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**IN THE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
CENTRAL NEW ENGLAND RAILROAD AT HOLMES, N.Y.,
ON SEPTEMBER 29, 1919.**

November 21, 1919.

On September 29, 1919, there was a rear-end collision between two freight trains on the Central New England Railroad at Holmes, N. Y., which resulted in the death of two employees and the injury of eight employees, one of whom afterwards died. The investigation of this accident was held in conjunction with the Public Service Commission of New York. As a result of this investigation the Chief of the Bureau of Safety submits the following report.

This part of the Central New England Railroad is a double-track line extending from Maybrook, N. Y., to Danbury, Ct., a distance of 74.08 miles. Trains are operated by time table and train orders, supplemented by an automatic block signal system between Maybrook and Holmes, a distance of 54.59 miles. From Holmes to Danbury a manual block signal system is in use, operated as an absolute block for eastbound trains. Approaching the station at Holmes are eastbound automatic signals 13.6 and 14.6, located 6,582 and 867 feet, respectively, west of the center line of the station. On account of signal 14.6 being the last eastbound automatic signal, when it is displaying a stop indication trains are required to come to a full stop and are then allowed to proceed with caution to the train order board at the station. The collision occurred about 100 feet west of the station. Approaching the point of collision

from the west the track is tangent for a distance of about 8,650 feet. Starting from a point west of signal 13.6, the grade is 1.04% descending for about 2,700 feet, extending to a point about 150 feet east of signal 13.6. The track is then level or slightly descending for 1,700 feet, followed by an ascending grade of .45% about 800 feet in length. From the top of this grade the track descends for a distance of about 1,000 feet at the rate of .34%, followed by a 1.00% descending grade to the point of collision, a distance of about 2,800 feet. The weather at the time of the accident was foggy.

Eastbound freight train extra 425 consisted of engines 425 and 338, with a caboose in which there were two crews dead-heading. There was no conductor assigned to this train, the crew consisting of Engineman Booth of the leading engine, his fireman, an engineman on the second engine merely to look after it while on the road, and a flagman. Under general rule 1195, when there is no conductor the engineman assumes the duties and responsibilities of the conductor. The train was therefore in charge of Engineman Booth. Extra 425 was en route from Maybrook to Danbury. It left Maybrook at 10.30 p.m., arrived at Hopewell Junction, 14.84 miles from Holmes, at 12.22 a.m., departed at 12.35 a.m., passed West Pawling at 1.01 a.m. and arrived at Holmes at 1.20 a.m. Signal 14.6, the end of the automatic signal system, was in the clear position, but the train order board at the west end of the station was displayed on account of a train being in the block. Extra 425 stopped opposite the station and had been standing at that point about 15

minutes when it was struck by extra 5114.

Eastbound extra 5114 consisted of 39 cars and a caboose, hauled by engine 5114, and was in charge of Conductor Brown and Engineman Francis. It left Maybrook at 8.00 p.m. and arrived at Hopewell Junction at 11.47 p.m., at which point it was passed by extra 425. Extra 5114 departed from Hopewell Junction at 12.40 a.m., passed West Pawling at 1.25 a.m., passed signals 13.6 and 14.6 displaying caution and stop indications, respectively, passed Flagman Pugeley, who was about 650 feet from the rear of extra 425, and at about 1.35 a.m. collided with the rear of extra 425 while traveling at a speed estimated to have been about 8 miles an hour.

The caboose of extra 425 was practically demolished, while the two engines were pushed ahead a distance of about 75 feet. The second engine of extra 425 was derailed on the left side of the track, as was engine 5114. The first three cars of extra 5114 were also derailed, while two other cars buckled farther back in the train.

Engineman Booth, of extra 425, stated that there was more or less fog between Maybrook and Holmes, the fog varying in density. Signal 13.6 could be seen a distance of about 600 feet. Approaching Holmes, signal 14.6 was plainly seen when about 400 feet distant, while at about the same time the train order board could be seen displaying a stop indication, this being visible, therefore, a distance of approximately 1,500 feet. After stopping he went into the telegraph office to find out why the train order signal was displayed. The flagman followed him

into the office, but went out again in about a minute. Shortly afterwards the operator told him that extra 5114 had passed West Pawling, 4.51 miles from Helmes, and he then went to the door to see that the flagman was out, and he stated he saw the flagman on his way back, being at that time about 600 feet distant. Engineman Booth said he then sat down in the waiting room to wait for the block to clear. Soon afterwards he heard a train answer the flagman's signals, and then one of the operators said that there was going to be an accident. The collision occurred before he could get to the door. He did not know whether or not the weather conditions had changed during the 15 minutes his train had been standing at the station. Engineman Booth also said that before leaving Maybrook he had given Flagman Pagsley specific instructions about giving the train adequate protection.

