

In re investigation of an accident which occurred on the
Washington, Baltimore & Annapolis Electric Railway
at Pumphrey, Md., September 2, 1917.

October 20, 1917.

On September 2, 1917, there was a rear end collision between two extra passenger trains on the main line of the Washington, Baltimore & Annapolis Electric Railway at Pumphrey, about 7 miles south of Baltimore, which resulted in the injury of 31 passengers. After investigation of this accident, the Chief of the Division of Safety reports as follows:

The main line of the Washington, Baltimore & Annapolis Railway has about 36 miles of double track on its own right of way exclusive of its connections with the United Railway Company at Baltimore and the Washington Railway & Electric Company at the south end. A single track line crosses the main line at Naval Academy Junction, extending between Annapolis and Annapolis Junction on the Baltimore & Ohio, a distance of 20 miles. No block system is in use on the main line, but trains are operated by the train order and time-table system. Men are stationed at two points on the main line, which are considered as needing extra protection, and they hold cars 5 minutes apart. There are automatic signals of the semaphore and light types between Naval Academy Junction and Annapolis.

Beginning at a point two miles north of the scene of the accident, and proceeding south, there is a series of descending grades, varying from 1.50% to .14%, extending as far as the bridge over the Patapsco River, where the grade is level. After this level stretch, about 1,300 feet in length, there is an ascending grade of 2% to the point of accident, 1,000 feet from the south end of the level track over the Patapsco River. In this section of two miles, there are two curves, both to the right, in the descending grade north of the Patapsco River, one of 2 degree 30 minutes, 700 feet long, and the other, 900 feet long, of 1 degree 30 minutes. The second curve ends at the bridge. The track is then tangent for 2,484 feet to the next curve, at the beginning of which the accident occurred.

The trains involved in this accident were extras 59 and 42, both carrying workmen to Camp Meade, at Adelphi, Md., a station on the Annapolis branch, east of the main line. Extras 59, consisting of 2 cars, 59 and 42, in charge of Motorman Cook and Conductor Grehgan, left the Baltimore Terminal at 6.17 a.m., and proceeded through the city and on to the Washington, Baltimore & Annapolis right of way. It was flagged at the Viaduct crossover by Yeomanster Taylor, who cautioned Motorman Cook, on account of the fog, to look out for a train just ahead, loading passengers at Westport. Yeomanster Taylor got on that train after dropping a 5 minute fusee, and the train then proceeded at a reduced rate

of speed, estimated to have been from 20 to 30 miles per hour, to a point just south of Pumphrey, and while still moving it was struck by the following train. There was a dense fog at the time.

Extra 82, consisting of 2 cars, 82 and 39, in charge of Conductor Snyder and Motorman Hartshorn, left the Baltimore Terminal at 6.23 a.m., 11 minutes after the first train. Immediately after leaving the terminal, the train parted; it was at once coupled up again, but this delay threw them back on the time of regular train No. 7, due to leave at 6.25 a.m. The train then proceeded at a normal rate of speed, without passing any fuses or other signals, to the point of accident. Power was shut off while descending the grade to the Patapsco River, but was again applied as the ascending grade at the south end of the bridge was reached, and the train proceeded nearly to the point of collision with all power on. The speed is estimated to have been 40 miles per hour at the time of the collision.

After the accident, all the cars were on the track. The cars moved about 100 feet from the first point of collision to where they finally came to a stop. The rear vestibule of the first train was crushed slightly and but very slight damage was done to the vestibule of the second train, glass in the motorman's compartment not being broken. The couplers on both cars were bent down and broken.

Both cars of both trains were equipped with motors, 4 of 75 horse-power being on each car, and they were being operated on the multiple unit system, all motors on a train being controlled by the motorman in the head car. These cars are equipped with automatic brakes and they were operating properly just before the accident. All cars except 59 were of steel construction, car 59 having steel underframe with wood superstructure.

