INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE NORFOLK AND WESTERN RAILWAY AT ALNWICK, W. VA., ON FEBRUARY 2, 1931.

March 11, 1931.

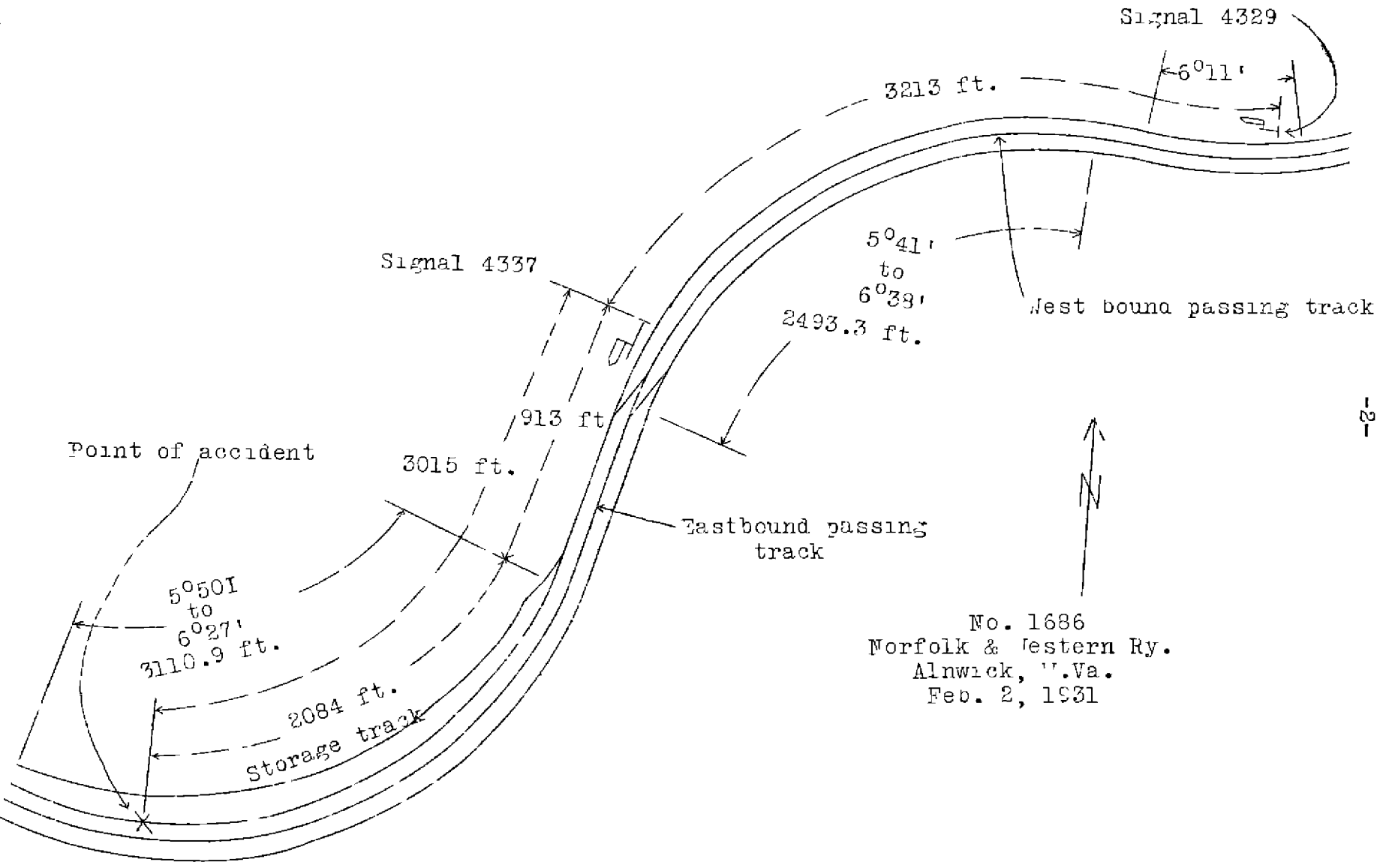
To the Commission:

On February 2, 1931, there was a rear-end collision between a work train and a freight train on the Norfolk & Western Railway at Alnwick, W. Va., which resulted in the injury of 23 employees.

