

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
CHICAGO & EASTERN ILLINOIS RAILROAD AT YARD CENTER,
ILLINOIS, ON DECEMBER 31, 1920.

February 24, 1921.

On December 31, 1920, there was a derailment of a passenger train on the Chicago & Eastern Illinois Railroad at Yard Center, Ill., resulting in the death of 2 employees. After investigation of this accident the Chief of the Bureau of Safety reports as follows:

The Danville District, Chicago Division, on which this accident occurred, extends from Yard Center to Danville, Ill., and is a double-track line over which trains are operated by an automatic block-signal system and an automatic train-control system. At the point of accident there are four tracks, the two outside tracks being yard leads and the two middle tracks being main-line tracks. At the point of accident and for some distance in each direction the track is tangent and the grade level

At Yard Center, there is an electric interlocking plant, from which are operated signals and switches governing both main-line movements and switching movements to the southbound yard, which is west of the main tracks and north of the tower, and the northbound yard, which is east of the main tracks and south of the tower. The main line switches at this point are double slip switches with moveable-point frogs. The time-table instructions prescribe speed restrictions at Yard Center of 20 miles an hour over slip switches in main track movements and 5 miles an hour through cross-

overs through slip switches. The derailment occurred at the east point of the movable frog of the double slip switch in the southbound track at Yard Center. The points of this frog were connected to a switch box through which the circuits of the interlocking signals were controlled. At the time of the accident the weather was clear.

The train involved in this accident was No. 21, consisting of engine 617, 1 baggage car, 1 combination mail car and coach, 1 coach, 1 chair car, 1 dining car, and 1 parlor car, in the order named, all cars being of wooden construction. This train, with Conductor Lockhart and Engineer Stoner in charge, left Chicago, at 10 a. m., and was derailed while passing through a double slip switch at Yard Center at about 10.45 a. m. The rate of speed at the time of the derailment was variously estimated by different employees at from 20 to 50 miles an hour.

The engine was first derailed, but continued running along the ties and across the northbound track in an upright position for a distance of 330 feet, it then turned over on its right side, sliding along the track for a further distance of 160 feet, and it came to rest across the northbound main track and the yard lead track of the northbound yard, 490 feet south of the point of derailment. The tender was carried along with the engine and came to rest on its side opposite the engine and across both main tracks. The baggage car was derailed and came to rest in an upright position clear of the southbound main track. The remainder

of the train passed over the switch, but was derailed on the left side of the track on account of a rail south of the switch which had been turned over by the derailed locomotive, the cars remained in upright position and in line with the southbound track. The employees killed were the engineman and fireman.

The investigation disclosed that prior to the arrival of train No 21 a yard engine had been switching a cut of 35, or 40 cars, mostly open-top cars and the turn-out track of the slip switch where the derailment occurred was used for a period of about 20 minutes during this switching operation. When lining up the route for train No 21 it was only necessary for the operator to line up the south end of the slip switch and clear the signal, the moveable point frog being properly set for a through southbound movement. This was done and the signal cleared properly for the approaching southbound train.

After the accident a 3/8" nopper-car-door chain was found on the track immediately back of this frog. This chain had evidently been dragging from one of the cars being switched over this track before the arrival of train No. 21 and had caught between the frog point and the stock rail. The links had been stretched out indicating that the clevis on one end of the chain had been caught in the angle formed by the heel of the frog point and the stock rail, and became wedged in with considerable force before the chain pulled loose from the car. However, as the signal governing the

southbound movements cleared properly when the route for train No. 21 was set up, it was evident that the moveable point was not forced open sufficiently to operate the switch box and open the circuits controlled thereby.

There was a flange mark on the end of the frog point, close to the gauge side, and the frog point was bent toward the gauge side of the stock rail. After the accident the switch stood with the point $1/2$ inch from the stock rail, while the back of the filling rail attached to the frog point was, about $1\frac{1}{2}$ inches from the stock rail. The spread bar and throw bar of the frog point were broken near the opposite rail.

The investigation indicated that the interlocking plant at this point was maintained in good condition. The moveable frog involved had been in service only about three weeks; the switch had been examined by the maintainer in the morning prior to the accident and was found in proper condition. The locomotive had recently been overhauled and no defect in its equipment was found which could have contributed to this accident.

The conductor and brakeman of train No. 21 estimated that their train was running at about the usual rate of speed, or 20 or 25 miles per hour, at the time of the derailment. The towerman and signal maintainer at Yard Center, however, stated that the train was running at an unusually high rate of speed, which they estimated to be between 40 and 50 miles per hour.

This accident was caused by a moveable point frog being obstructed by a car-door chain.

The manner in detail in which this chain caused the derailment is largely a matter of conjecture. In view of the number of rail sections at the frog of a double slip switch, it is altogether probable that a portion of the chain lay on top of the frog point and adjacent rails. As the passenger train approached, the pony truck wheels upon striking the chain may have jumped up, coming down on the wrong side of the frog point rail, thereby diverting the locomotive from the main track, in which case the frog point was probably struck by one of the driving wheels; or the chain when struck by the pony truck wheels may have been forced downward between the frog point rail and the stock rail, opening the point sufficiently to be struck by the following wheels.

The distance the locomotive travelled after being derailed, together with the statements of the towerman and signal maintainer, indicate that train No 21 was running at comparatively high speed at the time the derailment occurred and that the speed restriction of 20 miles per hour for main line movements at this point was not observed. Had this speed restriction been observed it is probable the results of the accident would have been less disastrous.

The conditions which led to the occurrence of this accident were that a hopper-car-door chain was hanging loose with one end dragging on the track while the car was

being moved. The possible dangers which may arise as a result of this condition are apparent and all possible precaution should be taken, both by responsible operating officers and by train service employees, to make certain that equipment of this character is in secure and safe condition before cars are moved.