IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, BURLINGTON & QUINCY RAILROAD, NEAR TROY, IOWA, AUGUST 17, 1918.

November 18, 1918.

On August 17, 1918, there was a collision between two freight trains on the Chicago, Burlington & Quincy Railroad near Troy, Iowa, which resulted in the death of one employee, the injury of one employee, and the death of four persons carried under contract. After investigation, the Chief of the Bureau of Safety reports as follows:

This accident occurred on the sub-division from Creston to Ottumwa of the Ottumwa division. The line is double tracked and trains are operated by a manual block system except for a distance of 1.6 miles between Troy and Whitebreast, which is single track. On this single track section trains are operated by a controlled manual block system which is absolute, only one train being allowed in the block at a time. Movements against the current of traffic are handled by train orders transmitted by telegraph, but the block system is operated by telephone.

Second class train No. 70, eastbound, consisting of 38 loads and caboose in charge of Conductor Bell and Engineman Sullivan left Creston at 10.33 p.m., August 16 and arrived at Troy at 12.35 a.m., August 17, where a helper engine was coupled on to head end of the train. At 12.46 a.m. this train left Troy and proceeded approximately two miles up an ascending grade of about 1.2%, when it was stopped by coupler pulling out of the first car of the train. This car was chained up and taken to Indianola Junction, a distance of 1.5 miles, after which the

engines returned for the rear portion of train, coupled up and proceeded about five car lengths when a coupler pulled out of the second head car in train. This and the car ahead of it were taken to Bellevue Junction and disposed of. The engines then returned for the rear portion of train, and upon arriving at the place where it had been left, it was found that the rear portion of the train, consisting of 55 loaded cars and caboose had disappeared down the grade. After coupling the two engines and backing down the grade it was discovered that the head end of the train was about 15 car lengths east of the Troy signal tower and the rear end had collided with extra 2114 east which was waiting for a helper engine and standing to clear the end of double track on the eastbound main track just west of Troy.

The impact practically demolished the caboose and 35 rear cars of No. 76's train and drove extra 2114 back about 150 feet, inflicting considerable damage to engine 2114. The remainder of the train was not damaged. The bodies of three track caretakers were found in the debris and the body of Flagman Boltz of train No. 76 was found just east of wreckage on north side of east main track and another caretaker was found seriously injured on south side of main track directly opposite the body of Flagman Boltz.

The track between Troy and Whitebreast ascends eastward over the single track section 3.8 miles long, with a maximum gradient of 1.3 per cent, the track consisting of a series of curves connected by short tangents. The collision occurred at the west end of this single track section.

Conductor Bell of train No. 70 stated that he left Creston the evening of August 16 with 59 loaded cars all equipped with air brakes. Before leaving an air test was made which indicated that all brakes were in working order except one. He arrived at Troy at about 12.35 a.m. (operator's report is 12.35) on the 17th and stopped there for a pusher. About five minutes later he left Troy and while between that point and Whitebreast the draw bar pulled out of the head car next to the engine. The truss rods underneath this car broke and hung down on the ground. The car was chained up by him and the engine crew and taken to Indianola Junction. The engines then returned and coupled onto the train. After starting, the train moved but five or six car lengths when a draw bar gave way on the second head car. Conductor Bell said that when the second break-in occurred he was on top of the train about seven cars behind the engine. He set five hand brakes on head end of train, called to brakeman to help roll draw bar out of trucks and leave red light on ground about six car lengths from head end, and proceeded with second head order car and the car ahead of it to Indianola Junction. After disposing of these cars and returning to where the rear end of train had been left, he found it had run down the hill.

Conductor Bell stated that he had worked as a conductor in this territory for ten years and as brakeman for seven years, and was familiar with the grade between Troy and Whitebreast. He said that in order to hold a train of 57 cars on the hill not less than 15 or 20 hand brakes should have been set on rear end of the train. He thought, however, that he had all he could