Location and method of operation

This accident occurred on that part of the Pocahontas Division extending between Bluefield and Williamson, W. Va., a distance of 99.6 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred on the westbound main track at a point 3,015 feet west of automatic signal 4337. In this vicinity there is a middle track between the two main tracks approximately 2.3 miles in length, and at about the center of this middle track there are trailing-point crossovers connecting this track with the main tracks, the west switches of these crossovers are located about 266 feet west of signal 4337. The section of the middle track east of these crossovers is designated as the passing track for westbound trains, and that portion of it west of the crossovers is the normal passing track for eastbound trains. There is also a storage track north of the westbound main track, the east switch of this track is 913 feet west of signal 4337. Approaching the point of accident from the east, there is a compound curve to the left 2,493.3 feet in length with a maximum curvature of 6° 38', and then the track is tangent for a distance of 694.9 feet, followed by a compound curve to the right 3,110.9 feet in length, ranging in curvature from 5° 50' to 6° 27', the accident occurring on this last-mentioned curve at a point 2,083.9 feet from its eastern end where the curvature is at its minimum. The grade at the point of accident is 0.40 per cent descending for westbound trains.

The signals involved are signals 4337 and 4329, located 3,015 feet and 6,228 feet, respectively, east of the point of accident. These are approach-lighting



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signals of the three-position, upper-quadrant, semaphore type, and at night they display green, yellow, and red indications. On account of the curvature of the track, signal 4337 can not be seen from the engineman's side of a westbound train until the engine is about 200 feet from it, but this signal is clearly visible from the fireman's side of a westbound train for a distance of more than 1,400 feet. The point of accident was visible from the engineman's side, a distance of 713 feet.

The weather was clear and it was dark at the time of the accident, which occurred about 6.35 p.m.

Description

Work train extra 1098 consisted of engine 1098 and a steel caboose, and was in charge of Conductor Stewart and Engineman Akers. This train departed from Devon, 12.1 miles west of Alnwick, and upon arrival at Alnwick it passed through the crossovers from the eastbound to the westbound main track, entered the storage track and coupled to the east end of 10 steel-underframe camp cars standing on that track. These cars and the caboose were then shunted westward on the westbound main track, after which the engine returned to the crossover and proceeded westward on the middle track in order to run around the cars. It entered the westbound main track at the west end of the middle, and moved eastward on that track, preparatory to coupling to the head end of the train, and it was while this latter movement was being made that the collision occurred.

Westbound freight train extra 2099 consisted of 108 cars and a caboose, hauled by engine 2099, and was in charge of Conductor Watts and Engineman Cook. This train passed Iaeger, 12.4 miles east of Alnwick, at 5.55 p.m., and stopped at Mohawk, about 2 miles east of Alnwick, for inspection. About 20 minutes later it left that point, passed signals 4329 and 4337 which were apparently displaying caution and stop indications, respectively, and collided with the rear end of work extra 1098 while traveling at a speed variously estimated at from 12 to 20 miles per hour.

Engine 2099 came to rest 402.6 feet west of the point of collision and was partly derailed. The caboose of extra 1098 and the first four cars ahead of it were also derailed, the caboose and the rear car coming to rest to the left of engine 2099, and the second and third cars to the right, while the fourth car was practically

in line with the track immediately ahead of the engine. The caboose and rear car of extra 1098 were practically demolished and the second and third cars were considerably damaged. The six cars on the west end broke away and were stopped by engine 1098. The injured employees were construction laborers who were occupying the wrecked cars.

Summary of evidence

Engineman Akers, of extra 1098, stated that upon arriving at Alnwick the engine and caboose were moved through the crossovers and into the storage track where they were coupled to the camp cars, these cars and the caboose then being pulled from this track and given a start westward on the westbound main track. He had run around the cars and was starting back on the westbound track when he observed the cars moving towards him and immediately reversed his engine in an attempt to avoid a collision. He did not notice the indication of signal 4337 when his engine first entered the westbound main track, but while returning to the crossover after having shunted the cars ahead on the westbound track he observed this signal to be displaying a red indication. Engineman Akers also said that during the movement around the train, he noticed that the markers on the caboose were displaying red to the rear.

