No. 314

In re investigation of an accident which occurred on the "Joint Track" of the Atchison, Topeka & Santa Fe Railway and the Colorado and Southern Railway, near South Denver, Colorado, on April 11, 1918.

May 22, 1918.

On April 11, 1918, there was a rear-end collision near South Denver, Colo., on the "Joint Track" used by the Atchison, Topeka & Santa Fe Railway and the Colorado & Southern Railway, between a Colorado & Southern passenger train and a Colorado & Southern switch train, resulting in injuries to 6 passengers and 2 employees. After an investigation of this accident the Chief of the Bureau of Safety reports as follows:

The collision occurred on the Denver Terminal Division of the Colorado & Southern Railway, at a point about 1.8 miles north of South Denver. Between South Denver and Denver Union Depot, a distance of about four miles, it is a double-track line, over which trains are operated jointly by the Colorado & Southern Railway and the Atchison, Topeka & Santa Fe Railway by train orders and Colorado & Southern time-table and operating rules.

Approaching the point of accident from the south, there is a tangent 2,026 feet in length, followed by a compound curve to the right 717 feet in length, the maximum curvature of which is 5°4'. Then there is 40 feet of tangent, followed by a compound curve to the left 585 feet in length having a maximum curvature of 6° 4'. Following this there is 277 feet of tangent, the accident occurring 40 feet in on this tangent. The grade over the section of track just described is descending northerly, varying from .4% to .8%, and at the point of collision is .5% descending to the north.

Colorado & Southern switching locomotive No. 222, in charge of Foreman Schwartz and Engineman Harthrop, was engaged in moving 30 loaded and 34 empty cars from the Mississippi yard at South Denver to the Seventh Street yard in Denver. At the north end of the Mississippi yard there is an interlocking signal governing movements over the Denver & Rio Grande crossing, which is located about 1,800 feet north of the signal. The engineman of locomotive No. 222 sounded the whistle for this signal at 8.56 p.m., was given a proceed signal, and the train left there at about 8.59 p.m. At about 9.10 p.m., it was brought to a stop at the

stop board located about 1,000 feet south of South Park Crossing, the rear end of the transfer train being about 1.5 miles north of the station at South Denver, and while standing there it was struck in the rear by passenger train No. 3.

Colorado & Southern northbound passenger train No. 3 consisted of 1 baggage car, 1 combination car and 2 coaches, all of wooden construction, hauled by locomotive 325, and was in charge of Conductor Sullivan and Engineman Schaller. This train was on route from Trinidad to Denver, Colo., and at 9.05 p.m., stopped at the home signal at South Denver and whistled for the signal. After receiving a proceed signal, it left there at 9.06 p.m., and at a point about 1.5 miles north of South Denver collided with switch train No. 222, while running at a speed of about 14.5 miles per hour.

As a result of the collision, 2 box cars were destroyed, and locomotive 325, two coaches, one box and one baggage car were slightly damaged. The weather at the time of accident was clear.

On February 18, 1918, the Colorado & Southern Railway issued Bulletin No. 17, which changed the leaving time of train No. 3 from South Denver from 9.15 p.m., to 9.05 p.m., that bulletin reading as follows:

> "Bulletin No. 17:
> Effective 12.01 a.m., February 24th time of No. 2 will change to leave Denver Union Depot at 12.30 p.m., arrive South Denver 12.45 p.m. No. 3 leave South Denver at 9.05 p.m., instead of 9.15 p.m., arrive at Denver Union Depot 9.20 p.m. Will not issue new time card to cover. All be governed accordingly."

Engineman Northrop of switch train No. 222 stated that at about 8.52 or 8.53 p.m., he sounded the whistle for the signal to proceed from the Mississippi yard, received it promptly, and left there shortly thereafter. His train proceeded at a speed of about 12 or 14 miles per hour until brought to a stop at the stop board at South Park Crossing, which is located 1.9 miles north of South Denver Depot, and after standing at this point about two minutes the collision occurred. He said he was familiar with Colorado & Southern time-table Rule No. 2 which requires yard engines to be fully protected when occupying the main track within ten minutes of the

time of a first-class train. He further stated that he read the bulletins issued from day to day, but had no knowledge of Bulletin No. 17, as it had not been posted in the Colorado & Southern bulletin book at the South Denver roundhouse. He thought train No. 3 was due to leave South Denver at 9.15 p.m., as shown on the time-table in effect, and said he mentioned that train to Foreman Schwartz before leaving South Denver. He considered that he could have reached the Seventh Street Yard and cleared the time of train No. 3 ten minutes, had his train not been stopped at South Park Crossing.

