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Accident Reports.

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MoT Report into Accident at
Manchester Victoria.

(7 Pages).

Ministry of Transport,
4, Whitehall Gardens,
London, S.W.1.

17th March, 1936.

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order of the 3rd January, 1936, the result of my Inquiry into the accident which took place at about 9.46 a.m. on the 1st January, 1936, at Manchester (Victoria) Station on the London Midland and Scottish Railway.

The engine of the 8.35 a.m. mineral train from Ashton Moss to Aintree was overpowered descending the steep incline from Miles Platting, and collided with a passenger train consisting of three coaches (without engine attached) standing at the west end of No. 14 platform. Fortunately there were only nine passengers in the coaches, eight of whom received slight injuries; the guard was in the brake compartment which bore the brunt of the impact, and was more seriously injured.

The mineral train consisted of 19 12-ton and 23 10-ton wagons, all loaded with coal, and a 20-ton brake van, with the brake operating on all six wheels. It was hauled by engine No. 12771, Class 6, freight, 0—8—0, driven from the left-hand side and weighing with tender in working order 104½ tons. The total weight of the train was estimated to have been approximately 847 tons and its total length 310 yards. The engine was fitted with the vacuum brake operating blocks on all engine and tender wheels, and with the hand brake on the tender wheels only; the power of the vacuum brake was 40 per cent. of the weight of the engine and tender, and of the hand brake 28.8 per cent. of the weight of the tender only.

The three coaches concerned were of non-corridor bogie type, built in 1907 and 1910, with steel underframes carrying wooden bodies; they were fitted with ordinary buffers and were electrically lit; their total weight was 76 tons.

The three coaches were forced forward 303 yards by the impact, but the engine of the freight train was not derailed and suffered comparatively little damage, mainly at the leading end; the body and underframe of the rear passenger coach, a brake third in which there were no passengers, was damaged beyond repair, the engine having penetrated for 8 ft. 6 ins. into the brake compartment, doubling back the underframe; the bogies of this coach were driven together, but apart from broken axle boxes were little damaged; the leading end of the underframe over-rode the underframe of the next coach, the bodies of the two coaches being telescoped to the extent of 6 ft. At the leading end of the middle coach, however, the body was little damaged, but both headstocks were badly bent and three buffer castings were broken. The leading coach was only slightly damaged.

Of the mineral train, the 25th, 26th, 28th, and 30th wagons suffered varying degrees of damage, the first-named being derailed, considerably damaging the permanent way, 277 chairs and 18 sleepers being broken. The brake van of the mineral train was also slightly damaged.

At the time of the accident the weather was damp and misty, although rain was not actually falling, visibility being about 600 to 800 yds.; the rails were greasy.

Description.

1. The freight train was routed, in the up direction, from Ashton Moss via Droylsden, Miles Platting Station Junction, and Manchester (Victoria), and thence via the avoiding line lying to the north of Manchester (Exchange) Station.

At Miles Platting Station Junction (which is situated at the west end of this station) two double lines from the east, both used for passenger traffic, converge, the line from Ashton Moss being the most southerly of the two. A few yards to the west of Miles Platting Station Junction, which is trailing in the up direction, there is a junction, facing in the up direction, where the double line becomes quadruple, the four passenger lines being named in order from north to south:—Down North, Up North, Down South, and Up South.

In addition, on the line from Ashton Moss there are, to the south of the two passenger lines, two (up and down) goods lines, which continue westward parallel with, and to the south of, the passenger lines for 260 yds. beyond the junctions at Miles Platting, before crossing the up and down South lines and joining the up and down North lines at Collyhurst Street signal box. Thence the four passenger lines continue westward for approximately one mile past Newtown No. 2, Newtown No. 1, and Millgate signal boxes to Victoria East Junction box, which controls the connections at the approach to Manchester (Victoria) Station.

