

October 17, 1912.

**In re investigation of accident on the Chicago, Milwaukee & Puget Sound Railway, August 12, 1912.**

On August 12, 1912, there was a derailment of a passenger train on the Chicago, Milwaukee & Puget Sound Railway, near Keechelus, Wash., resulting in the death of one passenger and four employees, and the injury of one employee and an express messenger.

After an investigation into the causes and the circumstances surrounding this accident, the Chief Inspector of Safety Appliances reports as follows:

Train No. 15, known as the "Olympian", runs from Chicago, Ill., to Tacoma, Wash. At the time of its derailment this train consisted of one combination mail and express car, one baggage car, one day coach, one tourist car, one dining car, two standard sleeping cars, and one observation car, all of which were of steel construction. It was hauled by two locomotives, regular engine 3013, in charge of engineman Noble, and helper engine 2142, in charge of engineman Townsend. The train was in charge of conductor Hophart. It passed Keechelus at 4:59 p. m., 4 minutes late, and had proceeded 1430 feet west of that point when the accident occurred. The speed of the train at the time of the derailment was estimated to be about 30 or 35 miles per hour.

The accident occurred on a two per cent grade, ascending towards the west, and on a curve of about ten degrees. The western end of this curve is on a wooden trestle bridge 300 feet long which spans a creek 55 feet below the track level, 94 feet of the curve being on the bridge. The track is laid with 65-pound steel rails, 33 feet long, about 20 fir ties being used to the rail. The rails were double-spiked on this curve, and tie plates were used. The track was laid in 1908 and both ties and rails were in good condition at the time of the accident. The track was ballasted with about one foot of gravel ballast.

The first wheels to leave the track were those of the forward tender truck of the leading engine, No. 2142. The first flange mark was found inside the outer rail of the curve and extended for a distance of nearly three rail lengths before marks appeared on the outside of the inner rail. About  $1\frac{1}{2}$  rail lengths from the bridge and 225 feet from the first mark of derailment, the ties began to bunch, and from that point to the bridge the track was badly torn up. This demolition of the track caused the derailment of the second engine, No. 3013, which toppled over into the ravine on the outside of the curve at the approach to the bridge, falling back against the bridge bents and throwing down the entire structure for a distance of 190 feet. The collapse of the bridge caused the first engine, No. 2142, which had entered upon the structure, to fall to the bottom of the ravine.

Engine 2142 turned completely over, and after the accident was found resting on its back at the bottom of the ravine under the bridge, a short distance outside the line of the track on the outside of the curve. Its tender lay about 50 feet away on the same side of the curve, some distance farther from the line of the track. Engine 3013 lay flat on its right side in the creek bed, directly under the bridge and across the track line, with its tender separated from it and lying about 20 feet away from the track line on the inside of the curve. The combination mail and express car went to the bottom of the ravine on the inside of the curve, and after the accident was found standing almost upright with one end lying diagonally across the creek bed. The baggage car lay on its side on the slope of the ravine on the outside of the curve, with its rear end telescoped a short distance into the front end of the day coach, the rear trucks of which remained on the track, as did all the remaining cars in the train. The enginemen and firemen on both engines were killed. The passenger killed was in the day coach.

An examination of the track on this curve after the derailment disclosed considerable irregularity in alignment and in the superelevation of the outside rail. The first mark of derailment was 25 feet west of a kink, which placed the track 4 inches out of proper alignment for a distance of 54 feet. Roadmaster Hunt stated that in his opinion this kink was caused by the leading engine rounding the curve at excessive speed. He considered the curve safe for a speed of 30 miles per hour, and thought the train must have been running 40 or 45 miles per hour at the time of the accident. He considered the superelevation of the outside rail sufficient but stated that it was figured for freight train service. Section foreman Wade stated that the track was in good shape. Six inches of ballast had been placed under the track about two months previous to the accident, and the track had been realigned seven or eight days before. Roadmaster Hunt said he did not consider this a bad curve, but always watched it pretty closely and had given orders to realign it on two different occasions, one about a year previous to the accident and again only a short time before.

