MINISTRY OF TRANSPORT

RAILWAY ACCIDENT

Report on the Accident that occurred on 28th November 1969 at Great Coates Level Crossing near Grimsby

IN THE

EASTERN REGION

BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

1970

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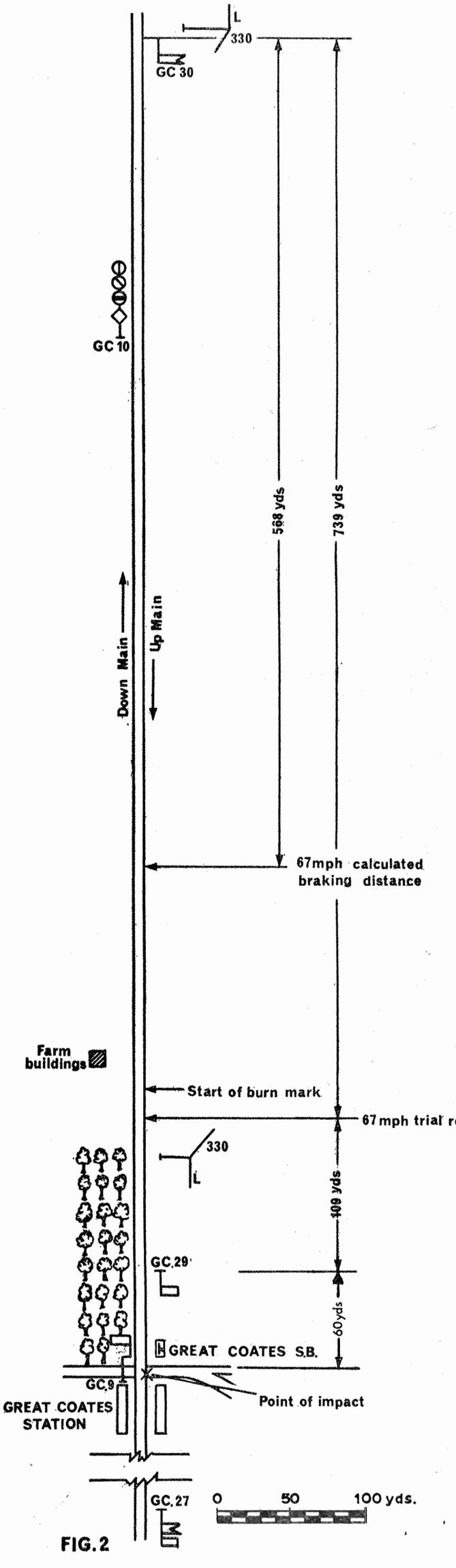
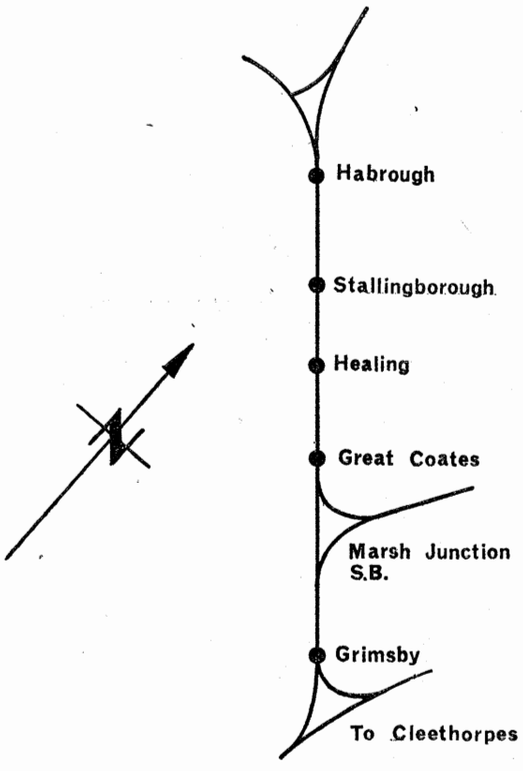


