

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE  
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON  
THE BOSTON & MAINE RAILROAD NEAR FARMINGTON, N. H.,  
ON JULY 22, 1928.

September 12, 1928.

To the Commission:

On July 22, 1928, there was a derailment of a mixed train, consisting principally of circus equipment, on the Boston and Maine Railroad near Farmington, N. H., which resulted in the death of 4 circus employees and the injury of 8 circus employees.

Location and method of operation

This accident occurred on the Lakeport Branch of the Portland Division, extending between Lakeport and Dover, N. H., a distance of 45.17 miles, 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 at a point approximately 2 miles south of Farmington, approaching this point from the north the track is tangent for a distance of approximately 3,000 feet, followed by a  $0^{\circ}55'$  curve to the right about 2,200 feet in length, the accident occurring on this curve at a point about 1,250 feet from its northern end. The grade for southbound trains is generally descending to within a distance of about 3,000 feet north of the point of accident where it ascends at the rate of .02 percent, the accident occurring at the apex of this ascending grade.

The weather was cloudy at the time of the accident, which occurred at about 11.31 a. m.

Description

Southbound circus train extra 1363-1372 consisted of 1 stock car, 16 freight cars, 2 coaches and a caboose, in the order named, hauled by engines 1363 and 1372, and was in charge of Conductor Carne and Enginemen Sargent and Willis. This train left Lakeport, 17.52 miles north of Farmington, at 9.47 a. m., and was derailed shortly after passing Farmington while traveling at a speed estimated to have been between 20 and 25 miles per hour.

The 6th to 9th cars, inclusive, and the forward truck of the 10th car were derailed, the 6th and 7th cars coming to rest at right angles to and across the track, while the 8th and 9th cars came to rest almost parallel with the track, the derailed equipment was considerably damaged.

#### Summary of evidence

Engineman Sargent, in charge of the leading engine, stated that on arrival of his engine at Lakeport after its northbound trip for the purpose of hauling the circus train southward, his engine assisted in switching the equipment of that train for loading the cars and assembling the train. As soon as this work had been completed an air-brake test was made, which proved satisfactory, and his train started southward. At Black Brook crossing, a highway crossing located about one-half mile from Lakeport, a stop was made in order to flag the crossing, and in accordance with the conductor's instructions another application of the brakes was made as an additional test. The conductor, who had been riding on the engine, got off at the crossing and as the train passed that point the conductor inspected the equipment after which the conductor signalled him, as pre-arranged, that every thing was all right. While descending the grade north of the point of accident he made several applications of the brakes to steady the train and keep its speed below the maximum permitted, which was 25 miles per hour for the class of train he was handling. His first warning of anything wrong was when the air brakes applied in emergency at the point of accident at which time the train was drifting, with the air brakes released, at a speed of not more than 25 miles per hour, he immediately placed his brake valve in lap position and upon looking back he observed what had occurred. Engineman Sargent said that there had been no rough handling of the train at any time, and that he noticed nothing wrong with the track either on the northbound trip or as his engine approached and passed the point of derailment immediately prior to its occurrence.

Fireman Bickford, of the leading engine, and Engineman Willis and Fireman Barry, of the second engine, substantiated the statements of Engineman Sargent as to the speed and the handling of the train prior to the accident. These employees further stated that shortly after the accident the forward portion of the train was moved to Rochester, 7.6 miles south of Farmington, and at that point they inspected the rear car in the cut and

found the drawbar missing from the rear end of the car while the drawbar in the forward end of the same car was found with the coupler key about one-half way out of the coupler, the bolts or cotter keys which had held it in place being missing.

Conductor Came stated that after the train was coupled up at Lakeport an air-brake test was made and he personally noted that the brake on each car was operative. He said that no car inspector assisted in making this test, although while the train was being assembled he saw a man, whom he thought was a car inspector, engaged in measuring the loaded cars for clearance. Before the train proceeded over Black Brook crossing he instructed the engineer of the leading engine to make a running test of the brakes and as each car passed over the crossing he inspected it to assure himself that everything was safe. From Alton Bay, a point 17.08 miles south of Lakeport, he rode on the leading engine and during that time he observed the handling of the train which was operated carefully, and at no point did the speed exceed the prescribed limit of 25 miles per hour, the speed at the time of the accident being from 23 to 25 miles per hour. He accompanied the forward portion of the train to Rochester where he noted the defective condition of the rear car in the cut, later returning to the scene of the accident with the wreck train and upon making an inspection he found a drawbar lodged in the track under what had been the 10th car in the train which in his opinion was what caused the derailment. He then walked northward past the rear of the train where the section foreman handed him a drawbar cross key which apparently was lost from the drawbar found under the train.

The statements of Frank Newling and Florian Hart added no additional facts of importance, their testimony with respect to the speed and the handling of the train being practically the same as the other members of the crew.

