INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE BALTIMORE AND OHIO RAILROAD NEAR PLEASANT VALLEY, OHIO, ON SEPTEMBER 1, 1933.

January 4, 1934.

To the Commission:

On September 1, 1933, there was a derailment of a freight train on the Baltimore and Ohio Railroad near Pleasant Valley, Ohio, which resulted in the death of 4 trespassers and the injury of 5 trespassers.

Location and method of operation

This accident occurred on the Central Ohio Sub-division of the Newark Division, which extends between Newark and Schick, Ohio, a distance of 102.2 miles, and is a single-track line over which trains are operated by time-table, train orders and a manual block-signal system. The accident occurred at a point about 1.37 miles west of Pleasant Valley; approaching this point from the west, there is a series of curves and tangents followed by a compound curve to the right 1,570 feet in length, including spirals, with a curvature varying from 3°59' to 6°, the accident occurring on the east spiral of this curve at a point about 47 feet from its eastern end. The grade for east-bound trains is 0.3 percent descending at the point of accident.

The track is laid with 100-pound rails, 39 feet in length, with 22 ties to the rail length, double-spiked on the inside of the rails on curves, and fully tieplated. It is ballasted with crushed stone to a depth of 12 inches, with a top layer of gravel and cinders in the immediate vicinity of the point of accident. The speed for slow freight, local, pickup and work trains is restricted by time-table instructions to 30 miles per hour.

The weather was clear at the time of the accident, which occurred about 6:15 p.m.

Description

East-bound extra freight train 4577-4328 consisted of 44 cars and a caboose, hauled by engines 4577 and 4328, with helper engine 4303 coupled in ahead of the caboose, and was in charge of Conductor Bay and Enginemen Grimes and Poulton. This train departed from Newark, 16.5 miles from Pleasant Valley, at 5:34 p.m., according to the train sheet, and on approaching Pleasant Valley was derailed while traveling at a speed estimated to have

been between 25 and 30 miles per hour.

The rear truck of the tenth car, the eleventh to the thirty-fourth cars, and the front truck of the thirty-fifth car, were derailed; the tenth and eleventh cars remained coupled to the head of the train which traveled a distance of about 1,200 feet beyond the point of derailment. The twelfth to the thirty-fourth cars were piled up within a space of about 250 feet.

Summary of evidence

Engineman Grimes, of the lead engine, stated that he looked back over his train at points en route, and on rounding the curve on which the accident occurred he was looking back and saw what appeared to be a hot box on one of the cars near the head end of the train; it was smoking and appeared to be about ready to blaze. He sounded a meeting point whistle signal to the second engineman, intending to stop at Pleasant Valley and set the car off on the storage track. He thought the train traveled a distance of about 30 car lengths after he first discovered the hot box and before the derailment occurred. He estimated the speed of his train to have been about 30 miles per hour at the time of the accident, and said that at no time did it exceed 30 miles per hour. About 1 hour and 10 minutes after the accident he examined the broken journal, which was on the tenth car in the train, and while he could place his hand on the end of the broken journal, which was cone-shaped, it was too hot to hold his hand on it; the broken portion was missing.

Engineman Poulton, of the second engine, stated that he had looked back at the train while en route and had seen the length of the entire train at Toboso, 6.4 miles from Pleasant Valley but at no time had he noticed anything wrong until the train was approaching Pleasant Valley; he saw the blazing hot box about the same time as Engineman Grimes, and was going to whistle a signal when he heard the signal sounded by the lead engineman. About 20 minutes after the accident he placed his hand on the broken journal and while he found it hot, he stated that he could hold his hand on it; he did not think that if it had burned off it could have cooled in that length of time.

Fireman Spitzer, of the second engine, stated that when his engineman called his attention to the hot box he went over to the right side of the cab and looked back and saw a little blaze, the accident occurring almost immediately afterwards. After the accident he immediately went back along the right or south side of the train and on examining the broken journal he found its end cone-shaped, with a blue color, indicating that it had been hot, but he did not see the wedge or brass, nor did he see any waste along the track.

Engineman Lay, of the helper engine, stated that he watched

his train at different points en route and at no time did he see any smoke or fire, or anything to indicate a hot box on any of the cars, but on rounding the curve on which the accident occurred he was able to see ahead only about 10 or 12 cars. He examined the broken journal about 30 minutes after the accident, and at that time it appeared bright and smooth as if it had been cut off and beveled, and it was not hot; he could hold his hand on it, although he was wearing a thin canvass glove at the time.

