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## INTERSTATE COMMERCE COMMISSION

### REPORT OF THE CHIEF OF THE DIVISION OF SAFETY COVERING THE INVESTIGATION OF AN ACCIDENT BETWEEN TWO NORTH- ERN PACIFIC TRAINS ON THE TRACK OF THE SPOKANE, PORT- LAND & SEATTLE RAILWAY AT SOUTH CHENEY, WASH., ON FEBRUARY 20, 1916

APRIL 8, 1916

#### *To the Commission*

On February 20, 1916, there was a rear-end collision between two Northern Pacific passenger trains on the track of the Spokane, Portland & Seattle Railway at South Cheney, Wash., which resulted in the death of 5 passengers and injury to 17 passengers and 5 employees. An investigation of this accident was made in conjunction with the Public Service Commission of Washington, testimony being taken at a hearing held at Cheney, Wash. As a result of the investigation as to the cause and nature of this accident, I beg to submit the following report.

This accident occurred on the third district of the Vancouver subdivision, extending between Pasco, Wash., and Spokane, Wash., a distance of 148.8 miles. This is a single track line, trains being operated by time-table and train orders. No block signal system is in use, but trains following one another are spaced 10 minutes apart at open telegraph offices. Approaching the point of accident from the west, the track is straight for about 6 miles and is on a descending grade of 0.4 per cent for nearly 1½ miles until about 800 or 900 feet from the station, from which point the track is practically level until some distance east of the point of accident. The collision occurred at a point about 650 feet west of the west passing track switch, or 430 feet west of the station at South Cheney. The weather at the time was very foggy.

On the day of the accident, as well as for several days prior thereto, trains of the Northern Pacific Railway between Pasco and Spokane had been detouring over the line of the Spokane, Portland & Seattle Railway on account of washouts on the line of the first-named road, and the two trains involved in this accident were trains Nos. 42 and 2 of the Northern Pacific Railway, running over the tracks of the Spokane, Portland & Seattle Railway as the second and third sections of Spokane, Portland & Seattle train No. 4, in charge of Northern Pacific crews without pilots. Trains second and third No. 4 left Pasco with an order, among others, to run as sections of train No. 4 from Pasco to South Cheney. At Marshall Junction, 8.5 miles beyond South Cheney, detouring Northern Pacific trains were switched over to their own main line. Marshall Junction is a nonregistering station on the Spokane, Portland & Seattle Railway, and trains

second and third No 4 therefore had orders to run only as far as South Cheney, both sections having to stop at this point to obtain the necessary orders to allow them to proceed to Marshall Junction and reach the tracks of the Northern Pacific Railway

Northern Pacific train No 42, running as Spokane, Portland & Seattle train second No 4, was known as the "Mississippi Valley Limited," and was en route from Seattle, Wash., to St. Louis, Mo. It consisted of 2 baggage cars, 1 coach, 1 chair car, 1 tourist sleeping car, 1 dining car, 2 Pullman sleeping cars, and a deadhead coach, hauled by Northern Pacific locomotive 2106, and was in charge of Conductor La Violette and Engineman Smith. The second baggage car, the chair car, and the deadhead coach had steel underframes all of the other cars being of wooden construction. This train left Pasco at 3 20 a m., 1 hour and 5 minutes late, with running orders as contained in train order No 13, reading as follows

Engs 107 N P 2106 and N P 2211, run as first, second, and third No 4, Pasco to South Cheney. Eng 107 run as No 4, South Cheney to Fort Wright

The crew in charge also had three other orders, as well as train order No 507, advising that all culverts were running to capacity, that rocks were falling, and that they should run very carefully where washouts or slides were likely to occur. At Snake River, 26 1 miles from Pasco, eight additional train orders were received, all but two of which related to places where the speed had to be materially reduced or the train brought to a stop for the purpose of examining the track before proceeding, some of these orders specified several different places at which slowdowns or stops had to be made. At Bengé, 80 5 miles beyond Pasco, three additional orders were received, two of which required the train to run very carefully over a total of 5 miles of track on account of water being over the track, while the third order (train order No 534) required in part that the speed between Amber and South Cheney, a distance of 10 6 miles, should not exceed 30 miles an hour. This order, which was originally issued on February 10, read as follows

Do not exceed thirty (30) miles per hour over track between South Cheney and Amber, also between Lantz and Bengé account soft track

At Lamont, 104 7 miles beyond Pasco, three more orders were received. These orders, Nos 46, 315, and 540, read as follows

#### TRAIN ORDER NO 46

Look out for bad broken rail 13 poles west of milepost 377, just west of South Cheney

#### TRAIN ORDER NO 315

Reduce speed to thirty (30) miles per hour over heaved track at east mile board at Amber and to fifteen (15) miles per hour for bridge 374-7 east of Overlook

## TRAIN ORDER NO 540

Very bad spot reported in track at west switch at Amber

The broken rail referred to in order No 46 had been replaced on February 18, the day the order was issued originally. All but one of the slow orders received were issued between February 9 and February 18, the exception being order No 315, issued on February 20. According to the train sheet, train second No 4 arrived at Amber at 7 15 a m and departed at 7 20 a m, arriving at South Cheney, where their running orders as train second No 4 expired, at 7 40 a m. The train was standing at the station, while the conductor was getting orders, when the rear end was struck by train third No 4, the collision occurring at 7 43 a m.