FIG. 2



LOCATION DIAGRAM

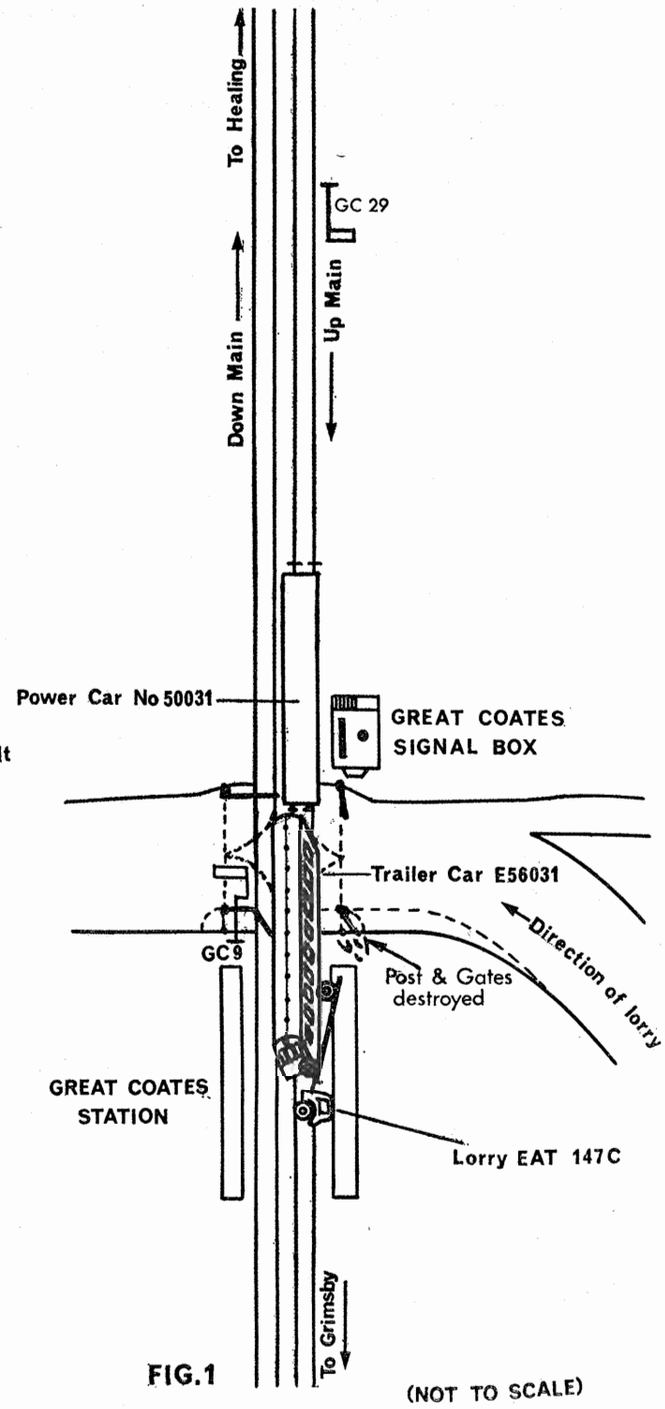


FIG. 1

(NOT TO SCALE)

MINISTRY OF TRANSPORT,
ST. CHRISTOPHER HOUSE,
SOUTHWARK STREET,
LONDON, S.E.1.
17*th April* 1970.

Sir,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 1st December 1969, the result of my Inquiry into the accident that occurred at 17.59 on Friday, 28th November 1969 at Great Coates Public Level Crossing near Grimsby, in the Eastern Region, British Railways.

After dark on a clear cold evening a two-car diesel multiple-unit passenger train travelling towards Grimsby on the Up Main line passed at Danger the semaphore Home signal and ran through the level crossing gates some 60 yards beyond. As the train approached, the gates had been across the road for a Down train to depart from the station, but the signalman had opened them for road traffic as soon as this train was clear and the Up train not only destroyed the gates but hit an articulated lorry and carried it 46 feet into the station the leading car being derailed and coming to rest fouling both the Up and Down lines.

The driver of the road vehicle, one passenger in the train, and a police cadet who was using the pedestrian crossing at the time were injured. A police sergeant who was waiting to cross the lines in his car gave immediate and valuable assistance and the ambulance arrived at 18.07 to take the 3 injured persons to hospital, but none were detained. The train left under its own power at 01.50 the following morning, and the level crossing was reopened to road and rail traffic at 02.10 under the protection of hand-signalmen pending the repair of the gates.

DESCRIPTION

The Level Crossing

1. Great Coates level crossing, which is of Public status, carries a Class II road connecting the A.1136 to an area of factories, over the two tracks some two miles north of Grimsby station. The crossing lies between Great Coates signalbox and the station platforms as shown in figure 1 at the front of the report. It is equipped with four swinging gates closing alternately across the railway or the road and is worked by a wheel in the signalbox. The gates are kept normally closed across the railway and a Direction to this effect was issued by the Minister of Transport on 28th June 1961. There is also a pedestrian crossing served by wicket gates on the station side of the level crossing.

2. The road approach from the Up side, the side from which the lorry crossed, is on a left-hand curve, such that articulated lorries have to pull out into the centre of the roadway for their rear wheels to clear the left hand gate post. The gates span 30 feet between posts and the roadway width is nominally 24 feet. The crossing surface is an experimental one of granite chippings in pitch on timbers.

