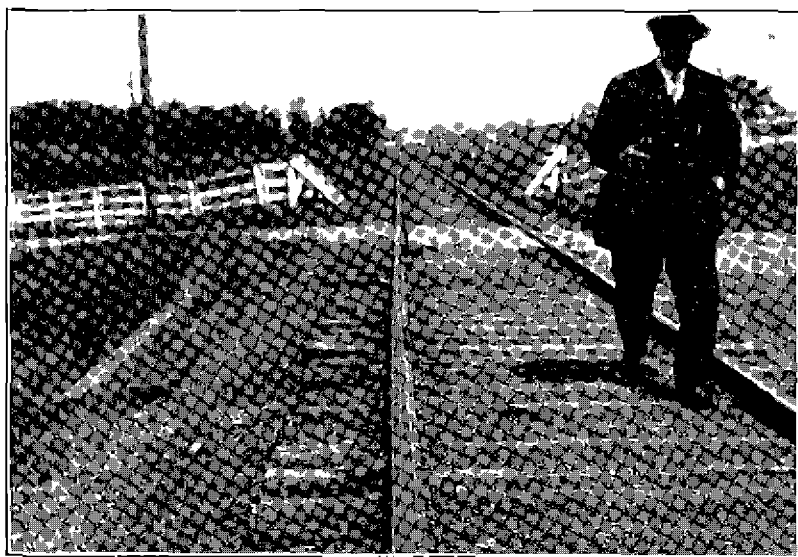


FIG No 3—Spread rail braced with tie plates

west of the point of accident there were found 143 broken and decayed ties in a 30-rail section, these defective ties not being uniformly distributed, as many as 12 being found in one rail section. Illustrations Nos 4 and 5 show decayed and badly cut ties, respectively, some distance west of point of accident. The track was somewhat rough, due to numerous low joints having been shimmed up, nine ties being shimmed up near one rail joint, the shims varying from $\frac{1}{2}$ to $1\frac{1}{4}$ inches in thickness, many loose spikes were also found. The rails were rolled and first laid in 1901, then taken up,

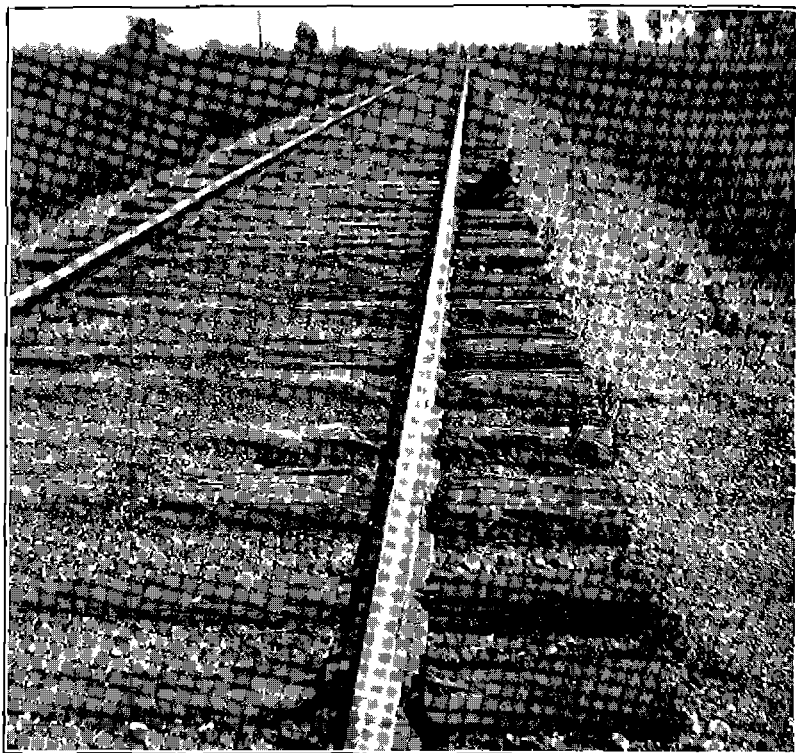


FIG. No. 4—Ties badly decayed and rail cut

sawed, and relaid on this district in 1908. This track was originally ballasted with gravel more than 25 years ago, however, since that time the gravel has disintegrated and mixed with the dirt to such an extent that at present it is of practically no greater value as ballast than natural soil.