Conductor Bay stated that as his train entered the main track at Newark Yard he was standing on the south side of the train and observed no irregularities as it pulled by him. He watched the train as it rounded curves at several points en route and saw nothing wrong nor did he smell anything burning at any time. On going up to the head end of the train after the accident he saw the broken journal, which had a dark appearance, but he did not examine it closely at that time. He returned some time later and noted that the journal was smooth and appeared to have been grinding on the brass or wedge; the box was empty and he saw nothing of the wedge, brass or packing, although he did see some packing lying along the track about two or three car lengths west of the broken journal.

Before leaving Newark Yard, Flagman Johnson went over his train letting off brakes and observing the cars in general, making his inspection almost entirely on the south or right side; at points en route where he could see the entire train he was on the rear platform of the caboose to watch for any irregularities, but saw nothing wrong.

General Car Foreman Quinn stated that on arriving at the scene of the accident he examined the car with the broken journal, which was N&W 12586, and found the rear truck frame down, with one end on the ground and the frame partly out of the bolster; the journal was broken at a point about 4 inches from the shoulder at the wheel seat and the broken portion was missing. On looking into the box he found no packing, not even any charred pieces. He placed his hand on the end of the journal and while it was not excessively hot he could not hold his hand on it; it was a dark blue color. General Car Foreman Quinn stated that he went back over the track a distance of 400 or 500 feet and found no indication of anything dragging, and the first marks were six or seven cuts on the ties which appeared to him to have been made when the frame of the truck dropped down on one side and allowed the bolster to cut into the ties, before the wheels became derailed. On further examination of the truck with the broken journal he found on the side of the wheels crayon markings "6 x 11 Good"; the treads had recently been turned, and the mark on the axle indicated these wheels had come from a W&LE car. This axle also had a box number on it "L-3" which indicated to him that there had been a hot journal and that the axle might have been trued up at the time the treads on the wheels were turned. He was of the opinion that the

wheels had been taken out for a rough or cut journal and later placed on N&W 12586. This car had been given what is known as an "A" inspection at Columbus by N&W and B&O joint inspectors, the entire car having been gone over to see that it was in safe condition; this inspection included the raising of the oil-box lids and examination of the packing and brass. On arriving at Newark this car, having previously received a Class "A" inspection, was given a running inspection, or what is known as a "C" inspection; the "C" inspection does not require the lids of the journal boxes to be lifted unless there is evidence of a box having been hot. A great number of hot boxes are detected and shopped in the Newark Yard. This car was again inspected after it was placed in the train before leaving Newark. Foreman Quinn stated that if this journal had been on fire from a hot box and the packing had burned it would have left charred pieces of packing and dust in the bottom of the box. The box was empty, and he saw waste lying along the track, some of which he thought came from this box. It was his opinion that the journal could have been crystalized and broken from that cause, and that friction from rubbing against the brass and wedge caused the turning of the end of the journal to cone-shape, and when the box tilted, the collar and wedge came down but still remained on the stub of the journal until it was cut down, then they slipped off the stub and the frame dropped down on the track.

Car Inspector Finch stated that he inspected the 15 rear cars which arrived at Newark in train no. 84, including N&W 12586. While he did not remember that particular car, he stated that when he makes his inspections he looks for hot boxes and places his hand on the boxes to see if they are warm, and if the journal on that car had been broken off at that time it would have been warm and he would have detected it.

Car Inspector Foran stated that he assisted in making the air brake test before extra 4577-4328 departed from Newark Yard and went over every car on the south side without finding anything wrong; he did not remember N&W 12586 but was sure that if there had been a hot box on this car he would have detected it, and as a matter of fact he said he did raise the lids on boxes of several of the cars in the rear of the train as they looked as if they might be hot, there being oil on the wheels. After trying the air and giving a release signal from a point near the middle of the train, he walked toward the head end but did not know whether he went as far as N&W 12586 before the train departed.

Car Inspector Lucas stated that he assisted in making the air-brake test on extra 4577-4328 before its departure, going over the train on the north side, and found nothing wrong, and as the train pulled out of the yard he was at the head end on the south side and watched for sticking brakes or anything else that might be wrong; if there had been a hot box he said he

would have detected it but there was no indication of any squeal or smoke.