Northern Pacific train No 2, running as Spokane, Portland & Seattle train third No 4, was known as the "North Coast Limited," and was en route from Seattle, Wash, to Chicago, Ill. It consisted of nine cars, hauled by Northern Pacific locomotive 2211, and was in charge of Conductor Wilkins and Engineman Gander. It left Pasco at 4 a m, 1 hour and 45 minutes late, with running orders as contained in train order No 13, quoted above, order No 507, previously referred to, and two other orders. At Snake River the crew received copies of the eight orders which were delivered to train second No 4 at that point. At Bengt they received copies of the three orders which had been received at that point by the crew of train second No 4, together with a meet order with an opposing train. At Lamont the crew received orders Nos 46, 315, and 540, the same as were received by train second No 4 and are quoted above. Train third No 4 passed Amber, according to the train sheet at 7 30 a m, colliding with train second No 4 at 7 43 a m.

Locomotive 2211 penetrated the deadhead coach on the rear of train second No 4 a distance of about 3 feet beyond the vestibule. The forward part of this car slid over the end sills of the rear end of the sleeping car immediately ahead and telescoped the sleeping car for one-half its length, all of the persons killed being in the sleeping car. Illustration No 1 is a general view of the accident and shows the extent to which the sleeping car was telescoped. Illustration No 2 is a view of the forward end of the steel underframe coach after it had been separated from the sleeping car and shows the extent to which it was damaged in telescoping the sleeping car. Slight damage was sustained by the locomotive, third, fifth, and seventh cars in train second No 4, while three of the cars in train third No 4 were slightly damaged. Only slight damage was sustained by locomotive 2211, and it afterward traveled to Spokane under its own steam. Train second No 4 was driven forward about 60 feet by the force of the collision.

Miss Hazel Bauerfield, an eyewitness, testified that she was near the highway crossing about 1,700 feet west of the station at South Cheney and that she saw the flagman of train second No 4 two or three minutes before she saw train third No 4 approaching. When train third No 4 came along the flagman was running toward it, giving signals, and was not far from the highway crossing. She was unable to say whether or not the third section had passed entirely by the flagman when it stopped. She heard the approaching train whistle, but did not know how fast it was traveling. Two other ladies who were with Miss Bauerfield testified that her testimony was correct and that there was nothing which they could add to it. A Miss Putnam testified to being on the road at a point about 1,000



No 1 --View showing wooden sleeping car telescoped about half its length by steel under frame day coach

feet from the track and about one-eighth of a mile from the point where the road crossed the railway track, that when the flagman was first seen a short distance from his train he was running up the track waving a fusee, and that he was about halfway between his train and the road crossing when the approaching train passed him.

Flagman Lude, of train second No 4, testified that after leaving Pasco the train slowed down at Snake River, 26 1 miles from Pasco, and he threw off a fusee. The train stopped at Farrington, 38 miles from Pasco, and he threw off another fusee, and stated that he thought they picked up the flagman of the first section. At this point he went back about two car lengths and was recalled by two blasts of the locomotive whistle. Another fusee was thrown off before entering the tunnel west of Kahlotus, or 45 3 miles from Pasco. The train stopped at Kahlotus, 46 8 miles from Pasco, for

about five minutes, according to the train sheet, and at that point the head brakeman was looking over the train and came back to where he was and told him to watch out for the following train. The head brakeman then started for the head end of the train but before he had reached there the train started and Flagman Lude testified that he, himself, had to run in order to overtake the train. He thought he was back about a car length or so at the time, and testified that it was only slightly foggy at this point. The next stop was at Washtucna, 60.7 miles from Pasco, where the train stopped for six minutes, according to the train sheet, and Flagman Lude testified that he threw off another fusee at that point, but did not go back any distance from the train. A stop of four minutes was then made at Benge, 80.5 miles from Pasco, where water was taken, and he threw off another fusee just before reaching this point, but did not go back any distance from the train.

