No. 278

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY NEAR RANIER, WASHINGTON, ON JULY 3, 1915.

On July 3, 1915, there was a derailment of a passenger train on the Chicago, Milwaukee & St. Paul Railway near Ranier, Wash., which resulted in the death of 3 employees and the injury of 12 passengers and 3 employees. After investigation of this accident, the Chief of the Division of Safety reports as follows:

At a point three-fourths of a mile west of Ranier, the track of the Chicago, Milwaukee & St. Paul Railway crosses the track of the Northern Pacific Railway by means of a wooden trestle. Westbound Northern Pacific freight train No. 963 consisted of 41 cars and a caboose, hauled by locomotive 161 and was in charge of Conductor Heather and Engineman O'Leary. The twenty-fifth car in the train was an Ohio steam hoisting crane mounted on a flat car 33 feet in length. The boiler, engine and cab were on a revolving table and counter-balanced the weight of the 45-foot boom on the forward end of the car. As the crane was handled on train 963, the boom extended toward the rear. It was loaded on an adjoining flat car with its rear end detached from the crane. The revolving table was fastened by means of a lever hand brake located in the cab; two five-eighths inch hooks which passed through anchor straps on the end of the car body and were inserted into the corners of the ash pan, and four 4 x 4

inch blocks driven between the car body and the cab.

Train No. 963 left Tacoma, Wash., at 6.00 a. m. and passed Yelm, the last open telegraph office, about 5 miles east of the trestle of the Chicago, Milwaukee, & St. Paul Railway at 8.30 a. m. The fastenings used to hold the revolving table in place were evidently insufficient and in passing around a curve of 3 degrees immediately east of the trestle, at which time the speed of the train was about 13 miles per hour, the revolving table turned enough to allow the corner of the cab to strike and knock out some of the pilings supporting the trestle. The rotation of the table disturbed the three rods attached to the forward end of the boom, pulling it around to the opposite or right side of the train, and knocking out three of the bents supporting the trestle. The flagman riding in the cupola of the caboose observed the accident and applied the air brakes by [illegible] engineer's emergency valve, and the train was brought to a stop with the crane car 528 feet beyond the trestle. The flagman then took a red flag and went to the eastern end of the trestle, climbed the embankment and walked out on the trestle about 250 feet. He remained there until he saw Milwaukee passenger train No. 115 approaching about one-half mile away. He then started toward it, waving his red flag and had just reached the end of the trestle in time to get off before the train passed him at a speed estimated by him to have been about 20 miles

per hour.

Westbound passenger train No. 115 consisted of 1 combination car, 1 coach and 1 chair car, all of reinforced wooden construction, hauled by locomotive No. 2328 and was in charge of Conductor Truber and Engineman Baldwin. It left Seattle at 7:20 a. m., passed McKenna, the last open telegraph office, 7 miles from the trestle, at 9.50 a. m., 6 minutes late and was derailed at the trestle at about 9.58 a. m. at a point about 340 feet west of its eastern end. The speed at the time of derailment had probably been reduced to 10 or 12 miles per hour.

The locomotive and first two cars went through the trestle, while only the forward trucks of the chair car were derailed, this car remaining on the trestle about 60 feet from the opening. The engine came to rest on the right side of the trestle about 25 feet from the Milwaukee track and 40 feet fro the Northern Pacific track. The tender broke away from the engine, and landed on the ground close to the right side of the trestle. The combination car fell on the Northern Pacific train underneath, landing on the second and third cars from the caboose, with its rear end on the ground. The coach fell to the ground on the left side of the trestle, landing nearly on its side and being demolished.

This part of the Chicago, Milwaukee & St. Paul Railway is a single-track line, trains being operated under the manual block signal system. Approaching the trestle

from the east, the track is on a tangent 5,089 feet in length and on an ascending grade of about one-half of one percent. The weather was clear.

