In re Investigation of an accident which occurred on the Denver & Rio Grande Railroad at Price, Utah, December 7, 1916.

January 31, 1917.

On December 7, 1916, there was a rear-end collision between a mixed train and a freight train, on the Denver & Rio Grande Railroad at Price, Utah, which resulted in the death of 3 passengers and the injury of 5 passengers. After investigation of this accident the Chief of the Division of Safety reports as follows:

This accident occurred on the second district of the Green River Division, which is a single track line extending between Helper and Green River, Utah, a distance of 71.3 miles. Train movements are governed by time-table and train orders, there being no block signal system in use.

Eastbound train No. 138, a second-class, mixed train, consisted of 13 loaded cars and 30 empty cars, the rear car being a combination baggage car and coach, hauled by locomotive 1205, and was in charge of Conductor Hamilton and Engineman Chambers. This train was en route from Helper to Sunnyside, Utah, the crew having been called to leave Helper at 8.15 a. m., and at 9.25 a. m. it came to a stop with its rear end about 1,075 feet east of the yard limit board, and 4,500 feet west of the station, at Price, Utah, which station is 714 miles east of Helper. Some switching operations were then begun, the train being left standing on the main track, and at 9.55 a. m. the rear end was struck by eastbound freight train extra 1206.

Eastbound extra 1206 consisted of 52 loaded cars and a caboose, hauled by locomotive 1206, was in charge of Conductor Minnesang and Engineman Matson, left Helper at 9.40 a. m., en route to Green River, and collided with the rear end of train No. 138 while traveling at a speed of 6 or 7 miles an hour.

The point of collision was 100 feet east of mile-post 620. Approaching that point from the west, beginning at mile-post 622, the track is tangent nearly to mile-post 621, followed by a slight curve to the right; the track is then tangent to a point 900 feet west of mile-post 620, followed by a 2-degree curve to the right, 400 feet in length, beyond which the track is tangent to the point of accident. Approaching from the west, there is a descending grade of about 1% for eastbound trains, followed by 1,300 feet of practically

level track to the point of accident. Along the two miles of track described there are no obstructions to the view of the engineman on an eastbound train, there being only a few small trees and some low underbrush on the engineman's side. The weather at the time of accident was clear.

The combination baggage car and coach on the rear end of train No. 138 was demolished, all the persons killed and injured being in the car. Several water cars immediately ahead of the combination car sustained serious damage; locomotive 1206 was also considerably damaged.

Conductor Hamilton, of train No. 138, stated that he rode on the locomotive from Helper to Price, that upon the arrival of his train at Price there were two cars to be set out and two to be picked up, and that the train was left on the main line while these switching movements were being made, the rear end of the train being seven or eight telegraph poles within the yard limit, it therefore being unnecessary, under the rules, to protect by a flagman against any but first-class trains. He stated that he and his head brakeman were with the locomotive switching, and that when his locomotive had picked up the two cars and was returning to the train with them, about 25 or 30 minutes after the arrival of the train at Price, some one stopped the engineman and told him that the rear end of his train had been struck. Conductor Hamilton stated that the nature of the surrounding country is such that the rear of his train could have been seen a distance of 1-3/4 miles. He stated further that there was a strong wind blowing toward the east which carried the smoke ahead of the locomotive. Conductor Hamilton further stated that he did not instruct his rear brakeman to remain at the rear of the train, but that the brakeman knew it was his duty to protect against first-class trains. He stated that the rear brakeman told him that he went forward to inspect some water cars ahead of the combination car and knock off some ice in order that the hand brakes could be set on them when the cars were set out at another point on this trip, and had instructed the baggageman to protect the rear of the train while he was gone.

Rear Brakeman Wilcox, of train No. 138 stated that when his train stopped at Price he stood at the rear end a few minutes, then asked the baggageman to keep a lookout at the rear of the train, and went ahead to some water cars, crawled under two of them and knocked off the ice, which had formed on the dead levers and prevented the brakes from being released. He stated that he then walked forward ten or fifteen car lengths, when he heard a train whistle for Price; he stopped and listened for that train to answer a flag, and within what seemed to him not more than a minute the collision occurred. He

further stated that he understood the yard limit rules, and that in instances such as this he always protected his train by going back a short distance with a flag, unless some duty called him away.

