

In Re. Investigation of an Accident which
occurred on the Chicago & Alton Railroad
at Grain Valley, Mo., on
August 14, 1916.

October 7, 1916.

On August 14, 1916, there was a head-end collision between two freight trains on the Chicago & Alton Railroad at Grain Valley, Mo., which resulted in the death of 1 employee and the injury of 2 employees. After investigation of this accident the Chief of the Division of Safety reports as follows:

This accident occurred on the First Subdivision of the Western Division of the Chicago & Alton Railroad, which subdivision is a single track line, running east and west, extending between Slater, Mo. and Kansas City, Mo., a distance of 94.6 miles. Train movements are governed by timetable, train orders and an automatic block signal system.

Eastbound freight train third No. 88, consisted of 21 loaded cars, 2 empty cars and a caboose, hauled by locomotive 825, and was in charge of Conductor Ligon and Engineman Miller. This train, en route to Roodhouse, Ill., 251 miles distant, left Kansas City, Mo. at 1.05 a. m., 6 hours 40 minutes late. Train third No. 88 arrived at Blue Springs, Mo., 20.6 miles east of Kansas City, at 4.11 a. m., where the crew received train order No. 109, which read as follows:

"3rd No. 88 eng. 823 meet extra 805 west at Grain Valley. If any blocks between Odessa and Blue Springs fail to work, proceed very carefully and advise what blocks are out."

Train third No. 88 left Blue Springs at 4.17 a. m., and proceeded toward Grain Valley, Mo., 4.8 miles distant. At 4.30 a. m. it came to a stop on the main track between the passing track switches at Grain Valley, with the locomotive about 3,100 feet west of the east switch of the passing track. At 4.32 a. m., while standing at this location, it was struck by westbound extra 805.

Westbound freight train extra 805, consisting of 3 loaded cars, 41 empty cars and a caboose, hauled by locomotive 805, in charge of Conductor Wood and Engineman Kettler, left Slater, Mo. at 11.59 p. m., August 13th, en route to Kansas City, Mo. It arrived at Odessa, 54.8 miles west of Slater, at 3.38 a. m., where a copy of train order No. 109 was received. Extra 805 left Odessa, 14.4 miles east of Grain Valley, at 3.55 a. m., and at 4.32 a. m. collided with train 3d No. 88 while traveling at a speed of about 15 miles an hour.

Locomotive 823 and its tender were derailed, the locomotive remaining upright on the roadbed and the tender coming to rest on its left side, north of the track and parallel with the locomotive. The first car only in train 3d No. 88 was derailed; it came to rest on its left side, north of the track, with its front end on the tender. The rear driving wheels and trailer truck of locomotive 805 were derailed, the

second and third cars in extra 805 received slight damage, and the fourth and fifth cars were derailed and partly telescoped, but remained on the roadbed in an upright position.

Approaching the point of accident from the west the track is tangent for about one mile, followed by a 2-degree curve to the left, about 900 feet in length, and the track is then tangent for 172 feet to the point of collision. Approaching from the east the track is tangent for 7,700 feet. Beginning at a point 1,500 feet east of the point of accident, and extending a distance of about 3,500 feet westward, there is a one percent ascending grade for westbound trains. At the time of the accident it was dark and rain was falling.

Engineman Miller, of train third No. 88, stated that when his train had been brought to a stop he saw the markers on extra 805, and thought that train was heading in at the east switch. He then turned to some work which he was doing about his engine, but he looked out again shortly afterwards and saw extra 805 approaching only about a car length distant; he jumped, and had just reached the ground when the collision occurred. He said that when his train left Kansas City, the electric headlight on his locomotive was burning brightly, but that it became extinguished when his train was brought to a stop at the point of accident. He stated that at the time of the collision he was preparing to go out and try to restore it to working order.

Conductor Wood, of extra 805, stated that on account of the darkness, rain and fog, when approaching Grain Valley, it was very difficult for him to know just where his train was, but that he did know when it was passing around a curve about one and one-half miles east of that place; the first landmark he saw in the vicinity of Grain Valley was the east switch of the passing track. He stated that approaching that point he was expecting the brakes to be applied and the train brought to a stop in order to take siding for 3d No. 88. He stated further that the speed remained at about 20 miles an hour, although they held an order restricting the speed of freight trains to 15 miles an hour between the curve mentioned and the east switch. Conductor Wood said that when his train passed the switch he was riding in the cupola of his caboose, and he then thought that train third No. 88 for some reason must have headed in at the west switch of the passing track and that his engineman had been given a proceed signal. He therefore asked his flagman if train third No. 88 was on the passing track, and when informed that it was not, he started toward the rear of his caboose for the purpose of applying the air brakes, but at about that time the engineman applied them in emergency. He thought the speed of his train was approximately 15 miles an hour at the time of collision. Conductor Wood further stated that after the accident the engineman told him that he had entirely overlooked the fact that train third No. 88 was to be met at Grain Valley.