Joint Interchange Car Inspectors and Repairers Chandler and Treadway stated that they made a Class "A" inspection of N&W 12586 after its arrival in extra 2040 at Columbus, Ohio, on August 31. The car was under load and was in good condition; the journal boxes and contents were inspected and found to be in good condition.

Statements were obtained from two of the trespassers who were injured as a result of this accident. One of the men was riding somewhere between the fourth and seventh cars behind the car involved and he did not smell smoke or see anything wrong until just a few seconds before the accident occurred, when he saw flames shoot out of the box. Another trespasser who was riding on the seventh car behind N&W 12586 stated that he saw flames flash out of the box just as the cars started to pile up. Both men stated that they were riding on the south side of the cars, facing the engine.

Examination by the Commission's inspectors showed that the journal that failed was at the right lead wheel of the rear truck of the tenth car in the train, N&W hopper 12586. This car was equipped with Andrews side frame trucks and rolled steel wheels, with 6 by 11-inch journals. The journal broke at a point about 4 inches from the shoulder of the wheel seat and had been heated and rounded off so that it was cone shaped; the top of the box, the bottom of the frame over the box, the upper part of the box lid, the upper part of the sides of the box, and the outer surface of the hub of the wheel showed evidence of having been heated to a considerable extent, but it could not be definitely determined whether there had been as much fire in the box as is usually associated with the burning of the proper amount of material required in packing a 6 by 11-inch journal box. The inside of the box was clean, but the outside of the front end had charred grease or oil and dirt on it. The wedge, with about one-half the brass fused its entire length to the under surface of the wedge, was found on the south side of the track near the right of way fence at a point about 400 feet east of the point of derailment. The portion of the brass fused to the wedge was found to have been worn thinner at each end than at a point 4 to 5 inches from the inner end, and indicated that this metal had been dragged around by turning metal inside while the brass was at high temperature. Two small rounded pieces of the journal were fused tightly to the brass near the inner end, apparently having been sheared from the end of the journal in the final stages. The broken-off portion of the axle was found on the right of way about 260 feet east of the first mark of derailment, buried under the debris and contents of the derailed cars. This stub measured 10 inches from the inside of the collar to the broken end, or a total length of 11 inches; the diameter near

the collar was approximately 6 inches, but it had been tapered down to a diameter of about 5 inches at a point 7 inches from the inside edge of the collar, and to a diameter of about 3 inches near the broken end. This stub was dark blue and showed evidence of having been twisted off while at high temperature; in addition to the taper from the collar toward the broken end, the broken end showed several ridges and indentations, and the roughened surface showed where the metal had been turned off by the brass.

Inspection of the track for a distance of 3 miles west of the point of derailment showed no evidence of dragging equipment or anything that could have contributed to the cause of the derailment. The first marks on the track were on the ties on the south side of the south rail, apparently having been made by the box bolts of the truck after it came down; these marks extended a distance of 12 or 15 feet to the point where the wheels became derailed, and the wheel marks extended a distance of about 15 feet to the point where the track was completely torn up for a distance of 250 feet. Beyond the torn-up track there was evidence that the truck continued along on the ties, with the sand plank riding the south rail, to a point approximately 1,210 feet east of the first mark found on the track.

Examination of one piece of the axle, and the brass, wedge and end of the journal, made at the railroad's Mt. Clare Laboratory, brought out nothing additional of importance; the parts indicated that the failure was due to a hot box and that the journal had been heated to a high temperature before it twisted off.

Conclusions

This accident was caused by a burned-off journal, due to overheating.

The evidence was clear that the immediate cause of the accident was a burned-off journal under the tenth car of the train and that it was due to overheating, but the questions of when and why the journal became overheated is not so clear. The car had received a Class "A" inspection at Columbus, Ohio, this inspection including an examination of journal boxes and of their contents, and on arrival at Newark, 33.2 miles from Columbus, the car had received a Class "C" inspection, which does not require an examination of journal boxes unless there is indication of a hot box; the car also received an inspection after having been placed in the train and before leaving Newark, shortly before the occurrence of the accident, while one inspector and two trainmen watched the train as it pulled out of the yard at Newark. None of these inspections developed anything wrong and while en route from Newark to the point of accident no member of the crew saw or smelled anything to

indicate a hot box until the enginemen of the two engines on the head end saw smoke shortly before the accident occurred, although they said they had looked back along the train while on curves at different points en route. The failure of the journal was the result of overheating, but the inspections the car had received did not detect the condition which caused the overheating.

Respectfully submitted,

W. P. BORLAND,

Director.