Fireman Shahan, of engine 425, remained on his engine during the time extra 425 was standing at Helmes, and neither he nor Engineman Remalder, who was taking care of engine 358 and who had gone into the waiting room in company with Engineman Booth, could add anything to Engineman Booth's statements.

Flagman Pagsley, of extra 425, stated that when the train stopped at Helmes he went into the station to find out the cause of the delay, and on being told by the operator that the block was not clear started back to protect his train, taking with him red and white lanterns, and fuses, but no torpedoes. He estimated that he started back within three minutes of the

time his train stopped and said he continued back until he had reached a point about 600 feet from the rear of his train. He did not go back any farther as the weather was clear, there being no sign of any fog, and in view of the straight track and clear weather he considered that he was back a sufficient distance to insure full protection. According to his statement there had been no fog all the way from Maybrook to Helms. He said that he had been standing about 10 minutes when extra 5114 appeared over the top of the hill, about a mile distant. He lighted a fuse and began giving stop signals with it, the engineman of extra 5114 answering these signals when about 20 car lengths distant. He continued his signaling until he had to get off the track just before the train passed him, running at a speed of 12 or 15 miles an hour. Flagman Fugsley admitted that he was depending partly upon signal 14.6 for protection, but said that if again flagging under similar circumstances he would protect his train as he did in this case. He did not recall having had any conversation with Engineman Booth prior to leaving Maybrook relative to flag protection. He said that he did not take any torpedoes with him when going back to flag because there was none in the caboose. He had originally been called to flag two light engines and had put his flagging equipment on one of those engines. When orders were received to pick up the caboose he did not transfer his equipment to the caboose, taking it for granted that the caboose would be fully equipped. He said he had everything necessary except torpedoes; that there was a

supply on the engine, but that he had not had time to go after them. Later on he stated that he had had ample time to provide himself with torpedoes and that before leaving Maybreek he could have transferred some from the engine to the caboose.

Engineman Francis of extra 5114 stated that a terminal air brake test was made before leaving Maybreek and that after leaving that point he had no trouble with the air except at Highland, 30 miles west of Holmes. After taking water at this point trouble was experienced due to the air compressor stopping up, apparently for want of lubrication. After this had been cleaned and oiled, no further trouble was had in maintaining the maximum brake pipe pressure, which was 70 pounds. At a point about 3,100 feet west of signal 13.6 is an overhead bridge, just east of Whaley Lake, which is approximately the summit of two grades, the grade approaching that point being generally ascending, while east of that point it is generally descending. Extra 5114 had been assisted up the grade by a helper coupled to the rear of the train, and this helper was cut off near the overhead bridge. Engineman Francis stated that the speed of his train passing Whaley Lake was 30 miles an hour, or more, and that he shut off steam when his engine was about 10 car lengths on the descending grade. He saw signal 13.6 when some distance from it, at which time it was displaying a caution indication. His train was drifting at a speed of about 25 miles an hour, and he said that he made a 7-pound brake pipe reduction before passing the signal, followed by a 10-pound reduction as the engine passed over the top of the .45% ascending grade approximately

3,000 feet west of signal 14.6. These applications did not seem to hold the train as they should. He saw signal 14.6 displaying a stop indication, when it was about 10 car lengths distant, and stated that he at once placed the brake valve in the emergency position. The speed of the train at this time was about 25 miles an hour, and it had been reduced to about 8 miles an hour at the time of the collision. He also said that at the time of the emergency application he had not seen the flagman or the fusee, also that he saw the flagman and the rear end of the train at about the same time. He could offer no explanation for the accident except to say that the brakes did not seem to hold the train, and he said that he did not believe he would have handled the air any differently had he known all the time that there was a train standing at Helmes station.

Fireman Singley, of extra 5114, stated that the weather was foggy at Whaley Lake. He saw signal 13.6 and called it to the engineman. The speed of the train was about 15 miles an hour at the top of the hill, this then increasing to 20 miles an hour. He said the first application of the brakes was made at the top of the .34% descending grade, which is about half a mile beyond signal 13.6, when the speed was 15 or 20 miles an hour, and that the brakes were not released after this time. This application did not seem to reduce the speed of the train. The fog was thick near signal 14.6; he saw this signal when 12 or 15 car lengths from it, at which time the speed was about 15 miles an hour. The engineman then began to use sand, but did

nothing further toward stopping the train after seeing the stop indication until within five car lengths of the signal, at which time an emergency application was made, this being done when the flagman lighted his fusee. He said that only two brake applications were made, that no application was made at or near signal 13.6, and he thought that if an application of the brakes had been made early enough the train would have stopped short of signal 14.6. He estimated the speed at the time of the collision to have been about 15 miles an hour. He also said that there was no trouble with the air pump between the time it was fixed at Highland and the time of the collision.