The four through lines available for west-going trains lie at the north side of the station and are, in order from south to north:—No. 11 platform, No. 17 through road, No. 12 platform, and No. 14 platform. West of Millgate box, where there is a facing crossover from the Up North to the Up South line, No. 11 platform and No. 17 through road are accessible from the Up South line only, and, similarly, the Up North line can give access only to Nos. 12 and 14 platforms. The signals and connections at the west end of the station are worked from Victoria West Junction box.

2. Approaching Miles Platting Station Junction, the Up line from Ashton Moss is on a rising gradient of 1 in 452 until approximately 370 yds. from the junction. From this point, which is about the east end of the station platform, the gradient falls at 1 in 166 (230 yds.), thence continuing through the junction at 1 in 178 (500 yds.), after which, on the quadruple section of line, the steep incline commences, at 1 in 47 for the first 420 yds., then at 1 in 59 for 1,490 yds. to the east end of Manchester (Victoria) Station platforms, where the gradient changes to 1 in 178 and 1 in 180, rising through the station.

About 100 yds. back from the head of the 1 in 47 gradient there is a Stop Board with the wording "Goods trains must stop here to pin down brakes". A copy of the relevant instructions to the trainmen is given as an Appendix to this Report. The Stop Board is fixed immediately to the left, or south, of the Up Goods line, 53 ft. from the centre of the Up North line, on which the freight train was running.

The Board is only 86 and 129 yds. ahead of the respective fouling points of the junction between the north and south lines, so that a train standing at the Board on the Up North or Up South line, unless very short, fouls the junction, over which there is considerable traffic. In consequence, I understand that, although not officially recognised, the practice of recent years has been for trains of any length to draw well forward beyond the Board, with the rear of the train clear of the junction, before stopping to pin down brakes. To clear the junction it would have been necessary for the train in question to have overrun the Board by as much as 200 yds., with the engine and about 15 wagons on the 1 in 47 gradient.

3. From the point of collision, the following approximate distances are relevant:—

	<i>Miles.</i>	<i>Yards.</i>	
Commencement of 1 in 166 falling gradient	1	974	East
Centre of Miles Platting Station platform (Up branch)	1	787	„
Toe of points of trailing junction	1	608	„
Fouling points of double to quadruple line junction:—			
(i) Between Up North and Up South lines ...	1	477	„
(ii) Between Up North and Down South lines			
(diamond)	1	437	„
Stop Board	1	348	„
Commencement of 1 in 47 falling gradient	1	245	„
Collyhurst Street signal box	1	157	„
Commencement of 1 in 59 falling gradient	0	1,583	„
Newtown No. 2 signal box	0	1,183	„
Newtown No. 1 signal box	0	817	„
Millgate signal box	0	454	„
Victoria East Junction signal box	0	190	„
East end of Manchester (Victoria) Station platform ... }	0	93	„
Commencement of 1 in 178 rising gradient }	0	93	„
Point at which engine of freight train came to rest ...	0	303	West

Report and Evidence.

4. The freight train approached Miles Platting on the up passenger line from Ashton and continued thence on the Up North line. In the ordinary course it should have been stopped at the up home signals of Millgate box and there crossed over to the Up South line as opportunity offered, with a view to proceeding through Manchester (Victoria) Station on No. 17 through line. In fact, it was not practicable thus to divert the runaway train as the Up South line had just previously become occupied by a passenger train; it therefore continued past Millgate box on the Up North line, and on this account the signalman at Victoria East Junction could only direct it into either of Nos. 12 or 14 platform lines. The road was set for No. 12, at which a passenger train was standing ready to start, and this signalman, in turning the train into No. 14, chose the better alternative, as the short train at this platform, originating at Manchester (Victoria), had no engine attached and had only just commenced loading its passengers. It is evident that prompt attention was given to the injured by the station staff, and the stationmaster's clerk, J. Lennon, at once telephoned for the ambulances on hearing the sound of the collision.

The load was within, although approaching, the limit of 44 loaded wagons laid down for the class of engine on this route, and the engine and tender brake equipment was found to be in good order after the accident. Sand was flowing freely from both leading sand boxes when the engine came to a stand after the collision, and subsequent examination disclosed that these were approximately half full of dry sand. No marked flats were found on the tyres.