Car Department Foreman Gavitze stated that he inspected the circus equipment involved at Nashua, N. H., on its arrival at that point and again before its departure on July 8 and found all of the coupler cross keys and attachments in good condition, further stated that some of the cross keys were secured by bolts and nuts, some with cotter keys while others were secured with pieces of metal, the ends of which were through both bolt holes; there was no uniform method used to keep the cross keys in place. Wreck Foreman Scragg stated that he made an

inspection of this equipment at Dover, N. H., on July 9 and at that time the couplers and their attachments appeared to be in perfect condition.

Car Inspector Thompson, who had had six years' experience as an inspector, stated that on July 17 he made a thorough inspection of the circus-train equipment at Lakeport and at that time found no major defects in the coupler cross keys or their attachments. He did, however, find that the bolts in some of the cross keys were worn to some extent while some of the cotter keys which had been used to secure others were slightly bent; they were not in such condition, however, as to warrant replacing them. He also said that on July 22 he made an inspection of this train at Lakeport for clearances after the cars had been loaded but did not make an inspection of the equipment before it left that point, giving as his reason for not doing so the fact that he left Lakeport prior to the departure of the train under instructions from the trainmaster to proceed to Laconia, about 1½ miles southward, for the purpose of inspecting another circus train.

Assistant Superintendent of Car Maintenance Wilcox stated that on July 23 he made an inspection of what had been the 5th car in the train at Rochester and found the coupler missing on the north or "B" end of the car and the cross key fastenings missing from the south or "A" end with the cross key nearly out of the coupler shank. He further stated that the inspection made on the cars on July 17 at Lakeport developed the fact that all of the cross keys were securely fastened and as the cars had not left that point prior to the accident, only having been moved twice by switching, he did not believe that there would have been enough wear on the cotter keys or bolts to shear them off, thus permitting the cross key to work out, between that point and the point of accident. It was his opinion that the equipment had been tampered with while at Lakeport due to the fact that the fastenings of the cross keys on both ends of the same car were missing and the cross keys out of place, one being entirely out and the other almost out.

On July 24 the Commission's inspectors examined the three cars which had been moved to Concord, N. H., for repairs. It was noted that on none of these cars had there been any provision made by the use of washers between the cotter keys and the draft sills to prevent friction and wear directly on the cotter keys which secure the cross keys. Some of the cotter keys were found to be worn to some extent but as this wear appeared on the side of the

cotter keys next to the draft sills it required a very careful inspection to detect it. On account of the construction of the cars it was necessary to get under their ends to properly inspect the cotter keys. The cross keys were secured in various ways, some with 5/8 inch bolts and nuts, some with cotter keys, and others with staples or "U" bolts.

### Conclusions

This accident was caused by the pulling out of a coupler as a result of the coupler key working out.

The investigation developed that the coupler had pulled out of the rear end of the fifth car in the train and became wedged in the track resulting in the derailment. At a point approximately 2,100 feet north of where the coupler was lodged in the track a coupler key, such as is used in the type of coupler which failed, was found by the section foreman. This key was of standard size and on one side of it there were distinct imprints of nuts which indicated that it had been secured by bolts, the bolt holes were worn and there evidently had been considerable play in them.

It was not definitely ascertained whether the bolts were in place at the time the train left Lakeport, or whether they worked out or were sheared off en route. The evidence indicated that the last thorough inspection of the circus equipment was made at Lakeport on July 17, 5 days before the accident, the cars not having been moved from that point prior to the date of the accident. At the time of this inspection, according to the statements of Inspector Thompson, all of the coupler keys and their fastenings were found to be intact although some of them were worn or bent but not enough to warrant their replacement. It was the opinion of Assistant Superintendent of Car Maintenance Wilcox that the cars had been tampered with while they were at Lakeport, this theory being based upon the fact that the fastenings of the coupler keys on both ends of the same car were found to be missing subsequent to the accident. If such had been the case, a proper inspection of the equipment prior to its departure from Lakeport on the day of the accident would have revealed this condition.

An inspection of some of the cars subsequent to the accident disclosed that no uniform type of fastenings had been used to secure the coupler keys; bolts and nuts

were used in some cases, cotter keys in others, while still others were secured with staples. In no instance were washers or some other device installed between the cross key fastenings and the draft sills to absorb friction, and this probably was the case with the car on which the coupler was pulled out. In this event it is possible that the bolts were in place but were worn to such an extent at the time the train departed from Lakeport that the additional friction which was exerted upon them while the train was en route caused the bolts to shear off thus permitting the coupler key to slide out of its place in the coupler shank. The roadbed between the point of accident and Lakeport was searched in an effort to locate the missing fastenings but they could not be found.

The employees involved were experienced men, and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. Borland,

Director.