

Railroad accident investigation from report CV 147 no. 651 2005

JUL 09 1976

UNIVERSITY
Library

To the COMMISSION

On December 18, 1919, there was a head-end collision between two passenger trains on the Norfolk & Western Railroad at Walton, Va., which resulted in the death of 5 passengers and the injury of 10 passengers and 7 employees. After investigation of this accident I respectfully submit the following report:

This accident occurred on the Radford Division, which extends from Roanoke, Va., to Walton, Va., a distance of 41 miles. At Walton it divides, one double-track line extending to Bluefield, W. Va., and another double-track line extending to Radford, 4½ miles, beyond which point it is single track to Bristol. Extending eastward from Walton it is a three-track road for a distance of about 9 miles to the top of Christiansburg Hill, the track on the south being used for eastbound passenger trains, the middle track for eastbound freight trains and the track on the north for westbound movements. Trains are operated by time-table and train orders and an automatic block signal system. The accompanying diagram shows the approximate layout of the tracks in this vicinity, together with various other features involved in the accident.

At Walton there is a 35-level electric interlocking plant, all switches and signals at that point being controlled from a tower located in the angle formed by the intersection of the Bluefield and Bristol lines. Opposite this tower on the south side of the Bristol line is interlocking signal 14-L governing eastbound movements on that line. Illustration No. 1 is a view of this signal looking eastward. At a point 759 feet east of this signal is interlocking signal 8-L, which protects the crossover switch connecting the middle track with the eastbound main track. This is a two-arm, two-position lower quadrant signal, the top arm is a semiautomatic interlocking signal governing movement of trains from the eastbound track of the Bristol line over the eastbound main track east of Walton. The bottom arm is a calling-on signal, controlled by the crossover switch and an electric push button or switch in the tower, used as a permissive signal for the purpose of authorizing trains to proceed with caution be-

161160—20

Dept. of Transportation

JUL 09 1978

Library

yond the interlocking signal when the latter is in the stop position and when the crossover switch is properly lined up for an eastbound movement from the Bristol line. Illustration No 2 shows signal 8-L with the calling-on signal displaying a permissive indication. The signals at this point are electrically lighted. The night color indications of these two signals are as follows. Both signals, red, stop, top signal red and bottom signal yellow, proceed with great caution, top signal green and bottom signal red, proceed.

At the time of the accident the rear end of the first train was standing on the eastbound main track at a point about 1,290 feet east of signal 8-L, while water was being taken at the water tank. A few hundred feet east of signal 8-L is a transfer platform where passengers are transferred between through passenger trains and a shuttle train which usually stands on the middle track. This shuttle train operates between Walton and Radford, on the Bristol line. At the time of the accident the shuttle train was on the middle track with the engine clear of the crossover and the rear end of the train about 400 feet west of the rear end of the train which was taking water on the eastbound main track.

Approaching the point of collision on the Bluefield line from the west there is a 6-degree curve to the left 1,722 feet in length, this curve coming to an end a short distance east of where the double track of the Bristol line connects with the north and middle tracks of the three-track portion of the road east of Walton tower. Eastbound passenger trains after passing around this curve then pass through a crossover leading from the middle track to the eastbound main track. Approaching on the Bristol line from the west there is a curve to the right varying from 4 degrees to 5 degrees and 46 minutes, the total length of this curve being slightly over 1,300 feet. This curve ends about 100 feet east of signal 14-L. Just west of the point where the eastbound track of the Bristol line joins the eastbound track of the Bluefield line and continues eastward as the middle track, there is a switch leading to the eastbound main track on the right of the middle track. With the exception of the switches and crossovers, the track is tangent for a distance of nearly 2,000 feet, from the junction of the Bluefield and Bristol lines to a point beyond where the collision occurred. On account of an embankment and a building on the inside of the curve on the Bristol line the view of engine crews approaching signals 14-L and 8-L is restricted to about 1,000 feet. The grade is practically level for several thousand feet. At the time of the accident the weather was clear.

Eastbound passenger train 2d No 4, en route from Cincinnati, Ohio, to Roanoke, Va, consisted of 6 steel baggage cars, 2 steel sleeping cars, and 3 wooden coaches, hauled by engine 120, and was in

charge of Conductor Munsey and Engineman Heslep. It left Bluefield at 4 15 p m, 6 hours and 50 minutes late, passed Walton, according to the block sheet, at 6 36 p m, 7 hours and 15 minutes late, pulled through the crossover to the eastbound main track, and stopped at the water tank for water. The train had been standing at this point about five minutes when its rear end was struck by passenger train No 26.