5. Driver A. Carter of the freight train, who had 23 years' service with the Company and eight as a driver, was familiar with the gradients on this route. He said that, with a view to coming to a stand at the Stop Board, he first applied the engine brake at the west end of Miles Platting Station platform, which he passed at about 8 to 10 m.p.h. with steam shut off. Almost at once he felt the train, as he said, "pushing slightly", and told the fireman to apply the hand brake; he continued to apply the brake, destroying about 5 to 10 ins. of vacuum, and when close to the Board realised that the train was not stopping. He consequently made a full brake application and applied sand, but with little effect, so when about 15 to 20 wagon lengths beyond the Board he told his fireman, W. H. Hollins, to get off the engine and try to pin down some wagon brakes.

According to Driver Carter, Hollins alighted without difficulty, taking a brake stick with him, the speed of the train at this moment being about 4 to 5 m.p.h. Hollins did not rejoin the engine, and Carter then realised that the train was out of control, and commenced to "pop" on his engine whistle as he passed through the bridge about 170 yds. beyond Collyhurst Street box. As he passed Newtown No. 2 box he endeavoured to attract the attention of the signalman by shouting that he was running away, and at the same time a driver in the sidings nearby also "popped" on his whistle; the signalman, he said, came to the window and seemed to rush away again. He kept the vacuum brake fully applied, and thought that the engine wheels first commenced to skid passing Collyhurst Street box and were skidding most of the way down the incline.

Although the Stop Board is at some distance laterally from the Up North line, Driver Carter said that there was no difficulty in locating it; he was also aware of the instructions that all freight trains must stop at the Board, but had interpreted these instructions as allowing him a certain amount of discretion, and had on other occasions drawn forward to Collyhurst Street box (about 200 yds. beyond the Board) in order to clear the junction; he said, however, that if he was not confident of keeping control of the train in so doing, he always made a point of stopping at the Board. With a light train not requiring the assistance of wagon brakes on the incline, he had sometimes run through without stopping, though on this occasion, realising that he had a practically full load and that the rails were greasy, he had intended to stop before reaching the Board, and had said so to his fireman as he approached it.

He said that the engine brake operated satisfactorily earlier in the journey, and considered this type of engine, which he knew well, to be suitable for the class of work.

Fireman W. H. Hollins was unable, on account of serious illness (not resulting from the accident) to attend my Inquiry. According to his statement

to the Company's officers. the train approached Collyhurst Street signal box "cautiously"; and Driver Carter said to him as the engine approached the Stop Board, "We will stop at the Board, as we have a heavy load". After alighting close to Collyhurst Street signal box, he succeeded in dropping eight or nine wagon brakes as the train passed him, but was unable to pin them down. He did not think of informing the signalman at Collyhurst Street of what had occurred.

Guard A. Dickson said that, in accordance with his usual practice, he reminded the driver before starting from Ashton Moss to stop at Miles Platting to pin down brakes. The train was brought almost to a stand by signals at Ashton Branch Sidings box, about $\frac{1}{4}$ -mile before reaching Miles Platting; he confirmed Driver Carter's estimate of speed (10 m.p.h) through this station, where he applied his hand brake, as usual, to assist the driver to stop at the Board; he did not screw the brake fully down until past the trailing junction, and up to this time had not anticipated any difficulty in stopping at the Board. He said that he first felt concern when the train did not stop at, or a few wagon lengths beyond, the Board, and became further alarmed when the speed began to increase; his van wheels commenced to skid at the head of the steep portion, at which he released his brake and re-applied it, after which there seemed to be no further skidding.

Speed increased markedly approaching Newtown No. 2 box, which he thought the train passed at about 20 to 25 m.p.h., and he estimated that the collision, which was not severely felt in his van, took place at a speed of 30 to 40 m.p.h. Dickson was acquainted with the Regulations regarding stopping at the Board, but said that it was customary to stop beyond the Board (to clear the junction) more often than at it. He thought that the engine passed the Board at about 10 m.p.h.