do on the head end and relied upon the flagman to set brakes on the rear end of the train. When he started toward the head end at the time of the first break-in-two Flagman Bolts remarked to him that as there was a new man on the head end he would have plenty to do, and that he (Bolts) would take care of the rear end. He walked on the ground up to where the coupler was pulled out and after chaining up the car he rode it over to Indianola Junction without having done anything to protect his train from running down the hill; he set no brakes himself and did not know whether any brakes were set by the flagman other than the brake on the way car, but depended upon what Flagman Bolts had said to him when he left the way car, about taking care of the rear end. He said it was about an hour from the time his train stalled on the hill on account of the first break-in-two until he got back to it after disposing of the crippled car. At the time of the second break-in-two he saw the rear brakeman with his light on top of the train, and as near as he could judge the brakeman was near the way car, but he did not know whether he set any brakes on the rear end, and so far as he knew the only brakes set when he left the train the second time were the five which he set on the head end; from the time of the second break-in-two until he got back to the place where the train had been left, after disposing of the crippled car, about 45 minutes elapsed. He knew that five brakes would not hold the train, but said his rear brakeman was an experienced man and he depended upon him to hold the train.

Bulletin No. 3-07, dated June 11, 1928, addressed to train and enginemen, reads as follows:

When necessary to leave a train or portion of a train on a grade, air brakes must be set, then hand brakes set tight and air brakes released before the engine is uncoupled. This cancels my bulletin 2303 of February 13th.
(Signed) J. P. Cummings, Superintendent.

Bulletin 2307 contains the same instructions in condensed form as is contained in Bulletin 2304, dated February 13, 1914, reading as follows:

> We recently had a disastrous collision on lines west account rear end of a train, left on main line with insufficient brakes, running away and colliding with a passenger train. This emphasizes the importance of everyone knowing that braking power is ample and in first class condition when operating over hills and you will, therefore, in future, when necessary to leave any portion of train on a hill, set the air brakes to full capacity and when they are set hand brakes must be tightened up and air brakes released as it will be known, without any doubt, that the hand brakes do and will hold the train. By leaving the hand brakes set while the air brakes are set it will give the maximum braking power that can be obtained by hand and when the air is released it will show conclusively whether the hand brakes will hold the train or not. Be governed accordingly.
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> J. P. Cummings, Superintendent.

Conductor Bull said that he knew of these bulletins and understood them. He admitted that he did not comply with the instructions contained in the bulletins, and could give no reason why he did not, except that his hand brakes were a new one and he left all the work on the hand and to do himself; he said he was trying to do two men's work, and was depending on the flagmen to hold the rear portion of the train.

Engineman Sullivan stated that he arrived at Troy at 1.35 a.m. where further was ordered on to go up hill, and left Troy about three to five minutes later. When about the first curve west of Whitebreast, draw bar in the east end of the first car behind the engine gave way. The last order car was taken

to Indianola Junction and the engines returned to the train. After coupling to train he started once more, but had moved only five to seven car lengths when the engines lunged away from the train again. The brakeman and fireman went back and found that a draw bar in the second car behind engines had pulled out. After 15 or 18 minutes signal was given to go, and he started up hill coming down eastward track from Whitebreast to where first bad order car had been left and coupling engines on to it. Then train men cut pusher engine off and the conductor took this bad order car down to the west end of the eastward passing track, while he and the brakeman cut the other two cars over across the north main line on the Indianola branch track. He then came back with engine to eastward main line, the other engine came up, and coupling was made. He proceeded about 12 or 15 car lengths, when signal was given him to stop, and he was told that the train was gone. He backed down slowly to about 25 car lengths west of Troy station, where coupling was made to head end of train. He now discovered that his train had run into extra 2114 standing at the foot of the hill.

He was familiar with the provisions of Bulletin No. 3307 and stated that he knew of nothing that had been done toward securing his train on the hill after either break-in-two occurred.

Head Brakeman Walsh stated that when his train arrival at Troy, helper engine was at bottom of hill and this was coupled on to the train engine. When almost on top of the hill a draw bar pulled out of the car next to engine. After removing the

bad order car and coupling on ire on to train again they proceeded about two car lengths when draw bar pulled out of second car. Together with the conductor he took draw bar out, pushed it out of the way of track, placed red lantern on ground, and took the two cars to Indianola Junction. Neither he nor the conductor made an effort to set sufficient hand brakes on the rear of the train at the time of either the first or second break-in-two. On returning from Indianola Junction the second time and proceeding down hill to the rear end of his train he found that it had disappeared. This was his first trip on this division.