He also testified that there were several places where the train slowed down, and that wherever the speed was reduced to any extent he threw off a fusee, all of the fusees used by him having been red fusees which would burn 10 minutes. A stop of four minutes was made at Lamont, 104.7 miles from Pasco, and another stop was made at Amber, 119 miles from Pasco, at which point water was taken. At neither of these points did he go back any distance from the train. He threw off a fusee coming into Lamont, however, and also threw off a fusee at Amber. After water had been taken at Amber, the train proceeded, and when it slowed down at the broken rail referred to in train order No. 46, quoted above, he threw off another fusee. The speed of his train at this point was reduced to such an extent that he thought he could have gotten off in safety. At this time he did not know whether or not the train was entering South Cheney, but the speed was again increased, and shortly afterwards the train arrived at the station. He stated that he did not throw off any fusee when the train slowed down for the station as he was depending to a certain extent on the fusee thrown off near the broken rail. After the train stopped at South Cheney he descended to the ground and looked ahead, but could not see anything on account of the fog, which was more dense at this point than it had been at any other point. He stated that he stood about half a minute and then started to walk back. At this time he had torpedoes in his pocket and a fusee in his hand together with a red flag. As he walked back he heard no whistle or sound of any kind, but when about 600 feet from his train he saw the glow of the headlight of an approaching train and at once started to run toward it, at the same time lighting the fusee. He then began waving the fusee across the track, running toward the train until he had to jump from the track. He testified that he did not hear the engineer of the approaching train give any answer to his

stop signals, and he thought he had run an additional distance of 200 or 300 feet when he had to jump from the track. As the train passed him he turned and started back toward his own train. When the train stopped, after the accident, he was near the rear of the train, but did not notice which particular car he was near. At the company's investigation, however, he stated that he was about opposite the rear car. He then went back to the point of collision, throwing away his fusee but did not remember at what point he threw it away. Flagman Lude further testified that while he knew there was a third section of train No. 4 somewhere behind his own train, he had not seen or heard anything of it at any point between Pasco and South Cheney. He also testified that Conductor La Violette did not give him any special instructions concerning the protection of the train on account of the foggy weather conditions prevailing, and that at no point at which the train stopped was he signaled by whistle signals from the locomotive to go back and flag, and at no point did he go back far enough from the train to prevent him from catching it when it started ahead, he testified, however, that at all points except South Cheney the fog had not been thick enough to prevent him from seeing what was going on at the head end of the train. He also testified that nothing was said to him by any one concerning the manner in which he flagged at any of the stops.

Conductor La Violette, of train second No. 4, testified that his train picked up the flagman of the first section at Farrington, at which point water was taken, water was also taken at Benge, while coal was taken at Washtucna. He thought the train was not at Farrington over two or three minutes, and that it was at Washtucna only a few minutes. At Farrington the flagman went out and was recalled by locomotive whistle signals. The train stopped at Lamont, at which point the weather was clear, and at 7:15 a. m. was brought to a stop at Amber on account of the block signal being in the stop position, the operator telling him that his train was being held for the purpose of blocking it 10 minutes behind the preceding section. The flagman did not go back at this point, the weather being quite clear and the track straight, while at other points the flagman went back perhaps a hundred feet or more. Water was taken at Amber, and at 7:20 a. m., a clear block being given, the train proceeded on its way, arriving at South Cheney at 7:40 a. m. He then got off the smoking car opposite the station, and he testified that the weather was very foggy at this point, and that from where he stood he could see the rear of his train but could not distinguish objects beyond that point. As he looked back at the rear of the train he saw that the flagman had gotten off, and then went into the station for orders. There was no reason to suppose that his train would be delayed more than a couple of minutes, and he testified that under such cir-

cumstances he would not, and did not, say anything to the flagman about making any special effort to protect the train, and that he did not think there was anything in his orders which would require greater protection at South Cheney than at any other point. Conductor La Violette further testified that he received one order, which was made complete at 7 42 a m, and he then came out of the office, sending a copy of the order to the engineman by the head brakeman. He then saw train third No 4 approaching, with the flagman running toward it, waving a red fusee, and therefore supposed that the flagman must have stood about two minutes at the rear of the train. He thought the flagman was a distance of 800 or 1,000 feet from where he was standing at the station, and testified that his train was driven forward about 50 or 60 feet by the force of the collision, which occurred at 7 43 a m. Conductor La Violette further testified that he told Flagman Lude to watch out at all danger points, that he cautioned him particularly about throwing off a fusee at the entrance to one of the tunnels which he considered to be a particularly bad place. He did not know how many fusees Flagman Lude had used on the trip, but he testified that at one time the flagman came forward and obtained 8 additional fusees from the train box. He had had Flagman Lude in the capacity of flagman for at least a month and considered him to be a competent man, saying that he had never had occasion to caution him about flagging at a station. He also testified that at no point after leaving Pasco had he received any indication as to the whereabouts of the third section.