If the train had stopped at the Board, he said that probably the fireman would have pinned down six brakes and he would have pinned down five, which he considered to be a sufficient number for a train of that weight. It was always the practice, he said, to pin down the brakes and not merely to drop them.

6. There were two signalmen in Collyhurst Street box, J. E. Sykes, in charge, and F. Jones. Sykes said that his signals were clear for the train, which passed his box at about 4 to 5 m.p.h., and he saw the fireman get off the engine about 25 yards beyond his box; although the train did not stop and the fireman did not rejoin the engine, he said he did not realise there was anything wrong or that the train was running away; he heard no engine whistles until "a few minutes" after the train had passed.

He said that he had frequently seen freight trains run by his box without stopping, but not trains as heavy as this; he knew that this was wrong but had not drawn attention to it.

Signalman F. Jones, who attended to the goods lines only, was not exceptionally busy when the train was passing. He noticed that it did not stop to pin down brakes, but this did not cause him any concern, as he had on occasion seen fairly heavy trains pass without stopping at all. Moreover, he said the train passed his box at a walking pace and he booked four minutes as the time for clearing the section (about 700 yards) to Newtown No. 2 box. He did not see the fireman on the line.

According to both signalmen, it was quite usual for freight trains to draw well forward of the Board before stopping; in fact, the majority did so, and requests were frequently made by the signalman at Miles Platting Station Junction box or by the Yard Staff to draw trains clear of the junction.

At the next box, Newtown No. 2, Signalman I. Firth had all signals clear for the train; he said that as the train came through the bridge just before reaching his box, he heard the "popping" on the whistle and the driver shouted something to him as he passed. Having previously heard drivers whistle for the guard's brake, he concluded that the driver wanted the guard's brake on this occasion, and did not realise that the train was out of control; beyond shouting to the guard to put on his brake, he took no action. As the van passed he saw sparks coming from the wheels. Although, he said, the train was travelling "rather quickly," he had seen goods trains go by his box as fast on other

occasions, and consequently did not think there was anything wrong; he did not notice that there was only one man on the footplate. He estimated the speed of the train as it passed him as about 20 m.p.h.

The two signalmen in Newtown No. 1 box, T. H. Shaw and W. H. Winrow, realised at once from the unusual speed of the train, which both thought to be about 35 m.p.h. as it passed the box, that it was out of control. It passed with clear signals (except for the fixed distant) at 9.46 a.m., at which time Winrow sent forward the "Train-entering-Section" signal to Millgate box, followed at once by "Train-running-away-on-the-right-line." Shaw noticed that there was only one man on the footplate and that the engine wheels were skidding, but that the van wheels were revolving.

T. Speed, one of the two signalmen at Millgate box, passed forward the "Train-running-away-on-right-line" signal to Victoria East Junction box as soon as he received it, and the train passed almost at the same time. He thought that the speed was about 60 m.p.h. and that the engine wheels were skidding. He also telephoned to Victoria East Junction that the train was travelling very fast.

Reference has already been made to the action of Signalman A. C. Nicholson, of Victoria East Junction box, on receipt of the "Runaway" signal, which was at once passed forward to the West Junction box.

Conclusion.

7. This collision was caused by failure to supplement the normal braking power of the engine and van of the heavy mineral train by pinning down the requisite number of wagon brakes on this steep incline. The Company's Instructions recognise this necessity, and therefore prescribe a stop for this purpose at a fixed point, marked by the Stop Board, for all freight trains. Driver Carter failed to make the prescribed stop, and must therefore be considered to be primarily responsible.

He gave, however, a straightforward account of his actions, and I accept his statement that, in spite of the common practice of stopping with long trains well beyond the Board, he intended to stop at the Board on this occasion. I do not think, therefore, that his failure amounted to more than misjudgment, and mismanagement of his engine brake with a heavy load and a greasy rail.