Eastbound passenger train No 26, en route from Memphis, Tenn, to New York, N Y, consisted of 1 mail car, 1 combination car, 3 sleeping cars, 1 dining car, and 2 coaches, all of steel construction, hauled by engine 106, and was in charge of Conductor Davis and Engineman Hooper. It left Bristol, according to the train sheet at 3 34 p m, 2 hours and 29 minutes late, passed Walton at 6 43 p m, 2 hours and 22 minutes late, and at about 6 44 p m collided with the rear end of train 2d No 4 while traveling at a speed believed to have been about 20 miles an hour.

The rear car of train 2d No 4 was forced forward and upward, telescoping the car ahead two-thirds its length, the body of that car being entirely demolished. The body of the rear car was quite badly damaged and its rear end was penetrated by engine 106 as far as the smokestack of the engine. The third car from the rear in train 2d No 4 was forced against the steel sleeping car ahead of it and considerably damaged. The other cars in this train were not materially damaged. Engine 106 was not derailed and except for the front end of the engine no damage was sustained by any of the equipment in train No 26.

Engineman Heslep, of train 2d No 4, stated that after stopping at Walton tower to receive a train order he pulled ahead slowly on the eastbound track and stopped for water. He then released the train brakes and kept the independent brakes applied on the engine. He did not sound the whistle signal for the flagman to go back. After taking water he called in the flagman and as he finished sounding the whistle he saw two white lights about opposite the rear of the next to the last car in his train moving away from the track down the embankment, and at the same time the slack ran up and moved his engine ahead a distance of 6 or 8 feet. This occurred after his train had been standing about 3 or 4 minutes. He looked at his watch about 40 seconds afterwards and it was then 6 44 40 p m. He further stated that when passing the shuttle train he did not notice any smoke or steam blowing across the track. He also stated that he had operated trains over the Bristol line for several months and that with the top arm at signal 8-L displaying a red indication and a yellow indication displayed by the bottom or calling-on arm, it meant that the switches were lined up but the track was not clear, and to proceed prepared to stop, no speed limit being prescribed. He con-

sidered that the provisions of rule No 708 applied as to the manner in which the calling-on signal should be obeyed

Rule 708, which is printed in the rule book among the manual block rules reads as follows

Engineers and conductors running on permissive block card or permissive block signal must handle their trains with great caution. Where view is obscured, speed must be reduced to insure against collision with a train running ahead

The responsibility for colliding with trains in block when running on permissive block card, or permissive block signal, will rest with the train receiving and moving under such card or signal. This will not relieve conductor and engineer of train stopping in block or between stations from protecting as required by rule 99

Nothing in these rules will relieve train and engine crews from the fullest observance of all the general and special rules governing the movement of trains

Engineman Heslep further stated that it was not the general practice to protect by flag while stopping at this point to take water, but that he thought it should be done

Fireman Long, of train 2d No 4, said that the slack ran up within 2 or 3 seconds after the engineman finished sounding the whistle calling in the flagman. He looked back immediately but did not see any lights. Fireman Long also said that he had noticed quite a little smoke and steam blowing across the track from the engine of the shuttle train, which obscured the view to some extent

Head Brakeman Malloy stated that when the train stopped at the water tank he descended to the ground from the next to the last car, looked back and saw the flagman with his red lantern, and then started toward the head end looking over the train. He had reached a point about seven car lengths from the rear of the train when the collision occurred

Conductor Munsey, of train 2d No 4, stated that when his train stopped at the water tank at Walton he was in the second car from the rear. He thought this stop was made at about 6:37 p. m. He then walked back through the train to the rear in order to see that the flagman went back. The door at the rear of the car being open, he could see the flagman going back, and by the time he reached the rear platform the flagman was back about 6 car lengths and still walking back. He remained on the rear platform until train No 26 appeared around the curve west of the tower. At this time he could clearly see the train, his view not being obscured by any smoke or steam from the engine of the shuttle train. He estimated the speed of train No 26 when passing the tower at about 30 miles an hour, and he thought then that it was going to collide with his train. The engineman was working steam and did not shut off until within 10 car lengths of the rear of train 2d No 4. He saw the flagman giving