Engineman Smith, of train second No 4, testified that his train left Amber at 7 20 a m, slowed down at the point where train order No 46 stated that there was a broken rail, and then increased its speed. At a point about 2,500 feet from South Cheney he saw a yellow fusee nearly burned out and at once brought his train under control, losing perhaps about a minute in time between that point and the station. The train stopped at the station at 7 40 a m. He did not think over 3 minutes elapsed between the time the train stopped and the time he received the order and was ready to proceed, at which time the collision occurred, driving his train ahead 75 or 80 feet. He testified that the delay was not of sufficient duration to require the flagman to go back, and he said that he did not sound the whistle signal for him to do so, as he expected either to get orders immediately or to head in on the siding at the west switch, which is east of the station. The weather was very foggy, and while he did not pay particular attention as to how far he could see, he said he could not see the length of his train, in fact, not over three or four car lengths. Engineman Smith further testified that he ran his train at a speed as near as possible to 30 miles an hour between Amber and South Cheney, and estimated the maximum speed at any one point to

have been not over 35 miles an hour. He also testified that he was accustomed to running over the tracks of the Spokane, Portland & Seattle Railway, and that about a year or a year and a half previously he had been examined orally on the transportation rules of that railway. He considered that he was sufficiently acquainted with its operating rules and physical characteristics to be able to operate a train over its tracks without a pilot.

Head Brakeman Ball, of train second No. 4, stated that between Amber and South Cheney the train slowed down twice and that he did not think the maximum speed between the two stations was more than 30 miles an hour at any point. When the train stopped he went into the office with the conductor and as soon as the train order was completed the conductor gave a copy of it to him to deliver to the engineman. The engineman read it and as he was folding it up the collision occurred. He testified also that he did not look at his watch when the train arrived at South Cheney, but did look at it when the collision occurred, and that according to his time it was 7 44 a m. He thought the train had been standing about three minutes at this time and said that at no time had he heard a whistle from the approaching train. He also testified that prior to the collision he did not look toward the rear of the train and therefore did not know whether or not he would have been able to see that far. Head Brakeman Ball testified further that Flagman Lude came forward twice during the trip and that on one of these occasions he took back with him six or eight fuses, while the other time he heard him remark that he came for more flagging material. He also testified that it was customary for flagmen to go back immediately at every station stop made by a passenger train without waiting to see what the stop was for, these were the instructions received by him and they applied particularly under weather conditions such as existed at South Cheney.

Operator Duryee, on duty at South Cheney at the time of the collision, stated that train second No. 4 arrived at 7 40 a m, and that it was 7 42 a m when they were ready to proceed, the collision occurring at 7 43 a m. He also stated that the train stopped for no other purpose than to secure orders.

Conductor Welch, of train first No. 4, stated that when his train slowed down approaching South Cheney the flagman threw off a yellow fuse, his train passed through South Cheney at 7 31 or 7 32 a m. The flagman of this train testified that he threw off a fuse when his train was about 80 or 100 car lengths west of South Cheney.

Engineman Gander, of train third No. 4, testified that he looked at his watch just before whistling for the train order board at Amber, and that it was then exactly 7 26 a m. His train did not

stop at Amber passing through there at a speed of about 13 or 14 miles an hour within 10 or 15 seconds of the time at which he whistled for the board. Between Amber and South Cheney he slowed down at one point where the track was not in good condition and reduced the speed to 15 or 18 miles an hour at the location of the broken rail mentioned in train order No. 46, while he afterwards stated that the speed was reduced to 8 or 10 miles an hour. He then worked steam until reaching the top of the grade about  $1\frac{1}{2}$  miles west of South Cheney, at which point he shut off steam and made a slight application of the air brakes. When about one-half mile from South Cheney he sounded the station whistle and when about 16 or 17 car lengths from the point where his train was to be brought to a stop he made a 9 or 10 pound application of the air brakes. He then happened to look out and thought he saw some one flagging his train. At this time the speed of his train was about 20 miles an hour, and he thought the flagman was about 125 feet from him and about 800 or 900 feet from the rear of his train. He started to rise from his seat and answer the signals, and had just sounded one short blast of the whistle when he saw that the stop signals were being given violently and he at once opened the sanders and applied the emergency brakes. After traveling a short distance he could see a train on the track, but could not tell whether it was a coach or box cars, and he then jumped from the locomotive, at which time the speed was 12 or 15 miles an hour.

Engineman Gander also testified that after the accident he walked back toward the rear of his train and at a point about  $11\frac{1}{2}$  rail lengths from the point of collision the head brakeman of his train showed him the point where a burned-out fusee had been thrown away but he testified he did not know whether or not this was the fusee with which he had been flagged by Flagman Lude. At no point after leaving Pasco did he see any of the fusees thrown off by the flagman of the preceding train, nor did he see any fusee at a point about  $1\frac{1}{2}$  or 2 miles west of South Cheney, and at no time on the trip did he see anything or receive any information indicating how far train second No. 4 was ahead of his train until he saw Flagman Lude waving the red fusee just before the collision occurred. He testified that possibly the foggy weather prevailing tended to make the rails slippery, but that the distance between where he applied the emergency brakes and the point of the collision was so short that he could not judge of its real effect. He stated, however, that he did not get an emergency application of the brakes, due to the fact that he had just made a service application. Engineman Gander testified further that the speed of his train did not exceed 30 miles an hour, at least to any extent, at any point between Amber and South Cheney, and he said that with the locomotive he was running, with the number of cars in