Flagman Russell of the freight train, who was a promoted conductor, stated that he was in the cupola of the caboose when he saw the crane turn around just as it reached the trestle, the corner of the cab striking some of the piling. He thought the speed of the train at this time was about 18 miles per hour. He then applied the air brakes, the train coming to a stop with the second car from the caboose under the trestle. He gave a red flag to the watchman of the contracting company whose outfit made up a part of the consist of the train, and told him to go back on the Northern Pacific track and flag any train that might approach. He himself took another red flag and ran toward the eastern end of the trestle, which was nearer to him. In order to reach this point, he had to climb over two fences and up a steep embankment at the end of the trestle. He then looked in each direction and as he had to protect the track from trains approaching from either direction, and as he did not know from which direction the first train might approach, he walked out toward the center of the trestle. He had not been standing there more than 10 seconds when he saw the passenger train approaching at least one-half mile distant. He then started toward the end of the trestle as fast as he could, waving the red flag at the same time. He only had time to reach the end of

the trestle and jump from the track before the passenger train passed him at a speed estimated by him to have been about 20 miles per hour. He did not think the engineman of the passenger train saw him until but a short distance away, as the only whistle signal heard by him, the two short blasts acknowledging his stop signals, was sounded when the passenger train was within 300 feet of the trestle. Flagman Russell further stated that not five minutes elapsed between the time the trestle was damaged by the crane and the time the passenger train was derailed; he did not think the interval was more than three minutes. He did not look at his watch at any time.

The other brakemen and the conductor of the freight train were riding on the head end, and on account of a curve in the track a short distance beyond the trestle were out of sight and not aware of the nature of the accident to the freight train, and therefore were not in position to assist in flagging trains on the Milwaukee track.

Engineman Calahan of the Northern Pacific train stated that the speed of his train was between 10 and 12 miles per hour when it passed under the bridge. When the brakes were applied he placed the brake valve in the full release position, thinking the train had broken in two.

Conductor Heather of the Northern Pacific Railway stated that he did not look at his watch, but thought that the accident to his train occurred at 9.55 a. m. When the air

brakes were applied he thought the train had broken in two. The engine continued to work steam, the train running about 15 car lengths before being brought to a stop. The engineman sounded the whistle signal for a train broken in two and he himself started back toward the rear end. After walking about 8 or 10 car lengths he reached the straight portion of the track and saw the flagman on the trestle near the center, waving his red flag as he ran toward the eastern end. He did not think more than 5 minutes elapsed between the two accidents.

Brakeman Stoddard of the freight train stated that he was riding with the conductor on the fourth car from the locomotive and after the train had been brought to a stop he walked back about 10 or 12 car lengths and saw the flagman standing on the Milwaukee trestle. After a few seconds the flagman started to run toward the end of the trestle; this was after the passenger train had whistled. He stated that the engine on the passenger train whistled at two different times, the whistle in answer to the flagman's signals apparently being sounded when 250 or 300 feet from the bridge, this whistle consisting of 2 short blasts. Head Brakeman Kilhall corroborated the statements of Brakeman Stoddard. None of the employees on the freight train looked at his watch, and consequently none of them knew the exact time at which either of the two accidents occurred.

John Burke, a watchman employed by the contracting company, stated that the concern had 18 cars in the train. His duty was to watch these cars and to see that nothing was

taken from them. He was riding in the caboose when the crane damaged the trestle and saw Flagman Russell apply the air brakes. The flagman then gave him a flag and two torpedoes and he went down the Northern Pacific track to stop any train which might approach. The last he saw of Flagman Russell, the latter was climbing the embankment at the end of the trestle. He thought that about 4 or 5 minutes elapsed between the time of the accident to the freight train and the time the passenger train approached. He further stated that a board had been placed over the boom at each end of the car, these boards extending across the car from one stake to another and being placed there for the purpose of preventing the boom from being raised; he did not know whether or not they would prevent the boom from swinging to either side. The car stakes were high enough, however, to be encountered by the boom should it swing to either side. At Tacoma he saw car inspectors inspecting the crane, but stated that he had no conversation with any representative of the Northern Pacific Railway relative to the condition of the equipment. He passed the crane two or three times between Tacoma and Ranier but did not notice anything wrong at any time.