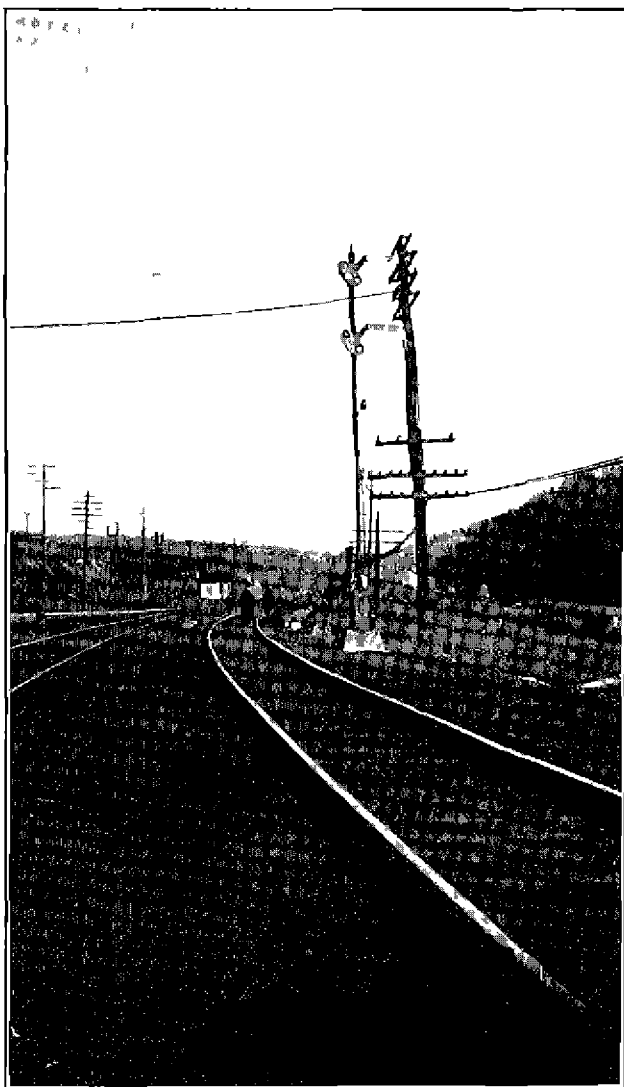


FIG. 1 —Interlocking signal 14-T, governing eastbound movements on Bristol line at junction with three track portion of road