Fireman Myers, of extra 1098, stated that after his engine arrived at Alnwick, preparatory to entering the storage track for the camp cars, he noticed that the blade of signal 4337 was in stop position, he did not notice the indication of this signal after that time. The markers on the caboose were displaying red to the rear when the engine passed it on the trip to the west end of the middle track while running around the cars.

Conductor Stewart, of extra 1098, stated that upon arrival of the engine and caboose at Alnwick, he got off at the east storage-track switch and opened it while the movement of the engine was being made through the crossovers. He rode on the west end of the camp cars when they were switched out on the main track, and shortly after they came to a stop he started walking towards the rear end but had proceeded only about one and one-half car-lengths when his attention was attracted by the rumbling of an approaching train. Upon looking towards the east he observed the reflection of a headlight and he immediately ran towards the rear of his own train,

climbed upon the embankment along the track and gave stop signals with a white lantern, but these signals were not acknowledged by the approaching train until it was about 10 car-lengths from the point of collision, he estimated the speed of that train at the time of the accident at 20 miles per hour. As he did not accompany the engine and caboose east of the storage-track switch, he was unable to see the indication displayed by signal 4337, he thought, however, that he opened the storage-track switch 20 or 25 minutes before the accident occurred. Conductor Stewart further stated that while the cars were being switched from the storage track to the westbound main track, the movement was protected by flag, as it was being made against the current of traffic, but when the engine started through the middle track to run around the cars, the flagman accompanied the engine, and according to the conductor's understanding of rules 86-C and 99-B, flag protection was not required after that time. Rules 86-C and 99-B read as follows.

86(c). "Second class trains may stand within yard limits, between the outer switches of passing sidings, and at coal or water stations without protecting against trains of the same or inferior class following, and freight extras, third and fourth class trains may stand at such points without protecting against freight extras, third and fourth class trains following, except in foggy or stormy weather when Rule 99 must be observed.

99(b). All trains, except first class and those running on train order schedule, must approach all stations, water and coaling stations between stations, under control and so proceed until the track or automatic signal is plainly seen to be clear. The responsibility for a collision at a station, water or coaling station between stations, will rest with the following train. This will not relieve train and enginemen from the responsibility of protecting their trains at stations as prescribed by rules 86 and 99.

This gives all trains, except first class and those running on train order schedule, the right to stand between the outer switches of passing tracks and with-

in yard limits, and gives one train only the right to stand at a water or coaling station outside of passing track limits, without protecting against following trains as follows.

Second class trains will not protect against trains of the same or inferior class, and freight extras, third and fourth class trains will not protect against freight extras, third and fourth class trains, except in foggy or stormy weather when Rule 99 must be observed."

Brakeman Woods, of extra 1098, stated that while the engine was switching the cars from the storage track he proceeded about 10 or 12 car-lengths east of the crossover to protect against westbound trains, and while so engaged he observed that signal 4337 indicated stop. When the engine returned to the crossover after having switched the cars down the westbound track, he accompanied it on its movement around the cars and noted that the caboose markers displayed red to the rear. He did not place any torpedoes on the rails when returning from flagging.

Brakeman Marshall, of extra 1098, stated that when the conductor opened the storage-track switch he saw the automatic signal east of that point change to stop position. He assisted in switching the cars from the storage track and rode the rear platform of the caboose as they were moving westward on the main track, noticing at the time that the markers were showing red indications to the east, and in addition there was a red lantern hanging on the rear of the caboose. As soon as the cars stopped, he entered the caboose and began preparing a meal, but shortly afterwards he heard the noise of an approaching train and when he saw the reflection of a headlight he went out, grabbed the red lantern from the rear of the caboose, and ran towards the approaching train giving stop signals. He was only able to get back four or five car-lengths when the engine of that train passed him, and as it did so his signals were acknowledged and the brakes were applied in emergency. In his judgment, extra 2099 was traveling about 30 miles per hour at the time of the accident.