Fireman Fisher stated that his train arrived at Troy at about 12.45 a.m. and left about 1.10 a.m.; that east of Troy a draw bar pulled out of the head car at the first curve west of Whitebreast; that the car was chained up, taken to the top of the hill, where they left it and went back to the train, coupled up, made an attempt to start and had gone about four or five car lengths when draw bar came out of second car. The two cars were taken to the Indianola branch track; they then hooked over to where the train had been left, and found that it was gone. He did not know what action had been taken toward securing the train after either the first or second break-in-two.

Operator Cox who was on duty at Troy at the time of the accident stated that extra 2114 arrived at Troy about 1.35 a.m. and that train No. 70 which preceded it had passed that point at 12.46 a.m. At 2.30 a.m. the latter train was still holding the block, though the Whitebreast operator said it was about

ready to leave. At 3.35 a.m. he noticed that engine 714 was about 35 car lengths below signal and in about three or four minutes heard a whistle, and saw a red lamp coming from the east. He ran for his lever, which was lined up west, but it was too late. He went out and gave stop sign with red lantern, and this also was too late.

Conductor Lambertson of extra 714 stated that his train arrived at Troy at 1.35 a.m. and while standing there waiting for helper to back down hill, the rear end of No. 70 came down and crashed into his engine. He was at that time in the cupola of the way car on rear of his train. His engine was damaged and his fireman injured. He had himself experienced a break-in-two at one time on Walkersmount Hill under similar conditions and stated that the proper thing to do in such a case was to anchor the train by setting air and hand brakes, and then releasing air to see that sufficient hold had been effected.

Engineer Clifford of extra 711 stated that he arrived at Troy at 1.31 a.m. and stopped there waiting for helper; had been there an hour and ten minutes when he heard a rattle on the bridge about 100 feet east of Troy office also 400 feet from where he was; he looked up and could see car coming. At the time of the crash he was over to the right of way fence. He did not observe whether hand brakes had been set on the head end of 70's train.

Fireman Isaacson of extra 714 stated that his train arrived at Troy at 1.31 a.m., stopped there for helper and while waiting for it, the crash came. He was preparing the engine for

the hill at the time, and had no warning of No. 70's approach. He was injured.

Engineer Henderson of the helper engine at Troy stated that he coupled on to No. 70 at about 1 .40 a.m.; the train started up the hill easily and they were going along nicely at the rate of about 10 or 12 miles an hour and engines were going around last curve on Whitebreast Hill when draw bar on head car pulled out. Car was chained up and taken to Indianola Junction. Engine returned, was coupled up, and had proceeded about five car lengths when draw bar on second head car pulled out. This car was also taken to Indianola Junction and when he returned to where train had been left it was found that it was gone. He did not know what precautions were taken either after the first or second break-in-two to answer and hold train on hill.

Fireman Lyman of the helper engine stated that train No. 70 arrived at Troy about 1^.^5 a.m. and within five minutes he got ready, coupled up and started to pull the train up hill. After going a short distance draw bar pulled out of the head car. Car was taken to Indianola Junction, left there, and engine returned for rear portion of train. Engine was again coupled, air pumped up, flags called in, and signal given to start with rear portion. He had gone about four or five car lengths when draw bar pulled out of second head car. This car was also taken to Indianola Junction and when engine returned to Troy for rear portion of train, it was found that it had disappeared. He flagged back down to Troy and found the train down hill where it had collided with Extra 816. He did not know what precaution

had been taken in the way of securing portion of train which had been left on hill either after first or second break-in-two.

This accident was caused by the failure of Conductor Ball to properly anchor the detached portion of his train while the defective cars were being disposed of. He was a man of long experience on this hill and thoroughly understood the danger of leaving a heavily loaded train at the point where the break-in-two occurred without a sufficient number of brakes set to hold it safely. He had also been specially warned against this danger by the published bulletins with which he was familiar. Yet he took no precaution to secure his train, leaving it in the first instance, by his own admission, without knowing whether any brakes were set ahead of the way car, and in the second instance with only five brakes set on the head end. Such flagrant disregard of the most obvious requirements of safety are inexcusable.

Engineman Sullivan and Fireman are also to blame for not knowing that the requirements of Bulletins 2307 and 2303 were lived up to. Had they insisted on obedience to these obviously necessary precautions this accident would not have occurred.

None of the employees on train No. 70 had been on duty over eight hours, and all had had ample periods off duty prior to beginning their trip.

H.F.