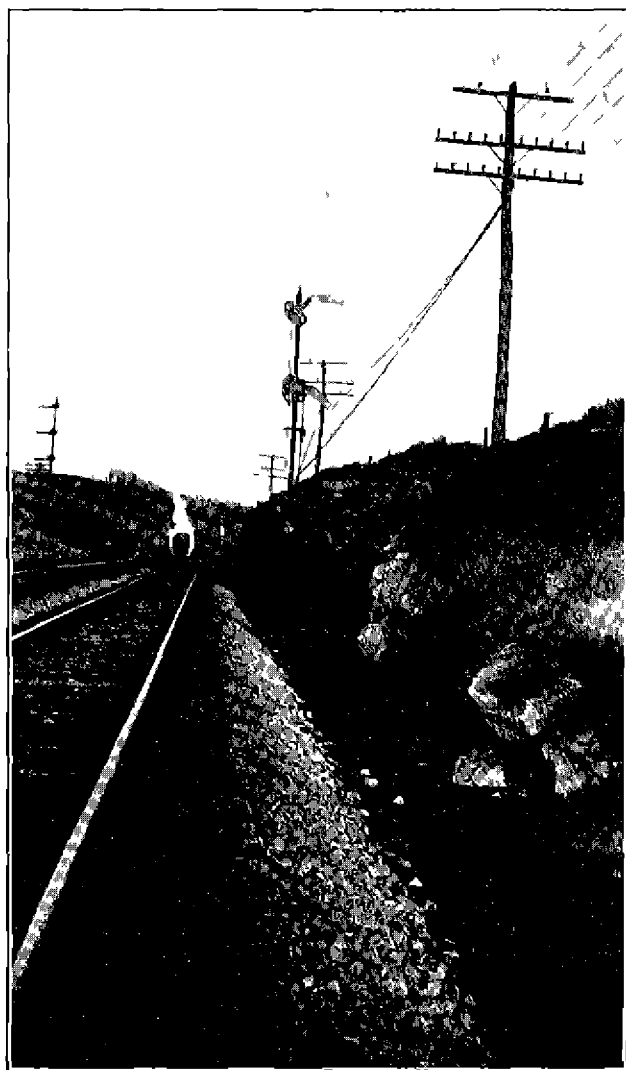
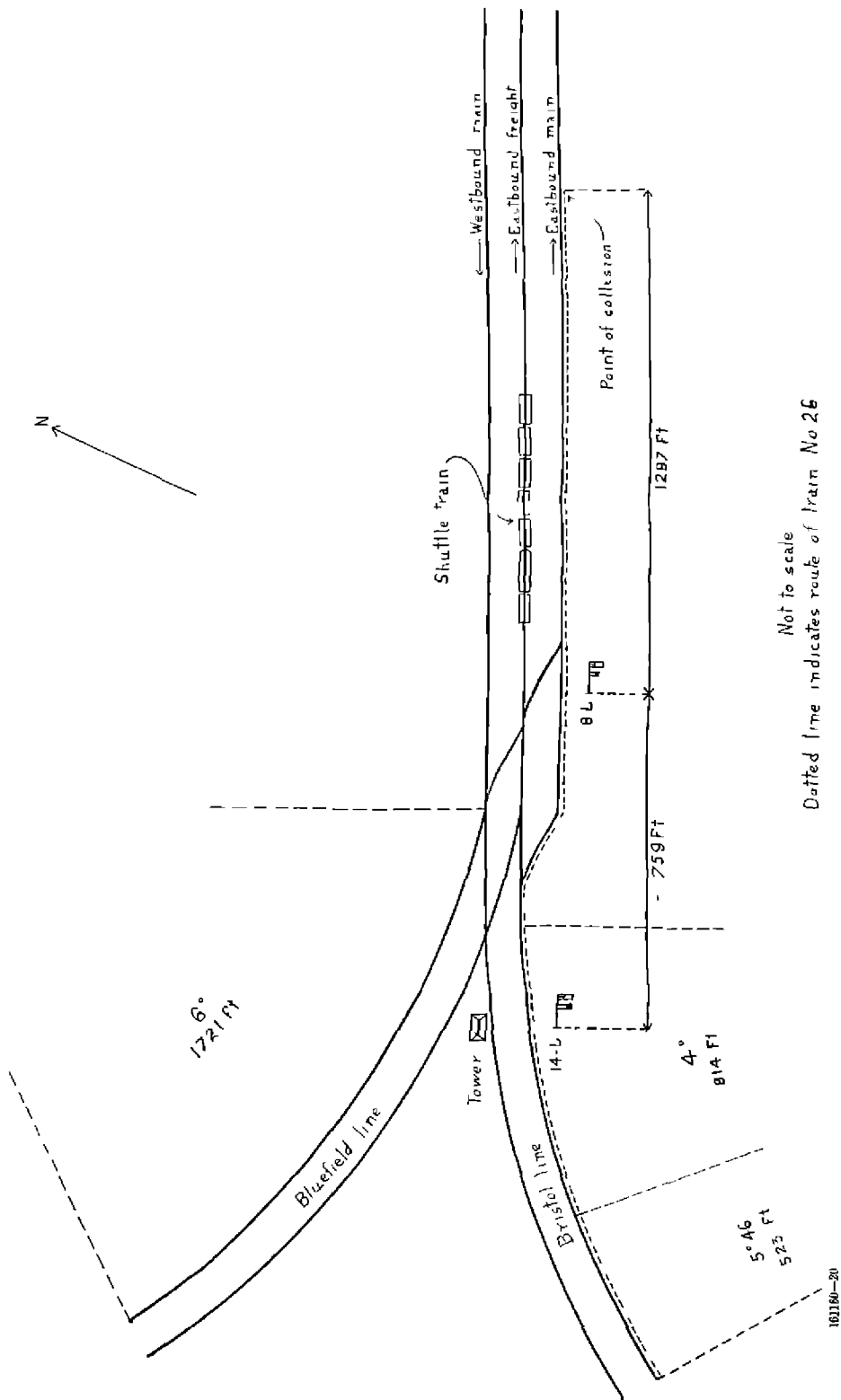


FIG. 2.—Interlocking signal 8-L, which protects crossover switch connecting middle track with eastbound main track.