Brakeman Haight, of extra 5114, who was riding on the engine, stated that he saw signal 13.6 and called it when it was about eight car lengths distant, at which time the engineman closed the throttle, but he did not hear him apply the brakes until the engine was a short distance east of the signal. He thought the speed was then about 8 or 10 miles an hour and he said that the brakes did not seem to take hold well. No other application of the brakes was made until they were within eight of signal 14.6, displaying a stop indication, at which time the brakes were applied in emergency and the sanders opened. This signal was visible six or eight car lengths. The speed at this time was from five to seven miles an hour, and the signal was passed at a speed of about five miles an hour. He saw the flagman just after seeing signal 14.6, and saw the rear end of extra 425 just as his own engine passed signal 14.6. Brakeman Haight further stated that work on the air pump was done at

Highland, but that in making several stops after leaving that point no trouble with the brakes was experienced. After the accident he examined the train in company with Trainmaster Christinger, but found nothing wrong except one car with the brakes cut out.

Conductor Brown, of extra 5114, stated that after fixing the air compressor at Highland the pressure was pumped up to 70 pounds, which was the pressure at the time of leaving that point. Several stops were made after this, but no trouble with the brakes was experienced. The engine which had been pushing the train was cut off just east of the overhead bridge, east of Whaley Lake, and he estimated that at this time the head end of his train must have been a few hundred feet west of signal 18.6. The speed of the train at this time was about 15 miles an hour, and the air gauge in the caboose indicated a pressure of 70 pounds. He did not notice the speed after passing this point, and said that he did not notice any application of the brakes until he felt a sudden jar, followed by another, and on looking at the gauge he saw that the indicator had gone to zero. He thought the two shocks were due to a brake application followed by the collision. Conductor Brown stated that it was 1.30 a.m. when the helper was cut off, and that the collision occurred at 1.35 a.m. He thought lights could be seen in the fog at Holmes a distance of about 15 car lengths. The fog was low, and he could see the block signal before he could see the cars which had been wrecked.

Flagman Comstock, of extra 5114, stated that he did not think the speed of his train was over 15 or 20 miles an hour when the helper was cut off, and he did not think the speed increased any after that time. He did not notice any application of the brakes until the application at the time of the collision, and this did not seem to him to be an emergency application. There was a slight jar, but if he had not seen the reflection of the fuses of the flagman of extra 425 he would not have suspected a collision. He said the air pressure was between 70 and 75 pounds. The weather was very foggy.

Brakeman Hawley, who was riding in the caboose of extra 5114, stated that he thought the speed was 20 or 25 miles an hour when the helper was cut off, but he noticed no increase in speed after that time. He felt an application of the brakes after the train started down the grade. This reduced the speed of the train gradually, and he did not think it was an emergency application. He estimated the speed to have been 12 or 15 miles an hour at the time of the collision, and said that all he felt was a slight jar as though an air hose had burst. After he got off the caboose he noticed the reflection of the fuses of the flagman of extra 425. He said the fog, although very thick, was lower than the automatic signal.

Operator Kent, on duty at Holmes, stated that extra 425 arrived at 1.20 a.m., and was held on account of the block being occupied by a train which had left at 1.12 a.m. He heard extra 5114 answer the flagman's signals and said it sounded as

if the engine at that time was just west of signal 14.6. He said the fog was variable, being thicker at some times than at others.

Air Brake Inspectors Compton and Alderf stated that they inspected extra 5114 before its departure from Maybrook. The train consisted of 39 cars and a caboose; the slack was adjusted on one car, while the brakes were operative on 39 cars.

Assistant Engineer Butterfield stated that the distance from the overhead bridge east of Whaley Lake to signal 13.6 was about 3,000 feet; from signal 13.6 to signal 14.6 was 5,267 feet, while from signal 14.6 to the center line of the station at Holmes was 866 feet. He also said that the track circuit extended 4,435 feet east of signal 14.6, or about 2,500 feet into the manual block territory. In this connection Superintendent Clark stated that when signal 14.6 was displaying a stop indication trains were required to stop, and then allowed to proceed under control to the train order signal at Holmes station. The blue print furnished in connection with this accident shows the distance between signals 13.6 and 14.6 to be 5,715 feet. The distances mentioned throughout this report are based on this blue print.