Engineman Cook, of extra 2099, stated that his train stopped at Mohawk for inspection, remaining there

about 20 minutes. After departing from that point, he observed that the first two automatic signals displayed green indications, which indications he called to the fireman. He was not certain about the indications of the following two signals, signals 4329 and 4337, or that he even saw them, but was of the impression that they were green, although he did not register these signals with the fireman. About the time of passing signal 4337, or just before reaching it, he shut off steam, turned on the injector, and shut off the feedwater pump, but he did not know whether this work distracted his attention from the signal. He looked back along the train while passing the east end of the storage track and when he looked ahead again he saw a red light about 25 car-lengths distant, which he thought at the time was a motor car at the tool house. Shortly afterwards he noticed stop signals being given by a white light and at about the same time he saw the lights on a caboose, but was of the opinion that it was standing on the passing track, and he did not realize that the westbound track was occupied until his engine was within 10 or 12 car-lengths from the caboose and he then applied the brakes in emergency. He estimated that his train approached the point of accident at a speed of 18 miles per hour, this speed being only slightly reduced prior to the collision. In order to assure himself that signal 4337 was not improperly displayed he returned to this signal and found it showing red, still not being convinced about the signal, he even climbed the mast and examined the semaphore. Engineman Cook further stated that he was suffering from a cold and had not slept soundly during the night preceding the accident and had taken some medicine, he was feeling well when he reported for duty at 12.30 p.m., but felt drowsy while standing at Mohawk and must have been in the same condition after leaving that point. He was familiar with the rule requiring an engineman to observe the position of signals and register them with the fireman, but was unable to give any reason for his failure to do so when the engine passed signals 4329 and 4337. He also understood that under rule 99-B it would be his fault if he struck a train between the switches, and that he would have to operate under control in the absence of clear signal indications.

Fireman Buckland, of extra 2099, stated that after leaving Mohawk he noticed the first and second signals west of that point were in the clear position, but before reaching signal 4329 the coal stopped feeding into the stoker hopper, making it necessary for him to go back

in the tender and shovel coal into the hopper. He was still engaged in this work when the train passed signals 4329 and 4337 and as a consequence he failed to see the indications displayed by these signals, and also failed to hear the engineman call their indications. His first knowledge of anything unusual was when the engineman acknowledged a flag and applied the brakes in emergency, Fireman Buckland then looked forward from his side of the engine and saw a caboose directly in front of the train. He thought his train was running 16 or 18 miles per hour at the time the brakes applied, but speed was reduced to about 12 miles per hour at the time of the accident. He knew it was his duty to observe automatic block-signal indications and check them with the engineman, and could have done so at the time his train passed the signals approaching Alnwick without interfering with his work to any appreciable extent, but he said his attention was devoted entirely to his duty of firing and he forgot to look for them.

Brakeman Cooper, of extra 2099, stated that he was riding in the brakeman's cupola on the tender while approaching Alnwick but did not see the indication of the signal east of the crossover at the time his train passed it. When the brakes were applied after passing this signal he noticed fire flying from the wheels, and becoming alarmed he left the cupola, looked back along the train, and then looked forward and upon observing a red lantern a short distance ahead he went down the ladder on the rear of the tender and jumped off. He estimated the speed of the train at the time the brakes were applied at 18 miles per hour, and this was only slightly reduced at the time he jumped off. When the train was being pulled back about one hour after the accident, he noticed that the signal east of the crossover was showing a stop indication.

Conductor Watts, of extra 2099, stated that cars were picked up at several points en route, the last place being at Farm, and before leaving that point the brakes were tested and found in proper working order. The next stop was at Mohawk, where the train was inspected, this required about 20 minutes. He was riding in the cupola of the caboose approaching Alnwick and the train was traveling at a speed of about 18 miles per hour when he noticed a sudden brake-pipe reduction of 10 pounds, the train decreasing speed very rapidly after that time until it came to a stop. The air pressure then continued to reduce slowly and as soon as it became exhausted, he noted the time, which was 6.40 p.m., this being from two to

five minutes after the train stopped. He did not observe the indication of signal 4329 when the caboose passed it, but while proceeding to the head end of the train after the accident he noticed that signal 4337 was in the stop position, with the light burning and displaying red. He further stated that he rode on the engine part of the time before the train arrived at Mohawk and during that time he noticed nothing unusual about the condition of Engineman Cook. In conversation with the engineman after the accident, the engineman said he thought the board was green.