Not to scale
 Dotted line indicates route of Train No 26

stop signals but did not notice anyone signaling from the shuttle train. He did not think the brakes on train No 26 were applied until after the engine had passed the flagman, and was within 8 car lengths of his train. When he saw that a collision was inevitable he jumped from the train and ran down the embankment on the south side of the track. He estimated the speed of train No 26 at the time of the collision to have been 20 or 25 miles an hour. After the collision he came up to the engine of train No 26 and looked at his watch, it was then 6 40 p m. He did not know exactly how far back the flagman went, but thought he must have been near the end of the shuttle train, a distance of approximately 400 feet. In his opinion the flagman could have gone back nearly to the tower in three minutes. At the time of the collision he did not have a lantern, having previously loaned his own lantern to the head brakeman, and he said he did not see anyone with lanterns running down the embankment. The markers on his train were burning brightly and were in good condition. Conductor Munsey also said that it was his practice when stopping for water to see that the flagman went back to protect the train, and also when stopping at the transfer platform if the stop was of more than three minutes' duration.

Flagman Pyrtle, of train 2d No 4, stated that when his train stopped he started back, walking slowly, and was about 6 or 8 car lengths from his train when he saw train No 26 about opposite the tower, at which time its speed was about 45 miles an hour and the engine working steam. At this time he did not notice any smoke or steam from the engine of the shuttle train. He also noticed that the headlight on the engine of train No 26 was dim and he thought they were using a lantern instead of the electric headlight. As soon as the train came in sight he began to give stop signals, continuing to give them until he had to jump from the track. At this time he was about 10 or 12 car lengths from the rear of his train, and he estimated the speed of train No 26 to have been about 20 or 25 miles an hour. He thought steam was shut off when the engine was 3 or 4 car lengths from him and that the brakes were applied at about the time the engine passed him. He was about opposite the next to the last car in train No 26 when it came to a stop after the collision. He stated that he did not light a fusee because train No 26 would have passed him before he could have done so, and he thought he could do better by signaling with his red lantern. Flagman Pyrtle also stated that he ran about a car length back from the track as the train passed him. When his attention was called to the fact that he had estimated the speed of train No 26 when it first came in sight as 45 miles an hour, and that in spite of the fact that the engine had been working steam until it was within 3 or 4 car lengths of him he had estimated its speed at that time as 20 or 25 miles an hour, he said that

it could have been reduced from 45 to 25 miles an hour within 3 or 4 car lengths, also that the train might have passed him at a speed of 30 miles an hour.

Engineman Hooper, of train No 26, stated that after leaving Pulaski, about 18 miles west of Walton, he cut in the electric headlight, found that it was not working, and had a message dropped off to have a man ready at East Radford, 3 miles west of Walton, to make repairs, but on reaching that point found that this message had not been delivered. In order to avoid delay, a lantern was placed in the headlight and the train proceeded. A clear indication was received at signal 14-L, opposite the tower, while at the next signal, 8-L, the interlocking signal was in the stop position while the calling-on signal was displaying a yellow or permissive indication. He had allowed his train to drift around the curve at a speed of about 15 miles an hour, and he stated that it could not have gone much farther without working steam. Accordingly as soon as his engine reached signal 8-L he began to work steam, and shortly afterwards ran into a bank of smoke and steam which blew across the track from the engine of the shuttle train. This bank of smoke and steam extended a distance of about three passenger car lengths and obscured his view of the track ahead, but he did not shut off steam. As soon as he had passed through it, at which time the speed of his train had been increased to about 20 miles an hour, he saw a red light, which afterwards turned out to be the night marker on train 2d No 4. At this time he had been working steam for a distance about equal to the length of his train. He then leaned out of the cab window, saw two red lights, and, realizing there was a train ahead of him, applied the air brakes in emergency. This reduced the speed of his train to such an extent that at first he thought he would stop in time to avoid a collision. He thought the rear end of train 2d No 4 was about four or five passenger car lengths distant when he first saw it. He also stated that he did not see anything of the flagman either before or after the collision. His understanding of a permissive indication at signal 8-L was that it gave him permission to pass the interlocking signal under control, proceeding in that manner until the next signal was encountered, and that in case of accident he would be the responsible party. He was unable to say why he failed to shut off steam or apply the brakes when he encountered the bank of smoke and steam which obscured his view. He thought that if the headlight had been burning he would have been able to see the train much sooner than he did. This was his third trip on train No 26, and he stated he had had trouble with the electric lights on the engine on each trip. He had reported them on the proper form and had also made a verbal report to the foreman in an endeavor to have them

repaired. On the trip on which this accident occurred the electric cab lights burned satisfactorily until the headlight was turned on, then he found that the headlight would not burn, while the cab lights began to flicker and from this point to the scene of the accident the lights were flickering while the train was in motion, being totally extinguished at one instant and then burning much brighter than usual the next instant.