Baggageman Anderson, of train No. 138, stated that to a certain extent he was familiar with the flagging rules. He stated that the rear brakeman had some work to do somewhere along the train and asked him to watch the rear of the train. As soon as he heard the whistle of extra 1206 being sounded for Price he started back, in the middle of the track, giving stop signals with a red flag. He went toward the engineman's side of the track, and, receiving no acknowledgment from him, he went to the fireman's side, but could not get an acknowledgment from him. He thought he had gone back four or five car lengths before he had to get off the track. He stated that he could not see the engineman because smoke was coming down on the engineman's side of the locomotive. He could see the fireman's side of the locomotive very plainly, but did not see the fireman, although he believed that, in order to see the fireman, it would have been necessary for the latter to have his arms or head out of the cab window. He was unable to estimate the speed of extra 1206 when the locomotive passed him.

Engineman Chambers, of train No. 138, stated that the rear of his train could have been seen 1-1/2 miles distant if there had been no smoke or steam to obstruct the view. He stated that while engaged in switching at Price, before the collision occurred, the steam blew down so that he was forced to stop his locomotive on account of not being able to see the signals given by men six or eight car lengths ahead.

Engineman Matson, of extra 1206, stated that after leaving Helper he applied the air brakes on his train several times before reaching Maxwell, a station 2.7 miles west of Price. He stated that when his train had passed over the top of the grade east of Maxwell, and began to push against the engine, he applied the brakes, reducing the speed to about 20 miles an hour; that when he released the brakes the speed promptly increased to about 25 miles an hour; that he had no more than secured a full release when he saw the rear of train No. 138, before his train rounded the curve a short distance west of where the accident occurred. He stated that he then applied the brakes, but that they did not take hold effectively, on account of the depletion in pressure caused by the previous application, and he placed the brake valve in the emergency position. This did not have the desired effect and he set the sand to running and closed the drifting throttle. He stated, however, that when he first saw train No. 138 he was confident

that he could bring his train to a stop before reaching it. He also stated that he did not see train No. 138 while his train was on the tangent west of the curve, because of the steam and smoke blowing about the engine; that his train had been drifting down the grade approaching the point of accident, and that he did not see the baggageman of train No. 138 waving a red flag; that he understood the rule requiring him to bring his train under control approaching yard limits, and that, although his view was obstructed by steam and smoke, he thought his train was sufficiently under control approaching the yard limit board. Engineman Matson further stated that he possibly made an error of judgment in releasing the air brakes and permitting the speed of the train to increase, just before he saw train No. 138, there being insufficient time for the recharging of the train line before he made the next application of the air. He stated further that, had his view been unrestricted by steam and smoke, he could have seen the rear of train No. 138 at any point after his locomotive passed the top of the grade at the east switch of Maxwell siding; and that when he saw that the collision could not be avoided he told the fireman and head brakeman, who were sitting on the fireman's side of the locomotive, to get off, and went to the rear of the tank, the speed at the time of accident being not much greater than that at which a man could walk.

Fireman McCarthy, of extra 1206, stated that he last put in a fire about two miles from the point of accident, that he thought two or three minutes elapsed between the last service application of the brakes and the emergency application, which was made as the train was rounding the curve; that he first saw train No. 138 when his train was about 35 car lengths distant, and that he did not get off until he saw that the accident was unavoidable. He stated that the speed was about 25 miles an hour when the last service application was made, and, while he was not certain, he thought it was about 10 miles an hour when he got off the locomotive. Fireman McCarthy stated that, while he had made but a few trips over this part of the road, he knew approximately where the yard limit board was located and thought the train was being operated under control approaching it, basing his opinion upon the fact that previous applications of the brakes seemed to take full effect. He further stated that the wind was blowing smoke ahead of the engine, that the blower was not used, and that approaching the point of accident the engine was not working steam.

Head Brakeman Patrick, of extra 1206, stated that approaching the point of accident he was riding on the fireman's side of the locomotive, in front of the fireman, who had been sitting there for a distance of about two miles. He stated that on this trip the brakes took hold properly upon each

application; that the brakes were applied just east of the east switch at Maxwell, and that the speed of the train had been reduced to 20 or 25 miles an hour before the brakes were released, it increasing afterwards to about 30 miles an hour. He stated that there was smoke, and snow from the train, blowing all about the engine, thus obstructing the view, and that he first saw train No. 138 as his train was rounding the curve, or when it was 20 or 25 car lengths distant. He stated that just before he saw the rear of train No. 138 the engineman applied the brakes in emergency, and that he went down into the gangway, and jumped off when his train was six or eight car lengths from the point of collision, the speed of his train at the time being six or eight miles an hour. Brakeman Patrick further stated that he thought the engineman had the train under control, and that approaching the point of accident he did not have any conversation with the engineman.

