

In re investigation of an accident which occurred on the Denver & Rio Grande Railroad at Colton, Utah, June 6, 1916.

On June 6, 1916, there was a derailment of a passenger train on the Denver & Rio Grande Railroad at Colton, Utah. After derailment this train collided head-on with a freight train on an adjoining track. This accident resulted in the death of 2 employees and 4 trespassers, and the injury of 3 employees, 1 mail clerk, 1 express messenger and 4 trespassers. After investigation of this accident the Chief of the Division of Safety submits the following report:

This part of the Denver & Rio Grande Railroad is a double track line; no block signal system is in use, trains being operated by time table and train orders. The station at Colton is in about the center of a curve of one degree leading to the left for westbound trains. This curve ends 465 feet west of the station, the track being tangent beyond that point. Just west of the end of the curve is a trailing crossover switch, while 101 feet beyond is a facing point switch leading from the westbound track to a passing siding. At the time of the accident, locomotive 1155 was standing on the passing track, well into clear, this locomotive, together with the cars which were on the passing track, belonging to a freight train which had tied up at 10:15 p. m. under the provisions of the

Hours of Service law. The track and switches in this vicinity were maintained in excellent condition in every respect. The weather was clear.

Westbound passenger train No. 15 consisted of 1 combination mail and baggage car, 2 baggage cars and 2 coaches, all of steel construction, hauled by locomotives 774 and 773, and was in charge of Conductor King and Enginemen Ladd and Campbell. The train left Halper, Utah, at 12:47 a. m., 5 hours and 52 minutes late, passed Kyune, 5.2 miles from Colton, at 1:24 a. m., 6 hours late, and at about 1:35 a. m. was derailed at the trailing crossover switch at Colton while running at a speed of 40 miles an hour.

Locomotive 774 broke away from locomotive 773 and continued down the main track with the tender derailed but practically undamaged. Locomotive 773 swerved to the right at the facing point switch leading to the passing track and collided head on with locomotive 1155, both being badly damaged. The combination car swerved to the left and came to rest in an upright position diagonally across the eastbound main track. All of the other cars in train No. 15 were derailed but remained upright and were not seriously damaged. The caboose and seven of the cars standing on the passing track were also more or less damaged.

Both of these locomotives were equipped with a

steam heat hose and the necessary hose couplings. The one on the second locomotive was coupled to the steam line of the train, while the hose on the leading locomotive had been hooked up by the usual chain provided for that purpose. The chain used in this case was of 3/16 inch material, with 2-inch links. The bottom link had been cut, one end being bent inward to hold it to the next link, while the other end had been straightened out nearly at right angles, for the purpose of acting as a hook to fasten in the eye of the hose coupling casting in order to hold it up. This hook was so short that it extended only a short distance through the eye. The coupling on this steam heat hose was found to have been torn off.

Examination of the track showed that for some distance east of the point of derailment there were marks which had been made by the striking of the steam hose coupling, while there were marks on the planks of a truck crossing near the station which indicated that at that point the coupling had been jammed between the planks and the pilot of the second locomotive, which undoubtedly resulted in stretching and tearing the hose to such an extent that it was only a question of a few seconds until the coupling became detached from the hose. The coupling was found on the right side of the westbound track about

40 feet from the point of derailment and fragments of the hose attached to it fitted perfectly the broken hose which remained attached to the tender of locomotive 774.

An examination of the trailing switch at the point of derailment showed that something had lodged between the switch and the stock rails, resting on the heel block, which was bent and scarred. All of the marks on both the heel block and the coupling indicated that the nipple of the hose rested on the heel block with the wider portion of the coupling between the two rails, the opening between which was just wide enough to make a snug fit. There were also flange marks on the coupling, indicating where wheels had encountered it as it rested on the heel block, resulting in bending and scarring the heel block, and also causing the wheels to be derailed. Examination of the tender of locomotive 774 showed it to be in good condition. There were no missing parts with the exception of the steam hose coupling, and all wheels, treads and flanges were in good condition.

Conductor King stated that after the accident he saw where the wheels had jumped the track near the switch. The switch had not been split and he came to the conclusion that something had dropped from the tender of locomotive 774 and had acted as a derail. After the accident he was talking with one of the road's employees, who said that on the previous trip he had had the same

locomotive and the same helper locomotive, when he noticed that something was dragging and kicking up sand, and on examination it was found that the steam hose coupling on locomotive 774 was dragging. Neither Conductor King nor the trainmen of train No. 15 saw the two locomotives when they were coupled together at Helper.

Engineman Ladd, in charge of the leading locomotive, stated that when his locomotive was coupled to locomotive 773 at Helper the coupling was made by the car men. After the coupling had been made he got off his locomotive and walked to the rear of the tender, at which time one of the car men was turning the angle cock in the train line. He looked at the brake beams and shoes, and stated that if the steam hose had not been hooked up at that time he was certain he would have noticed it. Coming into Colton he applied the air brakes and released them just before rounding the curve. When the fireman, who was on the inside of the curve, said that everything was clear he opened the throttle a little and was working a little steam. He saw the crossover switch light showing green, as well as the passing track switch light, which showed the same indication. He then started to work a little more steam, when he felt his locomotive pulled back slightly, and he looked back just in time to see locomotive 773 swerve to the right, apparently heading in on the passing track.