Fireman Martin, of train No. 26, said that signal 14-L was called green by the engineman, the next signal 8-L being called yellow. He did not see it himself on account of looking out on the left side to see the position of the train order board at the tower. The speed of the train at this time was about 15 miles an hour. At some point between the tower and signal 8-L the engineman began to work steam, while he went back in the coal pit and began to shovel down some coal. On account of working on the coal he did not know how far the engineman worked steam or at what speed the train was moving when the engineman applied the brakes, nor did he see the flagman or the rear end of train No. 4. His first knowledge of anything wrong was when the engineman called to him at the time the brakes were applied, the collision occurred before he was able to look out and see what was the matter. Fireman Martin further stated that his understanding of a yellow or permissive indication of the calling-on signal was that it was the same as the yellow indication of an automatic block signal, that it meant that the track was clear to the next succeeding signal and to approach that signal prepared to stop. He did not remember having previously received a permissive indication of this signal. He had been in engine service since 1903, and had been an engineman since 1912.

Conductor Davis, of train No. 26, stated that the speed of his train at the interlocking plant was in the neighborhood of 20 miles an hour, and he thought that this had been increased to about 25 miles an hour when the brakes were applied. At the time of the collision the speed was about 20 miles an hour. Conductor Davis also stated that it was the practice to flag when taking water at this point and also when stopping at the transfer platform more than two or three minutes.

Head Brakeman Cruise, of train No. 26, stated that he thought the train had been operated at the usual rate of speed between Radford and Walton, about 25 or 30 miles an hour, and that this speed was reduced through the interlocking plant to about 15 miles an hour. He was standing in the open door of the baggage compartment of the combination car and he said that the engineman began to work steam as the train was passing signal 14-L, the speed being increased until it was 20 miles an hour at the time of the collision.

Rear Brakeman Keesee, of train No 26, stated that the train ran at the usual rate of speed approaching Walton and that the speed was reduced through the interlocking plant, being about 20 miles an hour when passing the tower. He thought the speed at the time of the collision was about 25 miles an hour. When going back to flag he did not notice any smoke or steam from the engine of the shuttle train.

The shuttle train consisted of 5 cars, with the engine on the west end, but headed east. Conductor Wright, who was in charge of this train, stated that after train 2d No 4 came to a stop he walked to the rear of his train to see if there were any passengers to be picked up and then returned to the combination car, the third car in his train, and remained there until he heard train No 26 approaching. He then went out on the car platform and looked to see if train 2d No 4 had gone. He then saw the flagman about 4 car lengths from the rear of train 2d No 4 standing in the middle of the track giving stop signals with his lantern. Conductor Wright stated that he then commenced to give stop signals from the platform on which he was standing, which was on the fireman's side of train No 26, using his white lantern for this purpose. As the engine passed him he called to the engine crew, and he said that it was about this time that the brakes were applied. He did not pay much attention to the speed of train No 26, but thought it was then about 25 or 30 miles an hour. He did not notice any smoke or steam blowing across the track. Conductor Wright further stated that he operated regularly between East Radford and Walton, that eastbound passenger trains seldom took water at Walton, and that nearly always they had flag protection if they remained over 2 or 3 minutes. His understanding of a permissive indication of the calling-on signal was that a train should proceed prepared to find a train occupying the track ahead.

Conductor Moser, who was on the shuttle train, stated that when he heard train No 26 approaching he went out on the car platform and on looking out saw the markers of train 2d No 4, but he did not see the flagman. He said Conductor Wright gave stop signals with his lantern and that both of them called to the engine crew as the train passed, running at a speed estimated by him to have been about 15 miles an hour. He did not notice any smoke or steam obscuring his view of train No 26 as it approached.