Road Foreman of Engines Daly stated that shortly after the accident he took the undamaged portion of extra 5114, moved it up the hill and started it down again at a speed of 25 miles an hour, two 7-pound reductions being made as Engineman Francis indicated he made them. In this test the train stopped in just its own length, 37 cars. The engine handling the train at this

time was No. 5111. The train was afterwards placed on side tracks, and on September 30 a test of the air brakes was made. Of the 37 cars so tested, three were cut out, while on one car the brakes leaked off. Of the remaining 33, one had a piston travel of $9\frac{1}{2}$ inches, two had a 9-inch piston travel, and the balance had less than nine inches, 25 of them having seven inches or less. On October 1 these 37 cars were tested on the grade, being hauled by engine 5112, of the same type as engine 5114. The train was started at West Pawling and operated toward Holmes in as nearly as possible the same manner as when handled by Engineman Francis, except that the first brake application was not made until the engine was 1,200 feet east of signal 13.6, or about 1,500 feet east of the point where Engineman Francis stated he made his first application. The train was moving at a speed of about 30 miles an hour at the time of this application, after which the brake valve was placed in the lap position and no further reduction made. This resulted in bringing the train to a stop 1,400 feet west of signal 14.6. From this point the train was again started and a speed of about 18 miles an hour attained prior to the time the engine passed signal 14.6. Immediately west of the signal the throttle was closed and a full service application made, consisting of three reductions. This stopped the train with the engine and first four cars beyond the station. The train was then operated down the grade east of Holmes, where it varied from 1.25% to 1.35% descending. Two additional stops were made on this grade, one from a speed of about 20 miles an hour and another from a speed of about 25

miles an hour; no trouble was experienced in making either of these stops. The brakes were in serviceable condition, and the tests showed that even when running at rates of speed at least as high or higher than that which existed at the time of the collision, and also on heavier grades, it was possible to have the train under full control when good judgment and proper brake valve manipulation were used.

Engineer Francis said that in spite of the results of these tests he felt sure that he could have done no differently, and that there must have been something wrong with the brakes. The weight of evidence, however, is to the effect that he made a slight reduction, sufficient only to prevent the speed from being increased, and that he did not make an effort to reduce the speed until he saw signal 14.6 in the stop position. The condition of the brakes as shown by the various tests conducted on September 29 and 30 and October 1, together with the statements of the crew, indicate that Engineer Francis did not properly control the speed of his train.

This accident was caused by the failure of Engineer Francis properly to control the speed of his train on the heavy descending grade. Although there had been trouble with the air pump, the statements of all concerned indicated that this had been repaired and that no further trouble from this source was experienced. Inasmuch as Engineer Francis had passed a caution indication at signal 13.6, he knew absolutely that at that time signal 14.6 must be in the stop position.

Knowing that his train was on a heavy descending grade, with his vision obscured by fog, Engineman Francis was very negligent in allowing his train to run at a speed of 25 miles an hour, which he said was the speed when he came in sight of signal 14.6. At this point he could see only 10 car lengths, and he must have known that it would be impossible to bring his train to a stop within that distance.

A contributing cause was the failure of Flagman Fugley properly to protect his train. He had been standing a short distance from the rear of his train for at least 10 minutes, and as an excuse said that in his judgment he was back far enough to afford full protection, in view of the straight track and the clear weather. With the exception of Flagman Fugley, all of the employees who testified in regard to this accident stated that the weather was very foggy, and under these conditions Flagman Fugley was particularly negligent in not going back as far as possible in the time he had at his disposal. In spite of the statement of Engineman Francis that he did not think he would have handled his train any differently had he known a train was standing at the station at Holmes, it is believed that had Flagman Fugley protected his train in the proper manner in view of the weather conditions and the heavy grade, going back as far as possible in the time at his disposal, Engineman Francis would have handled the brakes in an entirely different manner and would have been able to bring his

train to a stop before it passed signal 14.6, or at least before it could have collided with extra 425. The failure of Flagman Fugsley to equip himself with torpedoes, while it had no direct bearing on the cause of the accident, also indicates that he was not paying proper attention to the protection of his train.

Engineman Francis was employed as a fireman in October, 1915, and promoted to engineman in November of the same year. His record was clear. Previous to entering the employment of the Central New England Railroad he had had several years' experience on the New York Central Railroad as fireman and engineman. The automatic signals mentioned in connection with this accident had only been installed about four months, and during that time Engineman Francis had made only one trip over this part of the road as an engineman. He had made 11 trips as a fireman during the months of July and August, however, and he stated that he was familiar with all of the physical conditions, including the location of the signals.

Flagman Fugsley entered the service as a brakeman in January, 1918, and in January, 1919, was promoted to flagman. His record was clear.

At the time of the accident Engineman Francis had been on duty about six hours, after about 11 hours off duty. Flagman Fugsley had been on duty about five hours, after about 21 hours off duty.