After the accident a careful examination of the running equipment of both engines and cars was made, and it was found in first class condition, exhibiting no defects that might have caused the derailment. All the statements of the surviving employees on the derailed train indicate that the train was running much faster than it usually did on that curve. Conductor Gephart stated that they were running about 35 miles per hour when passing through Keechelus, and when approaching the curve he felt a slight application of the air brakes indicating that the engineman intended to reduce speed. He said that had he not noted this intention to slow down he would have applied the brakes himself, as he believed they were exceeding the speed limit and he considered the curve a bad one. He thought the train was running about 25 miles per hour at the time of the accident. Brakeman Marshall did not notice any application of the brakes prior to the accident.

and he thought they were running about 30 miles per hour at that time. Flagman Farnsworth noticed a service application of the brakes before the derailment and thought the train was running 30 to 35 miles per hour when it occurred. Haggagowan Sibley said the train was running about 30 miles per hour. He felt a sudden lurch toward the high side of the curve and the car then went down. Express messenger Thomas made a similar statement.

Train No. 15 does not stop at Keechelus for passengers, but this is the point where the helper engine usually is attached to assist the train over the grade. As a rule, therefore, the speed of the train on the curve in question must have been quite moderate, as its location is on an ascending grade only about a quarter of a mile beyond the depot, and but little more than 700 feet beyond the west switch at Keechelus. On the date of the accident, however, the helper engine was attached to the train at Ole Blum, the subdivision terminal 26 miles east of Keechelus, and no stop or slowdown was made at the place where the helper is usually attached. It is a very rare occurrence for this train to pass Keechelus at speed with the helper engine attached, and it had not occurred since the reballasting and realignment of the curve several months previous to the accident.

The rules of the Chicago, Milwaukee & Puget Sound Railroad governing the speed of passenger trains on this division are somewhat indefinite. As previously noted the schedule time of train No. 15 at the place of the accident was 20 miles per hour. A special rule in the time card states that:

"The speed of passenger trains will ordinarily be that prescribed in the schedule, but in case of delay, requiring greater speed in order to enable trains to make meeting points or to secure connections, the speed may be so moderately increased above that prescribed in the schedule as in the judgment of the conductor and engineer in charge of the train may be safe and prudent due consideration always being given to condition of track, comfort of passengers and all the circumstances."

Another special rule limits the speed of passenger trains to 25 miles per hour through tunnels and requires them "to run slow over high trestles". Train No. 15 was a few minutes late, and there is no doubt that the schedule time was being exceeded in conformity with the provisions of the rule above quoted.

The records of all the employees on train No. 15 were good. Engineman Noble was sixty years old. He was transferred to the Chicago, Milwaukee & Puget Sound from the Chicago, Milwaukee & St. Paul Railway in 1908, and had been employed as engineer on the latter road since 1887. Engineman Townsend

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had had 24 years' experience as an engineer, and entered the service of this company in 1910. At the time of the accident engineman Noble had been on duty 8 hours and 45 minutes, following a period off duty of 18 hours. Engineman Townsend had been on duty 1 hour and 50 minutes, following a period off duty of 11 hours and 55 minutes. The service and rest periods of the firemen were the same as those of their respective enginemen, and the service and rest periods of all the other trainmen were the same as the conductor, namely, 9 hours and 10 minutes on duty after a period of 11 hours and 35 minutes off duty.

This derailment was caused by excessive speed in view of the condition of the track at this place.

The comparatively small number of deaths and injuries which accompanied the accident was undoubtedly due to the superior character of the equipment.

It is believed that in view of the condition of this curve extra precautions should have been taken to insure low speed while rounding it, and the timecard rule of the company, quoted above, was not sufficient for that purpose.