3. A count made over 24 week-day hours in December showed that 3,067 motor vehicles and 152 motor cycles used the crossing, of which 243 and 11 respectively passed between 17.00 and 18.00. Heavy lorries from the Pyewipe Industries Estate use the level crossing regularly, and they include a number of tankers.

The Signalling and Track

4. The layout of the track and relevant signalling is shown in figure 2. At the time of the accident the last manned signalbox approaching Great Coates on the Up line was Stallingborough some 2¼ miles from Great Coates signalbox. Great Coates semaphore Distant signal GC.30 is 848 yards from the semaphore Home signal GC.29 which is itself some 60 yards from the first level crossing gates. From Stallingborough the line rises at 1 in 660 to a point 1,172 yards from Great Coates signalbox, is level for 261 yards, and then falls at a gradient of 1 in 330 from a point 7 yards before the Distant signal becoming level again 82 yards before the Home signal or 142 yards from the gates. Healing station lies 1 mile beyond Stallingborough and some 1¼ miles from Great Coates signalbox. Marsh Junction signalbox which was manned at the time of the accident is 1,300 yards beyond Great Coates signalbox. The Great Coates Up Starting signal GC 27 is 409 yards beyond Great Coates signalbox.

5. Visibility approaching Great Coates on the Up line is excellent, and on a clear day the Up Home signal can be seen from Healing station. The track, which is of 109/110 lbs flat bottomed rail on wooden sleepers was laid on 9th June 1968. The maximum permitted speed on the line for DMUs was 70 m.p.h. although other trains were restricted to 60 m.p.h.

6. Great Coates signalbox has a mechanical frame, and the Signalman faces the railway. The signalbox has a small extension facing the level crossing which houses the gate wheel and from which there is a good

view of both road approaches to the crossing. From the wheel it is also possible to see back along the Up line for at least one mile through a window in the other end of the signalbox. Train working between Stallingborough, Great Coates and Marsh Junction signalboxes is in accordance with the Absolute Block Regulations and all the signals, except the Great Coates Down Starting colour light signal GC.10, are of the Upper quadrant semaphore type. There are no block controls on the Stallingborough or Great Coates Up line signals, and no track circuits on this line. Since a level crossing does not constitute an obstruction under Regulation 4, British Railways Regulations for Train Signalling and Signalmen's General Instructions, a train can be accepted from the previous signalbox when the gates are open for road traffic, but the Great Coates signalbox interlocking ensures that the gates can not be open for road traffic unless the signals protecting the crossing from both directions are at Danger. The two Home signals involved are GC.29 already mentioned, and GC.9 on the Down line platform ramp some 4 yards from the crossing gates.

The Train

7. The two-car DMU was the 2D97, 16.29 Newark Northgate to Cleethorpes train timetabled to depart from Great Coates at 17.52. It was not booked to stop at Healing. It was one of 49 similar units introduced in 1956 and consisted of No. E 56031 Gangwayed Driving Trailer Lavatory Composite, and No. E 50031 Gangwayed Motor Open Second Brake. The trailer car which was leading weighed 29½ tons with a brake efficiency of 73·8 per cent., and the power car 37½ tons with a brake efficiency of 69·35 per cent. The overall length of the two-car unit was 134 feet. Power was provided only on the rear car by two 230 b.h.p. B.U.T. (Leyland) diesel engines, through mechanical transmissions. These units are equipped with a Quick-Release Vacuum brake which incorporates a two-pipe system and with which the driver is able to lap his brakes at any desired level of vacuum. The trailer cars have 12 first class and 62 second class seats, and the power cars 62 second class seats and a guard's compartment. A seat is provided for the guard in a brake cubicle at the end of the power car in the centre of the unit, from which he can see through the car ahead, and there is also a seat in the main parcels compartment to the rear of it.

The Lorry

8. The lorry, Registration number EAT 147C owned by Messrs. T. H. Brown Limited, of Grimsby, was a Dodge articulated vehicle 33 feet long overall, with an unladen weight of 8 tons 7 cwt. It was carrying an empty container weighing almost 2 tons, but because the trailer body was not equipped with the necessary clamps to fit the container, the latter was lashed down at its four corners.