Charles Olson, a steam engineer employed by Porter Brothers, stated that he loaded the crane for shipment. Before disconnecting the boom the crane was blocked up between the deck of the car and the revolving table with 4 wooden blocks measuring 4x4 inches, varying in length from 17 inches to 2½ feet. The crane also was secured by the friction brake in the cab, and on

the rear by hooks which he made out of five-eighths-inch iron. The hooks were fastened to the corners of the ash pan and from there extended into the car body, one hook being on each side. These hooks were drawn tight, 2 nut locks being used on each rod. The forward end of the crane was not secured in any manner. He thought the weight of the boiler and machinery in the end which had been fastened, would aid materially in holding it stationary after the boom was disconnected. He was positive that the friction brake controlling the lowering or raising of the boom and the brake controlling the movement of the revolving table were set when leaving the Northern Pacific yard at Tacoma. He did not know whether the boom was anchored on the flat car, but thought it was anchored on one end by means of a chain. The cable between the revolving table and the end of the boom was slack enough to allow the table to turn at least 45 degrees before the cable would tighten. After the accident he examined the hooks and found them to have been straightened out. He had had 10 or 12 years experience in loading machinery but had never loaded or witnessed the loading of a crane of this character.

Conductor Truher of the passenger train stated that he was riding in the day coach when he heard the engineman sound his whistle in answer to the stop signals of the flagman of the freight train, the air brakes being applied in emergency at the same time. He went to the vestibule and upon opening the trap door saw that the train was approaching the trestle and that a

freight train was standing on the Northern Pacific track underneath. He then closed the trap door and was back inside of the car when it fell from the trestle. After he had been helped out of the car after the accident, he looked at his watch and it was then exactly 10 o'clock. He further stated that his train was about 30 rods from the trestle when the engineman sounded the whistle and applied the brakes, at which time the speed was about 40 or 50 miles per hour. He did not think the speed at the time of the derailment was over 10 miles per hour.

Brakeman Fisher of the passenger train stated that he was riding in the middle of the second car on the left side. The engineman did not sound any whistle signal in answer to the flagman and the first thing he knew was when the air brakes were applied in emergency. There is a public highway about one-half mile from the trestle and the brakes were applied about one-half minute after passing this crossing. He thought this was about 10 seconds after the engineman had sounded the station whistle. After the brakes were applied, he looked out of the window and saw the Northern Pacific train standing on the track below, the car in which he was riding being thrown from the trestle a few seconds thereafter. He thought the speed was between 50 and 60 miles per hour when the brakes were applied. He had not looked at his watch since leaving the last station and did not know at what time the accident occurred. On getting out of the car after the accident, he climbed up to the Milwaukee track and started back to flag. After he had started

back he looked at his watch and it was then 10.05 a. m. From this he figured that the accident occurred about 10.00 a. m., or a minute or two before.

C. M. Thomas, an express messenger on the passenger train, stated that he heard the engineman acknowledge the stop signals of the flagman, the air brakes at once being applied in emergency. The speed was reduced very rapidly, and he thought the train would stop before anything would happen. He further stated that the train was flagged within 200 or 300 feet of the trestle, as he only had time to go to the door before the train reached the eastern end of the trestle.

J. J. Hubbard, who reached the point of accident a few minutes after the passenger train had been derailed, stated that he asked the fireman if he saw the flagman and he said he had, but not in time to stop the train.