Conductor Minnesang, of extra 1206, stated that as soon as he got on his caboose, when his train was leaving Helper, he looked at the air gauge, which then indicated 60 pounds pressure. He felt several applications of the air between Helper and Maxwell, and again when the caboose was at the east switch at Maxwell, at which time, he thought, the locomotive was near mile-post 621. He stated that the speed was reduced to about 18 miles an hour, and that when the brakes were released the speed increased to 25 or 30 miles an hour. He also stated that the next application he felt was made at a distance which he estimated to be about 12 car lengths from the point of accident. Conductor Minnesang stated that at each application the brakes appeared to be working properly, that his train was not being operated under full control approaching the yard limit board, and that he did not instruct his rear brakeman to apply the air from the caboose because he was engaged in booking his bills and did not know exactly where he was. At another point in his statement, however, Conductor Minnesang said that he did not notice his train being handled in any unusual way, and that he believed the train was under sufficient control to be brought to a standstill if necessary. He further stated that the speed necessary to full control, approaching the yard limit, would depend upon the view of the engineman.

After the accident the cars of extra 1206 were taken back into the siding at Maxwell and a test of the air brakes was made, it being found that on two cars the brakes were inoperative, that three had excessive piston travel, and that on one the foundation brake gear was disconnected. This train with the exception of one car which had its east drawbar forced backward in the collision, was later taken to Green River and another inspection of the brakes made, it being learned that the brakes on three cars were inoperative, while

two had excessive piston travel. Traveling Engineer McGinnis, who rode the train from Price to Green River, and who, assisted by a car foreman, made the latter inspection, in his report thereon stated in part as follows:

> "This train was not as good as the average train, although we had no difficulty in controlling the speed, or stopping it at any time."

Operating Rule 93, of this railroad, reads as follows:

> "Yard limits will be designated by yard limit boards. All trains must approach yard limits under control, and run carefully through the limits, expecting to find the main track occupied. Yardmen must, however, protect themselves."

In this connection, time-table rule 15 reads as follows:

> "Within yard limits the track may be used protecting against first class trains.
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> "Second and inferior class and extra trains must move within yard limits, prepared to stop unless the main track is seen or known to be clear."

This accident was caused by the failure of Engineman Matson, of extra 1206, to have the speed of his train under control approaching the yard limit board, as required by rule 93, and to operate it within yard limits prepared to stop, as prescribed by time-table rule 15, when the track was not seen or known to be clear. According to the statements of members of the crew of extra 1206, its speed must have been at least 20 miles an hour as it passed the yard limit board, although all stated that they thought the enginemen had the train under control. Engineman Matson stated that when his train was descending the 1% grade, the foot of which is about 200 feet west of the yard limit board, he could not see the rear of train No. 138 on account of the smoke and steam blowing about the locomotive. Because of his view being obstructed, therefore, it would seem that his action in releasing the brakes was most inadvisable, inasmuch as he promptly thereafter saw the rear of train No. 138, the interval of time being insufficient for the recharging of the train line, and as a consequence he was neither able to comply with the requirements of rule 93 and time-table rule 15, nor to avert the accident.

This investigation disclosed a defective condition of air brakes in extra 1206 that should be condemned, particularly on account of the heavy grades that are to be encountered in train operation in this territory. An inspection of the cars in this train, made at Maxwell after the accident, disclosed the fact that on two cars the air brakes were inoperative, that on one the foundation brake gear was disconnected, and that on three the piston travel was excessive. This condition indicates less than 85% of air brakes in operation, and is in direct violation of the safety appliance acts.

Engineman Matson was employed January 1, 1902, as a machinist helper, was promoted to fireman October 16, 1902, and to engineman August 13, 1906. On June 24, 1908, he was dismissed for responsibility in connection with the damage to a firebox due to low water; he was reinstated as engineman October 6, 1908, and for the years ending August 26, 1911, and December 9, 1912, 1913, and 1915, and until the time of accident, his record was clear.

At the time of accident the train crew of extra 1206 had been on duty 1 hours, after a period of 16 hours and 20 minutes off duty. Engineman Matson and Fireman McCarthy had been on duty 1 hour, the former after 35 hours and 45 minutes off duty, and the latter after 38 hours and 40 minutes off duty.