Brakeman Reynolds, of extra 2099, stated that he was riding on the right side of the cupola of the caboose but did not see the indication of signal 4329 when the train passed it, although as soon as the train stopped he started towards the head end and on his way he noticed that signal 4337 was displaying a stop indication. He estimated that the train was traveling at a speed of from 15 to 18 miles per hour when the brakes were applied just prior to the accident.

Signal Supervisor Harris stated that while approaching the scene of accident, at about 12 o'clock midnight on the date of its occurrence, he observed that signal 4337 was in stop position, with the light showing red. After examining the wreckage, he returned to signals 4337 and 4329, accompanied by a signal maintainer, and made a thorough test of these signals, which were found to be in proper working order.

Conclusions

This accident was caused by the failure of Engineman Cook, of extra 2099, properly to observe and obey signal indications.

The rules provide that all trains, except first-class and those running on train-order schedule, must approach all stations under control and so proceed until the track or automatic signal is plainly seen to be clear, and that responsibility for a collision will rest with the following train. They also allow all except first-class and those running on a train-order schedule to stand between switches without protection, and specifically provide that freight extras and third and fourth-class trains may do so without protecting against following trains of the same or inferior class except in foggy or stormy weather.

The evidence is conclusive that signal 4337 assumed the stop position when the conductor of extra 1098 opened the storage-track switch preparatory to removing the camp cars from that track, about 20 or 25 minutes prior to the accident, and remained in that position during the switching operations immediately preceding the accident. According to the statements of Engineman Cook, he observed the first two automatic signals west of Mohawk in clear position, and checked their indications with the fireman, but he was not certain about the indications displayed by signals 4329 and 4337, nor was he certain that he saw them, his impression was that they were clear when his train passed them, although he failed to register their indications with the fireman as required by the rules. After passing the east end of the storage track, he saw the marker lights on a caboose ahead, but was of the impression that it was standing on the middle track, he then noticed stop signals being given with a white light, but by the time he took action to stop his train it was only 10 or 12 car-lengths from the point of collision. A test of the two signals involved was made subsequent to the accident and they were found to be functioning properly, and it is apparent they were in the proper positions at the time extra 2099 aproached and passed them.

Engineman Cook said he had not slept well the previous night, that he had taken some medicine for a cold, and that although he felt well when he reported for duty, he felt drowsy while at Mohawk, only about 2 miles from the point of accident, and he also said that he must have been in that condition after leaving that point. It is probable that this condition explains his action in passing the signals in question without knowing definitely what indications were displayed by the signals and controlling his train accordingly.

The rules further provide that firemen must observe the indication of fixed signals and register them with the engineman. Fireman Buckland stated that before reaching signal 4329 it became necessary to shovel coal in the stoker, and he was so engrossed in this work that his train passed this signal, as well as signal 4337, without his having noticed their indications. He should have been on the alert, and had he called the indications of these signals to the engineman, or checked with the engineman when the latter failed to call them, it is possible the accident might have been prevented.

This accident occurred on the main line of the Norfolk and Western. While automatic block signals are in service, there are many sharp curves and high banks which materially restrict enginemen's range of vision. The traffic movement on this line during the month of January consisted of 5 passenger trains in each direction and an average of about 10.5 freight trains, or a total movement of 31 trains daily. The accident here under investigation involved an engineman who was not in the best of physical condition, and who became drowsy while on duty and who apparently was in this condition approaching the point of accident, with the result that he failed properly to observe and obey the automatic-block signal indications. Under these circumstances, it is believed that the officials of this line should give serious consideration to the need for additional protection on this line, to the end that accidents of this character may in future be prevented.

The employees involved were experienced men, and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Director.