Motorman Cook, in charge of extra 59, stated that his train left the Baltimore Terminal at about 6.12 a.m., his orders having been completed at 6.05. At Viaduct crossover he was flagged by Yardmaster Taylor who cautioned him to look out for another extra loading passengers at Westport. Yardmaster Taylor got on the car after dropping a 5 minute fuse, and his train proceeded at about 20 or 25 miles per hour; it was making about half the normal rate of speed up the grade south of Patapsco River bridge when he felt a crash. This was the first he knew that an extra was following his train as he had in mind the next train would be the regular car

scheduled to leave at 6.25 a.m. He had seen the train ahead just as it left Westport station and then it he was 12 or 15 poles behind it. He estimated that the force of the collision drove his train about 100 feet ahead. He said the fog was very dense at the time and after the accident when he was flagging the first north-

bound train he could not see it at all as it approached but only knew from hearing it that it was coming. He was an extra man and had no regular run. He said that he had never been criticized for not making schedule time in foggy weather.

Conductor Creshan, in charge of extra 59, said that he was in the rear car collecting fares when the accident happened and this was the first he knew of the train that had been following them. He had expected the first train to follow them would be the regular train leaving at 6.25. He says his train was running slower than usual and that the accident occurred about 6.38 a.m. He had never been criticized by an official of the company for not making time in a fog, and in fact bulletins have been issued requiring trains to be run slowly in foggy weather. He was experienced on look of rules when first employed and again when promoted. He stated further that the conductor is responsible for proper signals being displayed and that ^{last} the terminal on the morning of the accident, he had flag markers on the rear, and he thought there was also a red light on the rear platform, the rule requiring a red light to be displayed on the rear of a train in foggy weather.

Brakeman Ferr stated that after stopping at Viaduct cross-over he noticed a fusee burning behind them and also one near Westport station. He saw the second train coming an instant before the collision, possibly the distance between two or three trolley poles away, but had no time to drop a fusee. Flags as markers were displayed on the rear of his train, although he had no lights, and there were no lights burning on the train. He did not notice any head light on extra 22 as it approached.

Conductor Snyder of extra 22 said that he had made a trip from Naval Academy Junction to Baltimore on Sunday morning, and was then instructed to take out the 6.15 a.m. train. His orders to run extra from Baltimore to Admiral were completed at 6.19 and they left about 6.23 a.m. After pulling out into the street, the train parted, but was coupled up again with little delay. He cautioned the motorman about being careful as it was a bad morning, and he then started to collect the fares. They ran slowly through the city, and had some trouble with a passenger who got on the steps near the head end instead of going to the rear where the vestibule was opened. After leaving the city, the speed increased, apparently about as fast as the car could go, but he felt the train drifting later until the river was reached, when the speed increased again. He felt the brakes go on, but thought nothing of it until he felt the motors reversed. The collision was not of sufficient force to throw him down. He said he had never been criticized for not making time in bad weather.

Motorman Hartshorn of extra 22 stated that he had been employed by the Washington, Baltimore & Annapolis Railway since February, 1917, and had had no previous railroad experience. He

