IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, BURLINGTON & QUINCY RAILROAD NEAR CURTIS, NEB., ON FEBRUARY 20, 1918.

March 15, 1918.

On February 20, 1918, there was a derailment of a passenger train on the Chicago, Burlington & Quincy Railroad near Curtis, Neb., which resulted in the death of 2 passengers, serious injury of 9 passengers and 1 employee, and slight injury of 33 passengers and 3 employees. After investigation the Chief of the Bureau of Safety reports as follows:

The division on which this accident occurred is a single-track line extending between Holdredge, Neb., and Sterling, Colo., a distance of 229.5 miles, over which trains are operated by time-table, train orders transmitted by telegraph, and a manual block system. By rule a train may be permitted to follow a freight train into a block 10 minutes after the departure of preceding train under permissive signal, or with permissive card, when authorized by train dispatcher.

The derailed train was westbound passenger train No. 151, en route from Holdredge to Sterling, and consisted of locomotive 667, 1 combination mail and baggage car, 1 baggage car, 1 smoking car, and 2 coaches, all of the cars being of wooden construction. This train was in charge of Conductor Griffith and Engineman Snyder, and left Moorefield, Neb., at 11.40 a.m., 25 minutes late, and was derailed at a point about 5 miles west of there, or about 5 miles east of Curtis, at about 11.57 a.m., while running at a speed estimated to have been about 35 miles an hour.

The cars left their trucks, rolled down a 15-foot embankment to the south, caught fire from their overturned stoves which were used to heat them, and were destroyed. The locomotive broke loose from the train and ran for a distance of about 200 feet before coming to a stop.

Approaching the point of accident from the east there is a 3-degree curve to the left 1,200 feet long, then a tangent 460 feet long, then a 3-degree curve to the right 1,154 feet long, then a tangent 1,680 feet long. The accident occurred on the 3-degree curve to the right and on a descending grade of 1%. The track consisted of 75-pound steel rails, 30 feet in length, 6-hole angle-bars and fully bolted, single-spiked without tie plates or braces, and about 17 ties under each rail. The superelevation at point of accident was about 2-1/4 inches. No ballast was used and the surface and alignment of the track were in fairly good condition. The section of track on which this accident occurred consisted of 7 miles of main

track and 1 6 miles of side track, and was in charge of the section foreman and from one to three laborers. The weather at the time was cloudy and a light snow was falling.

An examination of the track indicated that at a point about 120 feet east of the west end of the right-hand curve the south or outside rail had spread, and the first marks on the ties on the south side of track were 240 feet further west. There were flange marks on the ties just inside the north rail 150 feet from first indication of derailment, then for 325 feet there were flange marks on the inside web of the south rail, indicating that this rail turned over, the spikes on the inside being pulled up about 1-1/2 inches and the outside spikes pushed outward; the angle-bars then broke and the south rail was forced off the roadbed and down the embankment. The track was torn up for about 600 feet, and 17 rails were turned over, 5 of which were pushed down the embankment.

Conductor Griffith stated that he was standing in the front end of the smoking car, when he noticed a severe application of the air brakes and first thought some one had tried to cross the track in front of the train and the engineman had applied the air brakes in emergency, the speed of his train being about 35 miles an hour at the time. He later learned that the train had been derailed and thought the first car to be derailed was the baggage car. In passing over this section of track on previous occasions he had not noticed anything wrong with it, and thought it was safe for a speed of 35 miles an hour.

Engineman Snyder stated that after leaving Moorefield and his train was running at a speed of 30 or 35 miles an hour, he felt the air brakes being applied in emergency and thought that an air hose had broken in two, but on looking back saw that all the cars had been derailed; the locomotive broke loose from the remainder of the train and ran for a distance of about 200 feet before coming to a stop. He said that the wheels on the locomotive were in good condition, there was no excess lateral motion in the driver boxes; neither did he notice any unusual roughness or other condition of the track, and thought it was safe for a speed of 35 miles an hour. He stated that the locomotive was equipped with a speed recorder but it had become inoperative some time prior to the accident.

Fireman David stated that he thought the speed of his tra at the time of the derailment was about 25 miles an hour. He said the track was rough in spots, and in his opinion the accident was caused by a spread rail.

Section Foreman Dahlenburg, in charge of the section upon which the accident occurred, stated that he went over this part of the track about three weeks prior to the accident, gauged it, and found it was about one inch wide at the curve where the accident occurred. He also went over this section of track on the afternoon of February 18th, and found one place near point of accident where the rail was working loose and spiked it. He said he usually went over the track every day, and whenever he saw a place that looked a little too wide he gauged it; at the points where he found the track wider than was proper he double-spiked it and at other places it was single-spiked. He said he arrived at the scene of accident less than an hour after its occurrence, inspected the track, found one of the rails turned over, and there were flange marks there for about two or three rail lengths. He could not say what caused the accident, but did not think it was caused by spread track. He saw some marks on the ties which he did not think were caused by wheel flanges but did not find anything dragging under the train or anything about the equipment that could have derailed it. In his opinion the last car of the train was the first to be derailed, and the entire train ran about 300 feet before coming to a stop. He said the ties were in good condition, were not bunched, and had there been something dragging under the train it would have caught and bunched them.

Roadmaster Brennan stated that he had ridden over this portion of track several times prior to the accident and had not noticed any unusual conditions. He arrived at the scene of accident about one hour after it occurred, examined the track and found the rail on the outside of the curve turned over, with indentations on its web for a distance of about 360 feet, and the spikes on inside of rail pulled up about 1 or 1-1/2 inches. He said the ties had been in place about 12 years and the most of them were in good condition. He stated that he saw marks on the south rail indicating that a pair of trucks had crossed it. He could not say definitely what caused the derailment, but was satisfied that something dropped down from the train, probably a sandboard, and lifted a pair of wheels off the track, but could find nothing to indicate that such was the case, not even a broken brake rod.

This accident was caused by the rail on the outside of the 3-degree curve spreading and turning over. The condition in which the track was found, and the fact that the rail on the curve was crowded outward and turned over clearly established that this accident was due to the poor condition of the track.

A careful examination of the wheels, flanges and other parts of the train failed to reveal anything that should have caused the derailment; neither were there any indications that anything had been dragging under the train before the derailment occurred.

The track in the vicinity of the accident was inspected after the accident and it was found that the rails had worked loose in the spikes, that they were from one to two inches out of gauge. The rails were found to be insufficiently spiked on the curve and many of the spikes had worked up from 1/4 to 1 inch.

At the time of the accident the engine crew had been on duty 4 hours and 30 minutes, and the train crew 3 hours and 55 minutes.