I think, however, that his handling of the brake calls for some criticism; it is noteworthy that he did not make a full application or apply sand until almost at the Board; the falling gradients for the last 700 yards approaching the head of the incline are not particularly severe (1 in 166 and 1 in 178), and his speed was probably not materially in excess of 10 m.p.h. through Miles Platting Station; had he, therefore, made fuller use of his brake power and used sand at an earlier stage, I am of opinion that he would have had little difficulty in stopping his train at the Board. Carter also kept the vacuum brake fully applied all the way down the incline; had he from time to time released and re-applied the brake, I think it possible that, although he could hardly have regained full control, the brake would have operated to better effect and the speed at the foot of the incline might have been appreciably lessened.

It is, however, difficult to understand why Carter did not tell his fireman to get off the engine earlier, i.e., immediately he realised that his full brake application as he approached the Board was not effective. According to his own statement, he delayed taking this action until he had run 15-20 wagon lengths beyond the Board, and, having regard to Fireman Hollins' statement and that of Signalman Sykes, I think it probable that the former alighted practically opposite to Collyhurst Street box, nearly 200 yards beyond the Board.

Although it is to be regretted that Fireman W. H. Hollins, who alighted from the engine close to Collyhurst Street box, did not inform the signalman that the train had been unable to stop at the head of the incline, it is probable that he acted to the best of his ability in dropping eight or nine wagon brakes as the leading part of the train passed him, though he was unable to pin them down. I think that Guard A. Dickson also acted for the best by remaining in his van; I do not think the speed of the train at any time was less than a fast walking pace,

and it is very doubtful whether an attempt on his part to catch up the rear wagons of the train and drop their brakes would have been successful.

8. Neither the two signalmen at Collyhurst Street, J. E. Sykes and F. Jones, nor Signalman I. Firth, of Newtown No. 2, grasped the situation. Sykes, who was responsible for the signalling of the main lines, was aware of the Regulations requiring a stop at the Board, and if he had been alert he should have realised that the failure to stop by this heavy train indicated that it was probably out of control. At least four minutes elapsed before the train reached Millgate box, and had he sent forward the "Running-Away" signal or telephoned, it is possible that arrangements could have been made to divert the train safely from the Up North to the Up South line there, and give it a clear path through Manchester (Victoria) Station on No. 17 through road, which was unoccupied at the time. Although the signalling of the main lines at Collyhurst Street was not part of the duties of Signalman F. Jones, he was not otherwise occupied, and it is also difficult to understand that the failure of the train to stop caused him no concern. Signalman I. Firth, of Newtown No. 2 box, should also have realised from the "popping" on the whistle and from Driver Carter's shout that the latter was anxious and that there was consequently the possibility, if not the probability, that he had lost control. All three men have considerable experience of the boxes in question, and in my opinion none of them, especially Sykes, is free from some measure of responsibility in this case. Sykes knew that the instructions for working on this gradient were being disobeyed and had not drawn attention to it, and he also made no attempt to ascertain from the fireman why he did not rejoin his engine.

On the other hand, the signalmen at Newtown No. 1 and Millgate boxes carried out their duty, and credit is due to Signalman A. C. Nicholson, of Victoria East Junction box. He had an unenviable choice and little time in which to make up his mind; he undoubtedly saved the collision from having more serious consequences. Signalman A. Sharpley at this box, and E. Massey of Victoria West Junction box, also acted promptly in placing signals to Danger against conflicting movements.

9. The estimates of speed, 30 to 60 m.p.h., towards the foot of the incline, as given in the evidence, were probably exaggerated. The signal box timings indicated an average speed of 12 to 15 m.p.h. over the one mile between Collyhurst Street and Victoria East Junction. Even allowing for slow speed passing the Stop Board, I hardly think that the ultimate speed can have been more than 25 to 30 m.p.h., and the resulting damage to the passenger stock appeared to be consistent with this estimate.

Remarks.

10. Although this accident can be attributed to failure to obey clear and definite instructions to stop at the head of the gradient, it cannot be overlooked that the short distance of the Stop Board ahead of the junction has rendered strict adherence to the instructions difficult without hindrance to traffic. The trainmen and the staff concerned have thus for some time been placed in a difficult position in their anxiety to avoid delays. It is to be regretted that the risks which were in consequence being run were not recognised earlier.