acted as brakeman until about July 1st, when he started to break in as a motorman, but was not promoted to that position until August 1. During this time, except for seven days, he was with other and experienced motormen. He said he had reported at Naval Academy Junction at 5 a. m. and had brought the same two cars to Baltimore that he took out later as the train that collided with extra 59. He understood the train ahead left at 6.10 a. m. and they got their orders 4 minutes after that train left and thought it was 6.25 a. m. when they finally got away. Passengers were picked up at several cross streets, and about the usual time was made to the viaduct. Approaching Patapsco River, he drifted with power shut off, down the grade, over the bridge, to the foot of the grade leading up to Pumphrey. Then the power was applied and the controller handle was all the way over, giving the cars full power on the way up the grade. He could not form any estimate of the speed down the grade and across the bridge, but thinks the train may have attained a speed of 50 miles per hour. When he first saw the train ahead, he applied the brakes and started to leave the cab but thought better of that, returned to his post and reversed the motors. He stated that he saw no fuses and had no warning of any kind from the train ahead. There were flags on the rear of extra 59, but he saw no lights and he did not think lights would have aided him in seeing the train ahead any sooner. He could give no estimate as to how far he could see through the fog. He said his brakes were in good order, as he had used them several times both in going into Baltimore earlier and in coming out on this trip, and he thought under average conditions the train could be stopped within the space of 6 poles or 900 feet; on an ascending grade a stop could be made in about 600 feet. He said he had never been especially instructed as to running in a fog and had never seen any bulletin regarding it, but he knew the rules required night signals in bad weather. When he was examined previously to being promoted he was not shown any bulletins, and the only ones he had were those issued after his employment. He did not remember being cautioned by the conductor and believed that he was running properly, notwithstanding the weather conditions at the time of the accident.

Brakeman Doren of extra 82 stated that he did not pay much attention to the speed, but thought they may have been running 35 miles per hour. He felt the brakes applied and then a shock as if the motors had been reversed. Immediately after the accident he got off and went back to flag the following train and at that time he noticed no fuses burning. It was very foggy and he thinks he could see a following train about the distance from one pole to another, or 100 feet. He had no lights on rear of his train as it was not so foggy in Baltimore when they left. He had been examined on the book of rules and knew of a rule regarding night signals in bad weather in addition to a bulletin requiring trains to run slowly in foggy weather. He was not given the bulletins to read that were in effect when he was examined, but he had only those issued since he was employed.

Yardmaster Taylor said he was in charge of the trains operating between Baltimore and Camp Meade. On the morning of the accident, he had taken a train of 8 cars to Westport which had crossed over and it was just pulling away when extra 59 arrived. He stopped extra 59, dropped a 5 minute fusee and got on, going

along with that train. He had cautioned Motorman Cook about the train ahead and did not think they were running over 20 miles per hour at the time of the accident. The fog was so thick that it was not possible to see the distance between 2 poles.

Train Dispatcher Carroll stated that his office is in the tower at Naval Academy Junction and orders are given by telephone to motormen and conductors. When they have repeated an order back to the dispatcher, both of them sign it. Three copies are made in a triplicating machine, one each for motorman and conductor and one remains in the machine. After leaving Baltimore, the next place where trains are to report is Naval Academy Junction. His first knowledge of the accident was a telephone message about 6.38 or 6.40 a.m. from Yardmaster Taylor.

Trainmaster Schumacher said that new men are not used on the single track lines until they have had some experience and have had a further examination. The usual course with a new man is to put him on as brakeman and, if he shows progress, after 6 months he is given an opportunity to break in as motorman or conductor. During this period of 3 to 4 weeks, he is instructed on different runs, both day and night. After that he is sent to the Master Mechanic for instruction as to the equipment and is then given an examination. The bulletins that have been issued are given him to read over. After a year's service he is again examined to test his fitness for service on single track lines. Occasionally a man whose record on single track is not satisfactory is taken from single track runs and returned to the double track.

Master Mechanic Osbelt stated that outside of the terminal cities the normal voltage used is 1200 volts and it is usually a little under. With normal voltage on level track, 49.6 miles is the maximum speed of the cars. In his opinion the maximum speed of extra 59 could not have exceeded 47 miles per hour at the point of the accident and as he drifted down the grade before that, his speed probably was not as high as that figure. He thought that at 40 miles per hour the motorman should have been able to stop the car in 600 feet.

Rule No. 210 of the Washington, Baltimore & Annapolis operating rules reads as follows:

Trains running in the same direction must keep not less than one mile apart, except in closing up at stations or meeting points. When the view is obscured by curves, fog, storms or other cause, they must be kept under such control that they may be stopped within the range of vision.