the train, and with a running start at Amber, it would have taken him about 15 minutes to reach South Cheney. When informed that according to the train sheet his train only consumed 13 minutes in making the run between the two points, he stated positively that it could not be done in that length of time. He also stated that when coming into South Cheney he knew exactly where he was and that on account of the fog his train was not traveling as fast as it would have traveled had the weather been clear. He stated that under the orders held by him he had a right to come into South Cheney as fast as he wanted to, provided he could stop his train before passing the west switch east of the station, and also providing that he did not exceed the speed limit of 50 miles an hour imposed on all passenger trains at all times. Engineman Gander testified that he accounted for his train overtaking train second No. 4 by his train not stopping at Amber, while the second section had stopped at that point and lost a little time in starting, by his train being allowed to pass Amber less than 10 minutes after the departure of the second section, and by the second section losing a little time coming into South Cheney on account of the yellow fusee thrown off by the first section. Engineman Gander testified further that about three years previously he had run over the tracks of the Spokane, Portland & Seattle Railway and that since the Northern Pacific had been detouring all of its trains the preceding few days he had made four round trips the trip on which the accident occurred being his fifth round trip. On the first of these trips he was furnished with a pilot, although he did not ask for one. He testified that the only examination he had passed on the rules of the Spokane, Portland & Seattle Railway was about three years previously when he was examined on the whistle signals and rules, at which time the rules of both railways were similar. He testified that he considered himself sufficiently familiar with the physical characteristics and the operating rules of the Spokane, Portland & Seattle Railway not to require the services of a pilot.

Fireman Wallace, of train third No. 4, testified that he did not look at his watch when his train passed Amber. When he first saw Flagman Lude waving the red fusee the flagman was about 150 feet away, and was about 400 feet from the rear of his train, at which time the speed of the train was about 20 or 25 miles an hour. He testified that Engineman Gander had made an application of the air brakes prior to this time, but was not sure whether or not he had released them. When the flagman was seen the engineman at once made an emergency application of the brakes. He thought the speed was about 10 miles an hour at the time of the collision. Fireman Wallace testified further that he did not see any fusee about  $1\frac{1}{2}$  or 2 miles west of South Cheney, neither did he see any fusee at any other point on the trip.

Conductor Wilkins, of train third No 4, testified that he did not know at what time his train passed through Amber and that so far as he knew his train did not pass any fusee. He did not notice how fast his train was traveling when the brakes were applied, neither did he know how fast it was traveling when the collision occurred. He stated that the train had been riding smoothly, there being no indication of any kind that it was running at unusual speed. He thought it was about a minute after the collision before he was out on the ground. He saw a lighted fusee on the right side of the train opposite the middle of the seventh car, at a point 50 or 75 feet from the track. He then went forward, met Engineman Gander, and asked him what they had struck, he then looked at his watch and it was 7 45 a m.

Head Brakeman Johnston, of train third No 4, stated that as his train came into South Cheney he was riding with the conductor in the smoking compartment of the day coach. He saw Flagman Lude being passed and at once braced himself, as he felt that there was going to be a collision. He then ran back through the train and got off on the right side either of the rear end of the day coach or of the rear end of the tourist car, and proceeded toward the rear of his train, to make sure that it was going to be protected. When going back he did not meet Flagman Lude. He stated, however, that when he saw Flagman Lude as the train passed him, the flagman was standing a considerable distance from the track and that he might not have met the flagman unless the latter came up to the side of the train. Brakeman Johnston stated further that he did not remember whether or not he saw a lighted fusee when he got off the train. By the interval which elapsed between the time his train passed Flagman Lude and the time of the collision, he thought the car in which he was riding, the third car of the train, must have run from 4 to 6 car lengths past the flagman.

Flagman Butler, of train third No 4, stated that he went to the rear platform when his train slowed down at the location of the broken rail between Mock and South Cheney, but did not see anything of the fusee claimed to have been thrown off by Flagman Lude of the preceding section. When the collision occurred he was on the rear platform, and he at once got off and started back to flag, and he testified that he did not meet Flagman Lude.

Operator Thompson was on duty at Amber when the three sections of train No 4 passed that point. He testified that the first section left at 7 10 a m, and that the second section arrived at 7 15 a m. He then held the second section until 7 20 a m, under the rule requiring that following movements be spaced 10 minutes apart. He did not hear train third No 4 whistle for the signal, but saw the train when it approached the station, and he said that he cleared the

signal by reason of the agent coming in and telling him to do so. He testified that train third No 4 passed at 7 30 a m, according to his watch, and that he did not notice anything unusual about its speed, which he stated to have been not over 20 miles an hour. He testified that as he remembered it he reported the train to the dispatcher at 7 31 a m as having passed his station. When asked if he obtained his information regarding the 10-minute spacing rule from the book of rules or from special instructions, Operator Thompson testified that he obtained it verbally, that this was his third night in the employ of the Spokane, Portland & Seattle Railway, that he was not examined on the rules when employed, and that his information concerning the spacing of trains had been obtained from the agent and also from a brakeman with whom he had talked on the train on which he arrived at Amber.