Engineman Kettler, of extra 805, stated that at Odessa he received a copy of train order No. 109, which, he understood, required his train to head in at the east switch of the passing track at Grain Valley for train third No. 88; in addition to that order he also received one restricting speed of freight trains to 15 miles per hour from the east switch to the first curve east of Grain Valley. He stated that block signal No. 209, 8,100 feet east of the station at Grain Valley, displayed a stop indication as his train approached, and was visible to him for a distance of one-half mile. He said, however, that trouble had been experienced with signals on other portions of the road on the morning of the accident, because of an electrical storm, and, when he saw that signal No. 209 was in the stop position, he thought that it, too, was out of order, or that he was closely following some train, and he kept a close lookout for any such train. He further stated that he tried to see the numbers of the signals which might be out of order, but that he forgot his train was to meet third No. 88 at Grain Valley. He said that under the rules when a red signal is received they are required to stop and send a flagman ahead, but order No. 109, which he held, permitted him to proceed carefully without stopping or flagging. Engineman Kettler stated that he first saw train third No. 88 when his locomotive passed over a road crossing just west of the station. The speed of his train was then 20 or 25 miles an hour and he applied the air brakes

in emergency, the speed of the train being about 12 miles an hour at the time of collision. His engine was equipped with a Pyle National electric headlight of 2,000 candle-power, and he said that at Odessa he had put in a new carbon, but before his train reached Bates City, 6.9 miles distant, the light became inoperative, and remained in that condition. He also stated that he saw no headlight or markers on train third No. 88.

Fireman Black, of extra 805, stated that while he did not see train order No. 109, the engineman and head brakeman read it to him, and he knew that his train was supposed to meet train third No. 88 at Grain Valley. He stated, however, that, owing to the fact that he had been employed as a fireman only about one month, he was not sufficiently familiar with the road to know when he was approaching Grain Valley.

Head Brakeman Shay, of extra 805, who was riding on the fireman's side of the locomotive approaching Grain Valley, stated that on account of the rain he had closed the cab window and did not know when his train passed the east passing track switch; when about at the station he opened the window, saw train third No. 88, and turned to tell the engineman that train third No. 88 was standing on the track, but before he could do so the engineman applied the air brakes. He thought the speed at the time of collision was about 12 or 14 miles an hour.

Dispatcher Emery stated that during the night of this accident several signals were reported out of order as a result of an electrical storm, and that several orders had been issued

which authorized trains to pass block signals in the danger position without stopping and without flagging. He stated that ordinarily if a train finds a signal at stop the train stops and then proceeds under protection of a flag, but when a signal is reported not working, an order is issued authorizing trains to proceed carefully, this order remaining in effect until the signal is repaired and so reported by the signal maintainer.

Signal Supervisor Rumans stated that on the night of the accident a number of signals were reported out of order on account of lightning discharges, but signal No. 209 was not reported in trouble that night.

The direct cause of this accident was the failure of extra 805 to take the siding for train 3d No. 88 at Grain Valley, as required by train order No. 109, resulting from Engineman Kettler, of extra 805, forgetting the meet order, and for which he is primarily responsible.

Engineman Kettler admitted that he overlooked the meeting point and was not reminded of it, notwithstanding the fact that approaching Grain Valley he saw signal No. 209 in the stop position.

The investigation of this accident disclosed a dangerous practice in connection with the operation of trains under the automatic block signal system in use on this line, and this practice contributed to this accident.

Rule No. 227 provides as follows:

"On single track, if the home signal indicates 'stop' before the train enters the block, or indicates 'proceed' and does not change to 'stop' before the train reaches the signal the train must stop, send a flagman in advance immediately, wait five minutes after the flagman has started, and then 'proceed' under control until the obstruction is reached or the train passes out of the block."

The practice established by this rule differs from the usual method of operation of trains on single track roads equipped with automatic block signals, as it is considered a failure if the signal does not assume danger position while the train is passing from the end of the track section or the setting point to the signal, this modification being due to the practice of locating the signal a distance of from 100 to 250 feet inside the block. Rule No. 233 provides that when trains meet within the limits of a block the inferior train may pass the stop signal and proceed to the siding under control. This modification is particularly necessary on account of the fact that, when approaching a siding, signals are often located a distance of a mile or more from the switch.

As shown by the investigation of this accident it is a common practice, when a signal is reported out of order, to issue a train order directing trains to proceed carefully, such an order being interpreted to relieve all trains, except the one reporting the failure, from obeying the requirements of rule No. 227 and flagging through the block. The records show that 44 orders of this character were issued from August

2 to September 1, 1916, inclusive; most of these orders specified certain signals which were reported not working. However, one order on August 14th was a "blanket" order, not specifying certain signals, but covering all signals between certain stations, 19 miles apart. Five of the signals between those stations had been reported out of order, but the train order mentioned covered 16 signals, and notwithstanding the practice in effect, there does not appear to be any justification for issuing an order covering more than three times the number of signals reported not working.

In connection with the accident at Grain Valley, signal No. 209 had not been reported out of order and the records do not indicate that it was out of order on the night of the accident. While there can be no excuse for Engineman Kettler overlooking the meet order, the train order which he held, permitting him to pass stop signals without stopping or flagging, practically nullified the block system so far as it related to the operation of his train. This is considered one of the contributing causes of this accident, for which the operating officials are responsible. Had the practice specified in rule No. 227 been followed in this instance the collision would undoubtedly have been averted.

The investigation disclosed that at the time of the accident, the electric headlights, with which the locomotives of both trains were equipped, were out of order and extinguished. It is possible that had these headlights

been burning the enginemen of the two trains would have been warned in time to avert the accident. The condition of these headlights indicates a lack of proper maintenance in order to secure the full benefit of these devices as safeguards.

Engineman Kettler entered the service of this railroad as fireman February 3, 1906, and was promoted to engineman December 2, 1910. At the time of the accident the crew of extra 805 had been on duty 5 hours 32 minutes, and the crew of train third No. 88 had been on duty 3 hours 47 minutes.