F. D. Campbell, General Car Foreman of the Milwaukee, stated that the cables should have been disconnected from the boom when it was shipped, while the table should have been chained so that it could not swing. He stated that he did not think the hooks on this crane were adequate, being improperly made, not large enough and not having turnbuckles for the purpose of making them tight. The table was not anchored at both ends and its motion was sufficient to pull the hooks out and allow it to swing. The hooks were not straightened but had apparently given away about three-fourths of an inch, this looseness finally allowing them to work out. He thought that they had been straightened to this extent by the motion

of the car. The fastening on the left side apparently had been working loose and when the curve was reached it gave way, allowing the crane to turn. He found only one piece of blocking measuring 3½ x 3½ inches, and about 17 inches in length; this block did not show any signs of having been driven with a hammer. The crane was improperly fastened and would not have been accepted for shipment by most railroads.

General Car Foreman Mulvey of the Northern Pacific Railway stated that he did not see the crane before it left Tacoma, but that his inspector had inspected it the previous night and considered it safe to transport. He further stated that he visited the scene of the accident and that in his opinion the hooks should have held the crane. He further stated, however, that the railroad had several cranes used by it in ditching service and that when they were transported they were chained with a heavy chain extending from one side to the other. The inspectors who inspected the crane car stated that it was all right as far as they knew.

The crane involved in this accident was mounted on a steel car which had a width of 8 feet 10 inches. The cab containing the machinery for handling the crane was 10 feet in width and 15 feet 4 inches in length. The cab is built on a roller rotating device fastened to the car body with a cast steel center, weighing 1,100 pounds. It is equipped with a friction clutch hand brake, designed to hold the cab in a stationary position. This hand brake is operated by a lever

worked in a quadrant. This quadrant has but one notch in it, located in the center, and when the lever is in this notch the brake is in the release position. When the lever is moved in either direction from the center there is no way of locking or fastening it. When the brake is intended to be applied, the lever is pushed forward. On the day of the accident this lever had been pushed forward and tied by means of a small rope fastened to a piece of iron extending across the cab. Two bolts five-eighths inch in diameter and 31 inches in length had been bent at the ends to form hooks to insert in the corners of the ash pan. After the accident the hook on the left side was found to be open 6⅛ inches, while the hook on the right side was open 5 inches.

The trestle involved in this accident consisted of 46 bents and had a total length of 756 feet 1 inch, with a vertical clearance above the rails of the Northern Pacific Railway of 21 feet 10¼ inches, and a horizontal clearance of 6 feet 3 inches outside the guage of the rails. The chief carpenter of the Chicago, Milwaukee & St. Paul Railway stated that the trestle was last inspected by him on June 23, at which time it was in good condition.

This accident was caused by 4 of the bents supporting the trestle of the Chicago, Milwaukee & St. Paul Railway being knocked out by a crane which was being transported in a Northern Pacific freight train passing underneath the trestle, this crane not having been properly secured prior to the

departure of the freight train from its terminal. The responsibility for the insufficient fastening of the crane would appear to rest equally with the employees of the contracting company who loaded and fastened the crane for shipment, and with the inspectors of the Northern Pacific Company who inspected the crane after it had been loaded and fastened.

The evidence indicates that the passenger train was derailed about 5 minutes after the trestle had been damaged and that the flagman of the freight train made every reasonable effort to protect trains of the Chicago, Milwaukee & St. Paul Railway. Not knowing from which direction trains might approach, the flagman was obliged to remain at the trestle. On account of a curve in the track just beyond the trestle, the trees and shrubs formed a dark background and undoubtedly made it difficult for the engine crew of the passenger train, which was approaching at a high rate of speed, to see the flagman or his signals, when their train first reached the tangent track approaching the trestle.

All of the employees involved were experienced men, and none had been on duty in violation of any of the provisions of the Hours of Service Law.

block system as operated at this point is inefficient, improperly operated and fails entirely to accomplish the purpose for which the block system is intended. It also develops that there is a habitual non-observance both of block rules and speed restrictions, of which condition operating officials could not fail to have full knowledge. The lax methods of block signal operation disclosed, involving a violation of the most primary requisites of safety, can not be too strongly condemned. For the prevention of similar accidents those in authority on this railway should immediately take whatever steps may be necessary to secure a proper observance of the company's operating rules.