From the statements of the employees involved it is evident that this rule was not complied with by the crew of extra 82. The

requirement of this rule is plain and definite that when the view is obscured by fog trains must be kept under such control that they can be stopped within the range of vision. The investigation disclosed that extra 59 was being operated at a reduced rate of speed, in conformity with rule 210. But from the statements of Conductor Snyder and Motorman Hartshorn it is apparent that notwithstanding the dense fog, extra 82 was operated at full, normal speed, and when Motorman Hartshorn saw extra 59 through the fog only a short distance ahead there was not time to stop or reduce speed sufficiently to avert the collision.

Rule 219 provides in part as follows:

If from any cause the speed is reduced, the conductor shall be held responsible for fully protecting the rear of his train by the use of proper signals.

Although the first train, extra 59, had its speed reduced the evidence shows that this rule was not complied with. Had Conductor Creggan of extra 59 dropped off fuses from time to time, the crew in charge of extra 82 might have been warned of the proximity of the preceding train in sufficient time to avoid the collision.

Rule No. 92 provides that when weather or other conditions obscure day signals, night signals must be used in addition. This rule was not observed in this instance. Had marker lights been used on the rear of extra 59, it is possible that Motorman Hartshorn might have seen the preceding train in time to reduce speed sufficiently to prevent the collision or at least mitigate its severity.

The direct cause of this accident was the failure of Motorman Hartshorn and Conductor Snyder of extra 82 to operate their train under control during foggy weather, as required by the rule; a contributing cause of the accident was failure of Conductor Creggan to provide proper protection for the rear end of his train when being operated at reduced speed.

In addition to the nonobservance by employees of rules essential to the safety of railway operation, the investigation of this accident disclosed inadequate operating rules as well as certain lax methods and careless operating practices which should be corrected by the management of this railway in order to avert similar accidents in the future.

Rule No. 209 provides that all extra trains must keep out of the way of regular scheduled trains and clear their time at least five minutes. Notwithstanding this rule, extra 82 was not only permitted to leave Baltimore terminal only two minutes before a regular train was scheduled to depart, but when delayed in that city was

permitted to proceed directly on the time of the scheduled train.

Attention is called to the ineffectiveness of a rule requiring trains in the same direction to keep one mile apart, when the motormen have no means of determining the location of the car ahead. That the management is not unfamiliar with the advantages of block signals is shown by the complete system of automatic signals between Naval Academy Junction and Annapolis. Had some adequate method of spacing trains been in service on this line the accident no doubt would not have occurred, and it is recommended that some form of block system be put in use on the main line of this road. The necessity of this is apparent when the schedule shows 60 trains from Baltimore to Naval Academy Junction in 18 hours, besides several ~~extra~~ extra trains used to handle men to and from the Army Cantonment at Admiral.

This investigation shows that in common with many electric roads, men are employed with little or no previous railroad experience and are put in charge of trains as motormen without the long training required on steam roads, and before they have had time, under the most favorable conditions, to acquire any considerable amount of experience. Motorman Hartshorn had been employed only since last February without any previous railroad experience. The comparatively few days of instruction given a new man, even when followed by a thorough examination, cannot begin to equal the training required by a steam road before, for example, a fireman is promoted to be an engineman.

Very few special rules are printed on the time-table, but a printed book of rules issued in 1909 is in use. Special instructions are given in the form of bulletins, which are handed to each employee and signed for by him, but a new man can only get the instructions conveyed by these bulletins by reading over the files in the train-master's office, which he is supposed to do when examined.

It is recommended that special rules be more extensively printed in the time-table so that less reliance need be placed on detached bulletins for those instructions affecting the safety of trains, and that the general rules should be revised so as to be applicable to existing conditions.

The absence of fatalities or serious injuries was undoubtedly due to the fact that all equipment was of steel construction or with steel underframes. Had these cars been of wooden construction, there would, in all probability, have been some deaths and many serious injuries.

None of the men concerned in the accident had been on duty more than 2 hours and all had had at least 8 hours rest before reporting for duty on the morning of the accident.