Agent Nedwed, located at Amber, testified that he was at the station when the three sections of train No 4 passed, but was not on duty. He was outside when train third No 4 whistled for the signal, and at once went in, looked at the clock, and told the operator, "that man is all right" and to let the train proceed. The operator then looked at the clock, and he thought also at his watch, after which he cleared the block. The train passed the station at 7 30 a m by his watch, running at a speed estimated by him to have been about 20 or 25 miles an hour. He stated that his watch was keeping correct time and that he saw the operator put the time down on the block sheet.

At a point 5 1 miles east of Amber, or 5 5 miles west of South Cheney, is a nontelegraph station named Mock. At the time the three sections of train No 4 passed this point, a westbound Spokane, Portland & Seattle freight train, extra 356, was occupying the sidetrack, and Engineman Winsla of the extra testified that train first No 4 passed that point at 7 16 a m, train second No 4 at 7 27 a m, and train third No 4 at 7 34 a m. The first two trains were traveling at a speed of about 30 miles an hour, while train third No 4 was traveling at a speed of about 40 miles an hour and he thought it was running a little close to the second section.

Fireman Robinson, of extra 356, testified that the first section passed at 7 16 a m, and that he was not sure when the second section passed, but that the third section passed at exactly 7 34 a m. His time was taken from his own watch, and he testified that at the time the third section passed he compared watches with the engineman and both watches showed the same time. He testified that he thought the first two sections were traveling at about a speed of 30 miles an hour, and the third section slightly faster.

Superintendent Votaw, of the Spokane, Portland & Seattle Railway, testified that he had been in charge of this division since November, 1915. Since that time the Northern Pacific Railway had

been running practically all its eastbound freight trains over the tracks of the Spokane, Portland & Seattle Railway, and he considered crews from the Northern Pacific Railway to be as familiar with the Spokane, Portland & Seattle tracks between Pasco and Marshall Junction as the crews of the Spokane, Portland & Seattle Railway. He testified that when officials of his road had knowledge that the crew from the foreign road was not familiar with the transportation rules or physical characteristics of the Spokane, Portland & Seattle Railway a pilot was furnished. He said that he did not inquire concerning each individual employee, but that he understood that all of the Northern Pacific employees who had been operating over the tracks of the Spokane, Portland & Seattle Railway had been examined on the rules of that railway and were familiar with the road. He also testified that all trainmen and enginemen running over the Spokane, Portland & Seattle tracks were required to pass a prescribed examination on the rules. Mr. Votaw further testified that while the book of rules required a five-minute interval in the case of following movements, a bulletin had been issued requiring trains to be spaced 10 minutes apart. The five-minute interval is required by rule No. 54 of the rules and regulations of the operating department, and reads as follows:

Unless controlled by block signals, trains in the same direction must keep at least five minutes apart, except in closing up at meeting or passing stations.

The bulletin as originally issued was No. 778, dated April 17, 1911, and it was reissued on January 1, 1915. This bulletin read as follows:

*To all concerned.*

Bulletin amending rule 54 in book of rules. Hereafter all trains should be blocked 10 minutes apart instead of 5 minutes, and between Kahlotus and Hairington, Lysle and Cooks, and Prindle and Washougal, 15 minutes apart. Operators, agents, and dispatchers will give this their personal attention.

Mr. Votaw further testified that he did not think much of the figures given by the employees of extra 356, indicating the time at which the various sections of train No. 4 passed Mock, and that he considered the figures of the operator at Amber to be more accurate. Referring to the testimony of Engineman Gander, in which the latter stated that under the most favorable conditions he could not have run his train from Amber to South Cheney in less than 15 minutes, Mr. Votaw said that, taking the figures which Engineman Gander himself gave, his train left Lamont at 7:07 a. m. and passed Amber at 7:26 a. m. The distance between these two points is 14.3 miles, and according to the engineman's own figures he covered the distance in 19 minutes. Mr. Votaw testified that had Engineman Gander run at the same rate of

speed between Amber and South Cheney, it would have been possible for him to travel the distance in 14 minutes. He testified further that the grade line from Lamont to Amber is very uniform, running from 0.35 to 0.4 per cent, with the exception of about 1 mile of level track between mileposts 340 and 341. He also testified that between Amber and South Cheney the grade line runs from 0.28 to 0.4 per cent from Amber to milepost 353, that it is then practically level over 3 miles to milepost 356, and then from 0.25 to 0.3 per cent to a point about halfway between mileposts 358 and 359, from which point it is a descending grade of 0.4 per cent to South Cheney, which is located at milepost 360.