Fireman Kumble of Switch train No. 222 stated that this was the first time he had worked in the territory involved. He said his train stopped at South Park Crossing and shortly afterward the air in the train was applied, whereupon Foreman Schwartz started back to find out what was wrong. He knew nothing of the collision until later informed of the fact, as he felt no shock and did not see nor hear train No. 3 approaching.

Foreman Schwartz of switch train No. 222 stated that he rode on the engine from South Denver to South Park Crossing, and that his train left South Denver at 8.52 p.m. When his train stopped at South Park Crossing he was on the right side of the engine putting down figures, and did not look back to see if No. 3 was approaching, as he did not think that train was due. Shortly after stopping, the air in the train applied, and assuming that a draw bar had been pulled out, he at once walked toward the rear of his train. He was met by Head Brakeman Barnes, who told him of the collision. He said he was familiar with Colorado & Southern time-table Rule No. 2 and the flagging rules, but did not remember having read Bulletin No. 17. He thought train No. 3 was due to leave South Denver at 9.15, as shown on time-table in effect at that time, and considered that his train had time to reach the crossover at Larimer Street (near the Seventh Street Yard) ahead of train No. 3, but that it probably would be necessary to flag that train there; before leaving South Denver he therefore instructed both his brakemen to look out for that train. He stated that when his train left South Denver, Rear Brakeman Baughman was riding on the rear car, and that he could see Head Brakeman Barnes riding about 25 cars from the engine.

Head Brakeman Barnes of switch train No. 222 stated that his train proceeded at a speed of about 15 or 16 miles an hour from South Denver to South Park Crossing and that he was riding about 25 cars from the engine. The first intimation he had of the approach of train No. 3 was about the time his train stopped at South Park Crossing, at which time he saw the reflection of No. 3's electric headlight, but thought it came from a train on the Denver & Rio Grande Railroad. As train No. 3 approached and rounded the curve just south of the rear of his train, he could see the headlight shining brightly and perceived it was on the same track as his train, the collision occurring almost immediately. He said he remembered seeing Rear Brakeman Baughman riding on the rear end of the train up to the time he saw the reflection of train No. 3's headlight, but after that he did not notice him, as he was watching the headlight. He stated that before leaving South Denver, Foreman Schwartz told him that in case they were stopped, No. 3 would be right behind them. He thought No. 3 was due to leave South Denver at 9.15 p.m., as shown in the Colorado & Southern time-table in effect at that time, and said if he had read Bulletin No. 17 he had forgotten it, and he understood that a bulletin would not supersede a time-table.

Rear Brakeman Baughman of switch train No. 222 stated that he rode on top of the rear car of his train from South Denver to the point of collision, and had only a white lantern with which to protect his train. He said his train stopped at South Park Crossing, the engineman sounded the whistle, and the train was just moving, when he first saw the electric headlight of train No. 3 rounding the curve about 13 or 14 pole lengths from the rear of his train. He immediately gave that train stop signals, and continued to do so until it rounded the curve and came onto the tangent on which the collision occurred. As his signals were not heeded, he then descended to the ground on the west side of the track and jumped across the track to the engineman's side of the approaching train and continued giving stop signals. He said the engineman of train No. 3 saw his signals when about four rail lengths away and immediately applied the brakes, the collision occurring at 9.08 p.m. He stated that before leaving South Denver Foreman Schwartz told him train No. 3 was due at 9.15 p.m. and that they might be able to clear that train, but in case they did not, they would flag it at Larimer Street. He

said he made it a practice to read the bulletin book each day before going on duty, but had no recollection of ever having seen or read Bulletin No. 17 and knew nothing of it. He thought train No. 3 was due to leave South Denver at 9.15 p.m., as shown on the time-table in effect, and said if he had known its time had been changed to 9.05 p.m., he would have told the foreman and his train would not have left South Denver ahead of train No. 3. He said that he had never been able to find proper flagging material on the switch engines with which he had worked, but had never reported this condition to those responsible for it.