I discussed with the Company's officers the possibility of moving back the Stop Board to a position in rear of the trailing junction of the up lines at Miles Platting, and tests as to the practicability of this were made. It was found, however, that with sufficient wagon brakes pinned down for safety on the steep incline, the falling gradient (1 in 178) was insufficient to avoid difficulty in re-starting the train without risk of breakaway, which in fact occurred during one of the tests. In consequence, it has been decided to retain the Stop Board in its present position, but no discretion in the interpretation of the instructions to stop is to be permitted, and all up goods trains without exception will in future be brought to a stand before reaching the Board.

In order to avoid as far as possible any consequent delay at the junction, fuller use is to be made of the up goods line by freight trains from the Ashton direction. This line is clear of both the junctions at Miles Platting and reaches the Stop Board before crossing the Up and Down South lines at Collyhurst Street

box. The Board is to be illuminated at night, and repeated laterally by a similarly worded notice, also illuminated, on the signal post opposite to it and immediately to the left of the Up North line.

The action taken by the Company should prove adequate for the safe working in future of goods trains on this steeply graded section of line.

I have the honour to be,

Sir,

Your obedient Servant,

G. R. S. WILSON,

Major.

The Secretary,
Ministry of Transport.

APPENDIX.

EXTRACT FROM CENTRAL DIVISION SECTIONAL APPENDIX TO THE WORKING TIME TABLES, JANUARY 1ST, 1931.

General Instructions for working down Inclines.

The letters AWB in the Loading Tables indicate where these instructions apply.

1. When it is necessary to apply wagon brakes to assist in controlling a train, the train must be brought to a stand before proceeding on to the heavy gradient, or, in the cases of the places shewn below, the train must be brought to a stand at the point named; and the fireman must apply sufficient wagon brakes near the engine and the guard or guards at the rear of the train. The train must then be drawn slowly on to the incline, and the guard, or guards, must continue to apply as many more brakes as may be necessary until the whole of the vehicles are on the heavy gradient. When the driver feels that a sufficient number of brakes have been applied, he must give two short sharp whistles to indicate that he is satisfied sufficient brake power is available to properly control the train, and to stop it at any point on the incline, should it be necessary to do so, but the guard in charge will be jointly responsible with the driver for working the train safely down the incline. Should a train be worked by two engines in front, the whistles to indicate that sufficient brake power has been applied must be given by the driver of the leading engine, after exchanging hand signals with the driver of the second engine.

2. The driver must use steam to draw the whole of the train on to the incline in order to be satisfied that sufficient wagon brakes have been applied, and must not give the two whistles referred to in clause 1 until the whole of the train is on the heavy gradient.

3. The engine and van brakes must be off when the train is being drawn on to the incline, and be held as reserve brake power for use in emergency.

4. When the guard has rejoined his brake van he must give the driver a green hand signal to indicate that the train can go right away, and the driver must acknowledge the same by a short whistle. The train must not start right away until these signals have been exchanged.

5. The guard must watch the speed of the train while descending the incline, and, if necessary, assist the driver to keep the train under control.

6. When a train has to attach wagons from a siding situated on an incline, a sufficient number of wagon brakes must be applied before removing the wagons from the siding, and the guard or shunter must accompany the wagons from the siding to the running line, and apply additional brakes, if necessary, to ensure the wagons being kept under complete control. When the wagons have been attached to the train, the instructions in clauses 1 and 3 must be strictly observed.

7. The driver must stop his train at the foot of the incline or where it may be necessary, and the fireman and guard, or guards, must release the wagon brakes.

EXTRACT FROM CENTRAL DIVISION SECTIONAL APPENDIX TO THE WORKING TIME TABLES, JANUARY 1ST, 1931.

Principal falling gradients at which notice boards are provided to indicate the point at which freight trains must be brought to a stand for brakes to be applied.

<i>From</i>	<i>Towards</i>	<i>Distance Miles</i>	<i>Gradient</i>
Miles Platting	Victoria	1½	1 in 47 and 59