Assistant Road Foreman of Engines Blankenship was on the engine of the shuttle train at the time train No 26 approached. He heard the engine working steam and thought that the speed of the train when it passed him was about 35 miles an hour. He stated that the brakes were applied as the next to the last car in train No 26 was passing him and that the last car stopped about even with the east end of the first car in the shuttle train.

Operator Harman, on duty at Walton tower at the time of the accident, stated that train 2d No 4 passed at 6 36 p m. When the engine of train No 26 was passing the tower he caused the calling-on signal to display a permissive indication. At this time he did not know of the location of train 2d No 4 except that it had not passed Vicker, the next station east of Walton. He was unable to estimate how fast train No 26 was traveling, but stated that it was faster than any passenger train he had ever seen going through the interlocking plant, and he thought that if he had not given a permissive indication at the calling-on signal the train could not have stopped without running the signal. He stated that he expected train 2d No 2 to arrive from Bluefield very soon after train No 26, probably 10 or 15 minutes, and that he considered he had sufficient reason for using the calling-on signal not only on account of train 2d No 2 being expected, but because it was desired to keep the interlocking plant clear at all times on account of the frequent movement of trains and engines back and forth. He said it was customary to use the calling-on signals at all times and for all purposes, and he considered it good practice to use them regardless of whether or not some other train was due, and that in this particular case he did what he ordinarily would have done to advance train movements, the use of the permissive signals not being limited to cases where their use is necessary to avoid congestion. According to his understanding these calling-on signals were installed to keep traffic moving as well as to reduce congestion through the limits of the interlocking plant. He also said that on two occasions he had received protests from enginemen about proceeding beyond the stop-and-stay interlocking signals when in the stop position, and he had explained to them the requirements of the bulletin relative to the use of the calling-on signals.

Signal Maintainer Anthony stated that he knew of two specific cases in which enginemen had stopped at the calling-on signals at Walton when they were displaying permissive indications. He also stated that before the calling-on signal was installed at signal 8-L, when a train was taking coal at the coal wharf a following train, on account of not being able to pass the signal, had to stop on the curve. In starting from this location trains frequently were broken in two. He considered that the use of the calling-on signal decreased the number of shop cars from this cause by 75 per cent. Even with the coal wharf now moved to Vicker, an 85-car freight train would often foul the track enroute for the block east of Walton, controlling signal 8-L, and thus necessitate the use of the calling-on signal. He thought that this signal increased the freight efficiency of the plant by 50 per cent, meaning that where a freight train formerly used 15 minutes in clearing the plant it could now do so in 7 or 8 minutes.

Signal Engineer Richards stated that engines formerly took coal at a coaling station near the water tank and that the only way helper engines could be moved ahead and coupled to the rear of a train was by hand signals, the use of which was prohibited in interlocking plants. The rules also required the engineman before proceeding beyond the signal to inform himself whether or not the derail was closed. It was for the purpose of avoiding hand signals and messages to enginemen that the calling-on signals at this point were installed, as well as for the purpose of taking care of passenger trains which might have work to do in the block, as in the case of the shuttle train. It was not intended, however, that the calling-on signals should be used for the purpose of permitting other trains to enter the block when it was occupied except in case of necessity, and unless absolutely necessary he did not approve of the use of the calling-on signals except for the purpose of advancing trains in order to clear the interlocking plant. He thought it would be safer if trains were brought to a stop before being given a permissive indication, and that this would not result in serious delay under normal traffic conditions.

Assistant Train Master Walker stated that he examined applicants for employment in train service as well as brakemen and firemen for promotion to the positions of conductor and engineman, and that in such examinations the operation of the calling-on signal was taken up in connection with the instruction in automatic and interlocking signals, he thought it was generally understood that it was a permissive signal to which rule 708 applies. He did not know of any misunderstanding due to the fact that the signal is in automatic territory, while rule 708 is printed in the rule book among the manual block rules.

This accident was caused by the failure of Engineman Hooper of train No. 26 to operate his train "with great caution" through the block section east of Walton as required by the rules, after receiving a permissive signal indication. A contributing cause was the failure of Flagman Pyrtle, of train 2d No. 4, properly to protect his train.