Engineman Schaller of train No. 3 stated that his train arrived at South Denver at 9.05 p.m., and as the interlocking signal there was not cleared for him, he brought his train to a stop. The signal was then cleared, whereupon he called in his flagman, departed at 9.05 p.m., and proceeded at a speed of 18 or 20 miles per hour to the point of collision. He stated that the electric headlight on his train was burning properly, but on account of the curves in the track, the rear of train No. 222 was not visible to him until he was about four rail lengths from it. He was not working steam, and immediately applied the air brakes in emergency. Immediately after the collision he looked at his watch and it indicated 9.12 p.m. He said the only signal of any description which he saw in the vicinity of the accident was when somebody with a white light crossed in front of his engine from the left to the right side of the track just prior to the impact, and supposed the party was trying to swing him down. He was familiar with Bulletin No. 17 and was running his train on its authority.

Fireman Dietz of train No. 3 stated that just prior to the collision he was sitting up in the cab and looking ahead, and did not see the rear of train No. 222 until about 4 or 5 rail lengths from it; he shouted, and at the same time the engineman applied the brakes. He estimated the speed of his train at 18 or 20 miles per hour when it struck train No. 222. He said he saw no flagman and no signals of any kind prior to the collision.

Conductor Sullivan of train No. 3 stated that his train arrived at South Denver at 9.05 p.m., was delayed one minute in getting the signal to proceed, left there at 9.06 p.m., and that the collision occurred at 9.12 p.m. He said he was running his train on the authority of Bulletin No. 17.

Towerman Wagoner, in charge of the interlocking tower at South Denver on the night of the accident, stated that switch train No. 222 called for the interlocking signal at 8.56 p.m., received it promptly, did not start until about 8.59 p.m., and cleared the interlocking plant at 9.05 p.m. He said train No. 3 called for the board at 9.05 p.m., but on account of train No. 222 not having cleared the interlocking plant, he did not give the board to train No. 3 until 9.06 p.m. Train No. 3 then proceeded and cleared the interlocking plant at 9.08 p.m. He further stated that as the rear of train No. 222 was passing the interlocking tower, the light of train No. 3's headlight was shining on it.

This accident was caused by switch train No. 222 occupying the main line track on the time of a superior train without proper protection, for which Engineman Northrup, Foreman Schwartz and Rear Brakeman Baughman are responsible.

While the entire crew of switch train No. 222 claimed they had no knowledge of the contents of Bulletin No. 17, the evidence brought out by this investigation clearly established the fact that this bulletin was posted in the bulletin book at the Denver Yard Office and in the Santa Fe bulletin book at the South Denver Roundhouse for a period of more than 30 days prior to the accident, and was accessible to all employees working in the Denver Terminals. It is an imperative duty of employees to read and familiarize themselves with all bulletins posted for their information and guidance, and the crew of switch train No. 222 [illegible] negligent in failing to acquaint themselves with the contents of this bulletin.

Rule No. 99 of the Colorado & Southern operating rules reads as follows:

> "An inferior train must keep at least ten minutes off the time of a superior train in the same direction."

Even though the crew of switch train No. 222 had no knowledge of Bulletin No. 17 and were expecting train No. 3 to leave South Denver at 9.15 p.m., as shown on Colorado & Southern time-table No. 38 in effect at that time, they could not have complied with Rule No. 99 and cleared the time of train No. 3 ten minutes. They attempted to make a move with a train of 64 cars and clear that train within 26 minutes, which move according to the best informa-

tion obtainable would require from 30 to 35 minutes.

This crew also failed to comply with Rule No. 2 of Colorado & Southern time-table No. 38, reading as follows:

> "Speed. --Within the limits of Denver Terminals all trains must reduce speed sufficiently to enable them to stop within the distance seen to be clear; no train may stop on main line track without protecting itself.
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> "Unless fully protected, yard engines must not occupy the main line track within ten minutes of the time of a first class train. They are not required to protect against other trains, but must keep a proper lookout."

Rear Brakeman Baughman is especially at fault, for there was nothing to prevent him seeing the reflection of train No. 3's headlight in sufficient time to have enabled him to flag that train, had he made proper efforts to do so.

Engineman Schaller of train No. 3 failed to comply with time-table Rule No. 2, which requires all trains within the limits of Denver Terminals to reduce speed sufficiently to enable them to stop within the range of vision.

This investigation disclosed the fact that for some time prior to the accident, yard engines operating in the Denver Terminals have not been supplied with proper flagging material. Proper protection of trains is impossible unless all trains are at all times supplied with proper flagging material and rules governing its use strictly observed.

All the employees involved in this accident were experienced men with good records. At the time of the accident the crew of switch train No. 222 had been on duty about 6 hours and the crew of train No. 3 about 8 hours.