Superintendent Tyler, of the Northern Pacific Railway, stated that all eastbound freight trains, excepting local trains and one time-freight, were operated over the tracks of the Spokane, Portland & Seattle Railway, and all men on the Pasco division of the Northern Pacific Railway were as familiar with the rules and physical characteristics of the Spokane, Portland & Seattle Railway as the men on that railway. The records he had did not show that the men had been examined, but he understood that they were all familiar with the Spokane, Portland & Seattle road, and stated that in fact some of them had been used for the purpose of operating Great Northern trains over it. He testified further that Engineman Gander was an engineman who could make up 20 minutes lost time where other enginemen would make up 10 minutes. Shortly after he became connected with the Northern Pacific Railway his attention was directed to Engineman Gander making up time on one of their passenger trains. As an effort was being made to keep enginemen from running at excessive speed at any particular point, he rode on Engineman Gander's train two or three times without his knowing it, in order to see how he made up time, and he testified that he found that Engineman Gander was one of the occasional enginemen who could take a passenger train and make up time and do it safely without sudden stops and starts and without rounding curves at excessive speed. He testified that during his early railroad career he had been an operator and dispatcher, and that he did not consider the figures shown on train sheets to be accurate at all times, as the reporting of trains by an operator was merely perfunctory. He testified, for example, that a train might be shown as arriving at a particular station at 6:29 a. m. and leaving at 6:30 a. m. when as a matter of fact the train might have been at the station only half a minute or it might have been there two or three minutes.

Rule No. 62 of the rules and regulations of the operating department of the Spokane, Portland & Seattle Railway is similar to standard code rule No. 99, and requires in part that "When a train stops

or is delayed by any circumstances under which it may be overtaken by another train, the flagman must go back immediately with stop signals a sufficient distance to insure full protection" Under date of March 1, 1914, a four-page addition to the rules was issued over the signature of W D Scott, general manager, addressed to "All employes in train, engine and yard service" and explaining the manner in which the requirements of Spokane, Portland & Seattle rule No 62 should be carried out This circular states in parts as follows

Your attention is called to the fact that you are held responsible for the protection of your train in whatever manner the circumstances require The fact that it is running does not release you from using all necessary precaution to guard against a following train colliding with yours especially so when running at slow rates of speed, or when the weather conditions are such as to obscure the view of following trains Under such circumstances you will drop a burning 10-minute yellow fusee as frequently as may be necessary, and, in addition, use whatever other method of protection that may be necessary to avoid a rear collision

When a train is stopped or is delayed at any point under *any circumstances* by which it may be overtaken by another train the flagman must, without waiting to be whistled out, or otherwise instructed, go back immediately with "stop" signals, consisting of red flag and at least six torpedoes by day, and *in addition, by night*, a red and white lantern, and two red and two yellow 10 minute fusees, and go a *sufficient distance to insure full protection*, whether it be a half mile, a mile, or a mile and a half, the distance to be determined by the surrounding conditions, such as the grade, curvature and weather or other conditions affecting the view

\* \* \* \* \*

While a flagman *must not wait for instructions* to go out and protect his train when required under the rules, the conductor and engineer are not relieved of the responsibility of knowing that their train is properly protected when exposed to danger of either head-on or rear-end collision It is the engineer's duty to promptly whistle flag out under all circumstances necessary to prevent rear collision, and the conductor's duty to *personally know* that the flagman has gone out a sufficient distance with *proper appliances* and *fully understands* their use

\* \* \* \* \*

A passenger flagman must always appear on the ground 60 feet to the rear of his train immediately after it stops \* \* \* Unless conditions require that he go out to flag, he must remain 60 feet to the *rear* of his train *until it starts*

The testimony of the members of his crew concerning the number of fusees being used by Flagman Lude, as well as the testimony concerning the time consumed at stopping points, and the weather conditions prevailing at those points, would seem to indicate that the flagman had been fully awake to the responsibilities involved in connection with the proper protection of his train while en route The flagman also testified that he threw off a fusee near the location of the broken rail, and, while the third section probably passed this

point before the fusee had time to burn out, the engine crew of that train testified that they did not see it. In view of this conflict in the testimony it is impossible to say whether the flagman failed to throw off a fusee, or whether he did throw off a fusee and the engine crew failed to see it. As will be noted from the circular above quoted, the flagman is required to remain 60 feet to the rear of his train until it starts, unless the conditions require that he go out to flag. The evidence indicates that the flagman descended to the ground as soon as his train stopped, and that in less than a minute he went back to flag, the testimony of various witnesses indicating that in the short space of time which had elapsed after his train had stopped he had gone back from 500 to 900 feet, flagging the approaching train with a lighted fusee. All of this was done without instructions to do so and without whistle signals to go back to flag having been sounded by the engineman, who testified that in his judgment it was not necessary for the flagman to flag, as the train was going to head in on the sidetrack unless orders were received immediately. Regardless of this, however, proper compliance with the rules required that when his train slowed down approaching South Cheney, on account of the dense fog prevailing at that time, Flagman Lude should have dropped a burning fusee from the rear end of his train, and, had he done so, and had this warning signal been observed by the following train, it is probable that this accident would have been averted.