Engine 5030 is of the 4-6-2 type and about 25 per cent heavier than the class of engines regularly assigned to passenger service on this district, having a total weight, engine and tender, of 375,000 pounds. Examination showed that all the ties were recently turned

and in good condition and there was but three-eighths inch lateral motion in the engine truck and driving wheel journals. This engine was released from the Battle Creek shops on April 27, 1923, after having had class 3 repairs and between that time and the time of the accident it had traveled about 2,000 miles. A thorough examination of this engine and its appurtenances failed to disclose anything that could have contributed to the derailment.

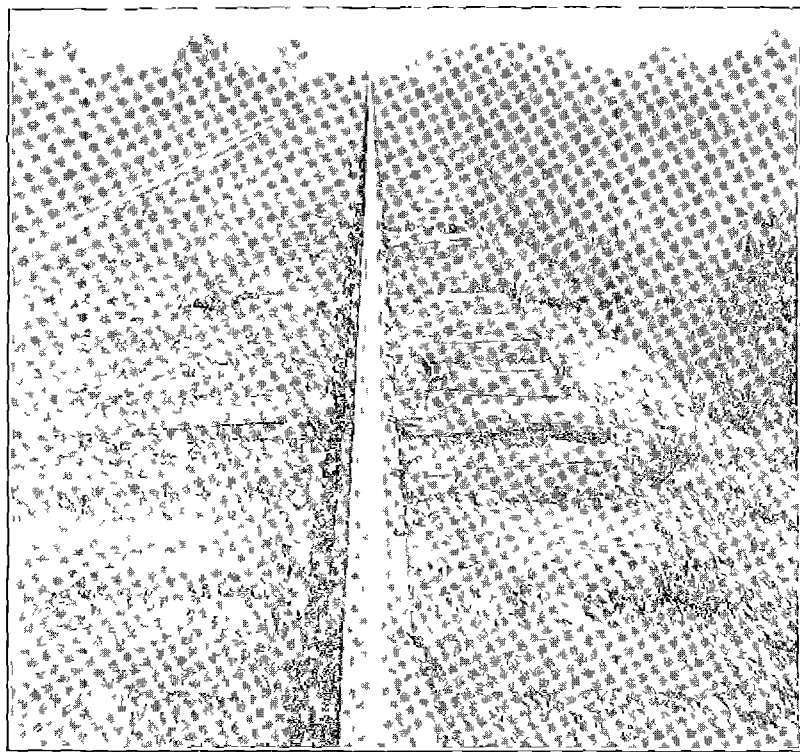


FIG. NO. 5.—Ties which were badly rail-cut used when rails were being moved to new bed.

CONCLUSIONS

This accident was caused by an overturned rail due to the track structure being too weak to support the movement of the train at speed.

Apparently the south rail overturned under the engine owing to the defective condition of the track. The large number of broken, defective and rail-cut ties together with low joints, loose spikes, braced rails, poor ballast, and generally bad track conditions in the vicinity of the point of accident, will not permit of the safe operation of high-speed trains.

In view of the condition of this track, the speed of trains should have been restricted, by slow orders or otherwise, to safe limits. The operating officers of this railway are responsible for permitting these conditions to exist and for allowing trains to be operated at speeds which were excessive in view of the existing track conditions. Steps should be taken immediately to restrict speeds within safe limits and to place this track in proper condition for the operation of trains over it.

All of the employees involved were experienced men. At the time of the accident they had been on duty less than 3 hours previous to which they had been off duty more than 13 hours.

Respectfully submitted

W. P. BORT AND *Director*