With interlocking signal 8-L displaying a stop indication Engineman Hooper knew positively that the track ahead was occupied by a preceding train or obstructed in some other manner, and although he received a permissive indication of the calling-on arm at signal 8-L, giving him the right to pass the interlocking signal in the stop position, the only definite information this permissive indication gave was that the switches were properly lined up for the movement of his train. It was still necessary for him, as required by rule 708, to proceed with great caution and to watch out for a train ahead or some other obstruction which would endanger the passing of his train. Under such circumstances there can be no excuse for his fail-

ure to have his train under full control at the time of passing the permissive signal, and while running through the block governed by it, in any event he should have shut off steam and have been prepared to stop quickly when running through the smoke and steam which he states obscured his view. Had he done so, it is probable that he would have been able to stop his train in time to avoid the collision.

According to Flagman Pyrtle's own statement he walked back slowly, and in spite of the fact that his train had been standing about five minutes before the collision occurred his statements indicate that he went back only a distance of about 400 feet. Had he utilized all the time at his disposal he could easily have gone back as far as signal 8-L, which would have placed him beyond the smoke and steam which Engineman Hooper claimed obscured his vision, and it is probable that he could have warned the approaching train in time to have averted the collision.

Engineman Hooper was employed as a section man in July, 1879, transferred to coaler in October of the same year, promoted to fireman in 1881 and to engineman in 1883. His record was excellent. Flagman Pyrtle was employed as a brakeman in January, 1914, and in October of the same year was disciplined for responsibility in connection with the derailment of an engine. His record since that time was clear.

At the time of the accident the crew of train No. 26 had been on duty nearly 4 hours, after periods off duty of over 21 hours. The train crew of train No. 4 had been on duty about 12 hours, after nearly 18 hours off duty. The engine crew of this train had been on duty about 4 hours, after 7 hours and 25 minutes off duty.

In view of the circumstances existing prior to this accident Operator Harman did not exercise good judgment in allowing train No. 26 to pass signal 8-L when he knew that the block section east of that signal was still occupied by a passenger train, although in doing so he was following a practice which had grown up at this point. In January, 1917, calling-on arms installed on signals 14-L and 8-L were placed in service for the purpose of allowing permissive movements through the interlocking in order to prevent delays due to the block sections being occupied, signal 8-L being the last eastbound interlocking signal. The particular service intended to be performed by the calling-on arm at signal 8-L, according to the officials of the company, was to enable helpers to advance and couple to the rear of trains without the use of hand signals, and to allow trains to close up at a coal wharf which was at that time located just east of Walton, this coal wharf has since been moved to another location.

The statements of Operator Harman, however, indicate that a practice has grown up of using the calling-on signal for all pur-

poses, even though the train so advanced might be so far ahead of a following train that no delay to the following train or congestion of any kind would result. It is noted that such a practice does not give even as much protection to the train ahead as would be afforded by an automatic block signal, a stop indication of which, under the rules of this railway, requires the approaching train to come to a full stop before proceeding under control, whereas a train receiving a permissive indication of the calling-on signal at this point is not required to stop. While no specific instructions had been issued to operators regarding the use of permissive signals at Walton, it was not intended that this calling-on signal should be used to advance succeeding through movements except in case of necessity, and no such necessity existed in this case, the signal engineer stated that unless such a necessity should arise he would not approve of its use for any purpose other than that for which it was installed. In view of these facts, immediate steps should be taken toward restricting the use of the calling-on arm at signal 8-L to its original functions, and it is recommended that such instructions be issued as will prevent its use to authorize the movement of a passenger train past the interlocking signal in stop position or to authorize the movement of any following train past the interlocking signal in the stop position when the block section east of Walton is occupied by a passenger train, except in case of emergency.

Attention is also called to the fact that Freeman Martin, of train No. 26, who was a promoted man, stated that he understood a yellow or permissive indication of the calling-on arm at signal 8-L to mean that the track was clear as far as the next eastbound automatic block signal. Such an understanding not only shows that he was not fully acquainted with the instructions issued in regard to this signal at the time the signal was placed in service, but also indicates a laxity upon the part of those officials whose duty it is to examine and instruct train-service employees, to know that they are qualified for service, and to know that such rules are being properly observed in daily practice. Immediate steps should also be taken to see that all employees fully understand and live up to the rules under which they are operating, for misunderstandings of this character upon the part of employees jeopardize the safety of the traveling public.

It is noted that the three rear cars of train No. 4, in which the casualties occurred were of wooden construction, had steel cars been used instead, there can be no doubt that the results of this accident would have been far less disastrous.

Respectfully submitted

W P BORLAND,
Chief, Bureau of Safety