In connection with the time at which train first No 4 passed Mock it is to be noted that the engineman and fireman of extra 356 testified that it was 7 16 a m, while the operator at Amber testified that the train left that point at 7 10 a m. If both of these statements are correct, the first section traveled the distance of 5 1 miles from Amber to Mock, from a standing start, in 6 minutes, or at an average speed of 51 miles an hour, and then consumed 14 minutes in reaching South Cheney, a distance of 5 5 miles from Mock, or at an average speed of 23 57 miles an hour.

With regard to the time the second section passed Mock, the engineman of extra 356 testified that it was 7 27 a m, while the fireman did not notice the time. The operator at Amber, as well as the members of the crew of the second section, testified that that train left Amber at 7 20 a m. If these statements are correct, the second section traveled from Amber to Mock, with a standing start, in 7 minutes, an average speed of 43 71 miles an hour, and consumed 13 minutes between Mock and South Cheney, an average speed of 25 36 miles an hour.

If all of these figures are correct, then both the first and second sections of train No 4 traveled from Amber to Mock at an average speed practically twice as great as the speed maintained from Mock

to South Cheney, notwithstanding a standing start at Amber and grades more adverse between Amber and Mock than between Mock and South Cheney. While this may be possible, it is not believed to be probable.

Concerning the time made by the third section, the operator and agent at Amber testified that the train passed that station at 7:30 a. m., and as the collision occurred at 7:43 a. m. the average speed of the train between the two points would have been 48.92 miles an hour. According to the testimony of Engineman Gander, however, his train passed Amber shortly after 7:26 a. m., and therefore at the most favorable estimate consumed only 17 minutes in traveling to South Cheney, an average speed of 37.41 miles an hour. It is also to be noted that Engineman Gander testified that the speed of his train was reduced at one point where the track was not in good condition, and that it was considerably reduced at the location of the broken rail. In view of these slow-downs, the speed of his train, from Engineman Gander's own figures, must have been 40 miles an hour over practically the entire distance between Amber and South Cheney, if the figures of the operator are correct, the speed must have been about 50 miles an hour.

This accident was caused by the failure of the engineman of train third No. 4 properly to observe and be governed by train order No. 534, restricting speed between Amber and South Cheney to 30 miles an hour. Even if his own figures are correct, Engineman Gander's train maintained a speed of about 40 miles an hour between the two points, while, if the figures of the operator and the agent at Amber are correct, the train maintained a speed in excess of 50 miles an hour. It is also apparent that Engineman Gander was operating his train into South Cheney, the station at which his running orders expired, at an excessive rate of speed in a dense fog, and that the speed at the time of the collision was much higher than is indicated by his estimate, which was 12 or 15 miles an hour, is clearly shown by the fact that train third No. 4 struck train second No. 4 with such force as to telescope the sleeping car Crookston a distance of approximately 40 feet and to drive the train forward a distance of 60 feet.

A contributing cause was the failure of Flagman Lude to throw off a lighted fusee when his train slowed down approaching South Cheney.

It is possible that a further contributing cause of the accident was the failure of Operator Thompson to hold train third No. 4 at Amber until 10 minutes after the passage of train second No. 4, but in view of the conflict in testimony in connection with this phase of the situation it is impossible to say definitely that the third section was not held 10 minutes, as required by the bulletin.

Engineman Gander was employed as an engineman in August, 1894. He had a good record and in every way was considered to be an efficient and reliable engineman.

Flagman Lude entered the service September 15, 1910, and had a good record.

The train crew of train second No. 4 had been on duty about 9½ hours after a period off duty of about 15 hours. The engine crew of train third No. 4 had been on duty about 5½ hours, after a period off duty of about 12 hours. The operator at Amber had been on duty 7 hours and 43 minutes, after 16 hours off duty.

This accident once more calls attention to the inadequacy of the time-interval system of spacing trains. Under such a system the movements of trains are restricted only at open offices, at which points trains going in the same direction are required to be spaced 10 minutes apart. While this system of operation may afford protection in the vicinity of open offices, the long distances between such offices, especially at night, makes it possible for a train traveling at a high rate of speed to overtake a train traveling at a low rate of speed, and makes advisable the adoption of some form of block signals that will provide a space interval rather than a time interval between trains.

Respectfully submitted

H. W. BELNAP,  
*Chief, Division of Safety*