At about this time the coupling between the two locomotives broke, the tender of locomotive 774 being derailed. He stated that the accident occurred before he had time to apply the air brakes and that they were applied automatically when his locomotive broke away from locomotive 773. After the accident he looked over his locomotive to see if any of the brake beams were down or missing, but found nothing wrong with any of them. He stated that he thought the tender of his locomotive was pulled off by locomotive 773.

Fireman Johnson, on locomotive 774, stated that he did not get off the locomotive after it was coupled to locomotive 773 at Helper. Coming into Colton he saw that the switch lights were green and that everything was clear, and told the engineman, who then released the air brakes, and, as the train approached the station, began working a little steam. Fireman Johnson said that he then started to put in another fire, and that when he stepped on the apron he was thrown against the boilerhead. He did not know whether or not the brakes were applied and did not make any examination of the track to find out the cause of the accident. The fireman and engineman of the second locomotive were killed in the accident.

Car Inspector Hall stated that he assisted Car Inspector Swan in coupling locomotive 774 to locomotive 773 at Helper. All of the hose were in proper condition

and the air hose and the signal hose were coupled to locomotive 773, while the steam hose was hooked up, the hook on the chain being hooked into the hole provided for that purpose in the coupling. Car Inspector Hall also stated that when the two locomotives were coupled together the steam hose, as hooked up, did not rest against the slats of the pilot of locomotive 773.

Car Inspector Swan stated that when locomotive 773 was coupled to the train at Helper he coupled the signal, air and steam hose. When locomotive 774 was coupled to locomotive 773 he coupled the air and signal hose, while Car Inspector Hall turned the angle cock on locomotive 773. At this time the steam hose on the tender of locomotive 774 was hooked up and did not come in contact with the pilot of locomotive 773.

Section Foreman Kjunle stated that he was called for duty after the accident at about 2:00 a. m. The first thing he did was to examine the track with a view to finding out the cause of the accident, and he stated that he found marks on the track where something had been dragging, these marks beginning about 100 feet back from the point of derailment. He also found the steam hose coupling and from the marks on it he thought that wheels had run over it. This coupling was found about 40 feet west of the first marks of derailment. Some of these marks

were about two inches in width, while others were not so wide, and in some places they were 10 or 15 feet apart, while in other places they were close together. He thought the marks were such as would have been made by the steam hose coupling and said that he thought the coupling was the cause of the accident. He also stated that he examined the heel block in the switch and found marks on it which fitted the coupling and indicated that the coupling had rested on the heel block when it was run over.

Roadmaster Huber stated that in his opinion the steam hose coupling caught at the heel of the switch and acted as a derail, derailing the trucks of locomotive 773 which, after being derailed, pulled off the tender of locomotive 774. He stated that he examined the coupling, found flange marks on it, and also fitted it to the hose left attached to the tender of locomotive 774 and that it fitted perfectly. He also found that the coupling fitted in the marks made on the heel block of the switch. Roadmaster Huber also said that he walked east for some distance and that for a quarter of a mile marks on the ties could be seen, where the hose had been dragging. There were also marks on the crossover rail leading from the eastbound track to the westbound track, showing where the coupling had come in contact with this rail and had dragged against the side of it. These marks were about 20 feet

back from the heel of the switch point.

Shortly after the accident locomotive 774 proceeded to Salt Lake City and a new hose was applied and measured. When hanging down, the bottom end of the coupling reached a point $7\frac{1}{2}$ inches below the top of the rail, while, when hanging in its proper place, it was $5\frac{1}{2}$ inches above the top of the rail. Two locomotives were then coupled together, both being of the same type as those involved in the accident, and it was found that the pilot of the second locomotive extended 12 inches beyond the steam hose when it was hung up, the hose resting on the center slats of the pilot.

This accident was caused by the steam hose on the tender of locomotive 774 becoming unfastened from the hook allowing the coupling to drag, the hose becoming weakened and torn, and when it came in contact with the crossover rail it was carried to the right and lodged between the stock and switch rails, the hose parting and the coupling lodging on the heel block where it acted as a derail, throwing the trucks of locomotive 773 from the rails and causing the derailment of the train.

The investigation of this accident developed the fact that the hook provided for the purpose of holding up the steam line coupling was insecure and not suitable and safe for that purpose. Had this chain been equipped with a proper hook, the coupling undoubtedly would not have become unfastened,

and the accident would not have occurred. Proper measures should at once be taken to make certain that all chains of this character are properly equipped with hooks of sufficient length and strength to insure that they will not become detached in service.