Accident Damage

9. Damage to the train had occurred to the leading car only. It came to rest with its leading end slewed across the opposite line and tilted at about 20° to its offside. Both axles of the leading bogie and the leading axle of the trailing bogie were derailed. The rear side of the driver's cab was damaged and the control panel forced back, but not so far as to trap the driver's legs. There was damage to the front and near side exterior body panels on the front of the cab, side door panels, steps, windows and side-lights, and controls and jumper connections were broken, an earthing bond was fractured, and the bogie brake rods were bent. The damage was consistent with the leading car having been crushed by the lorry on its near side as the lorry was turned over and pushed against the station platform. After re-railing and minor repairs the unit was driven away under its own power but from the rear driving cab. Damage to the lorry was mainly to the articulated trailer, the chassis of which was bent and twisted, the springs broken, and the body crushed. The chassis and front axle of the tractor unit were also bent and the driver's cab was damaged, as was the container.

Evidence

10. *Signalman D. Bates*, was on duty at Great Coates at the time of the accident. He had been a signalman since November 1955 and had served at Great Coates, Sandy Everton and Stallingborough since that date. He had only been in charge at Great Coates for 11 days, before which he had spent 5 days under instruction there. He had however only spent 5 days in all working the 14.00 to 22.00 shift during which the accident occurred, and on 2 of these days he was under instruction.

11. On the day of the accident he signed on duty at 14.00 after having signed off the previous night at 22.00. At 17.54 he accepted a two-car diesel multiple-unit train 2J78 on the Down line from Marsh Junction. He next accepted 2D97 at 17.55 on the Up line from Stallingborough, which was the train involved in the accident, and at the same time received "Train entering Section" for 2J78 from Marsh Junction. He received "Train entering Section" from Stallingborough for 2D97 at 17.57 and immediately offered it forward to Marsh Junction, and had it accepted. He closed the level crossing gates to road traffic and at 17.58 2J78 arrived in the Down platform. He told me that he sent "Train entering Section" forward on the Down line to Stallingborough at 17.58 and as soon as the train had departed he replaced signal No. 9 and wound the gates open for road traffic. He said that Up trains booked to call at Great Coates but not at Healing take from 2½ to 3 minutes to arrive from Stallingborough, and he thought that he had time to open the gates for the small amount of traffic waiting, and to close them again before the arrival of 2D97.

12. He heard a lorry on the Up side start up and the next thing he knew was that 2D97 was passing his signalbox sounding a continuous one-tone horn and ran into the gates and the lorry which was on the

crossing. He immediately sent "Obstruction Danger" signals in each direction and telephoned Stallingborough signalbox which is connected to Control, to ask for the police, ambulance, and fire services. He also went down to the platform and found that the injured were already being cared for, so he returned to the signalbox and stayed there until he was relieved at 19.00.

13. Bates told me that at no time after accepting 2D97 had he placed either the Down Distant or Down Home signal in the Off position. All his signalbox windows were shut and because of this and the noise made by the lorry, he did not hear the train's horn "popping". On being questioned he said that he thought the accident occurred about 20 seconds after the gates were fully opened for road traffic.

14. *Driver A. B. Bland, of Grimsby*, was the driver of train 2D97, the 16.29 Newark to Cleethorpes involved in the accident. He told me that he signed on at 11.45 having signed off the previous night at 19.45, and worked train 2D97 from Cleethorpes to Newark with two two-car diesel multiple-units as far as Lincoln, and the one two-car unit to Newark where it formed the 16.29 Newark to Cleethorpes. He said he carried out braking tests at Cleethorpes and at Newark. He had to brake to 25 m.p.h. for the Newark curve, for a 20 m.p.h. check between Swinderby and Eaglethorpe crossings, to 30 m.p.h. at Lincoln West, and for a stop at Lincoln St. Marks. He next had stops at Wickenby and Market Rasen, and had to slow to 15 m.p.h. for the curve at Wrawby Junction, then for a stop at Barnetby station, followed by a check for the 30 m.p.h. curve at Brocklesbury and finally he had to stop at Habrough. At none of these restrictions or stops did he have any trouble with his brakes.

15. He told me that passing Stallingborough he was in top gear and travelling at his maximum line speed of 70 m.p.h. He saw the Great Coates Up Distant signal at Caution in plenty of time and closed his throttle and prepared to brake for stopping at the Home signal. He began braking as he passed the Distant signal by making a normal brake application (10 inches of vacuum) which he held in the lap position for two or three seconds, and then made a full brake application. He told me that after a moment he realised the brake was not having the desired effect for him to stop so he blew his horn for the signal to be lowered. He said that he could see a train in the platform when he was a "good distance" from the level crossing. He also said that he had a good view of the Home signal from before passing the Distant, and that it too was "On".

16. He began "popping" his horn when he realised he would not stop at the Home signal, and he estimated that his cab was about at the Home signal when the cab of the other train passed his, at which time the other train was just clearing the level crossing. He said that the gates then closed and that he hit them at about a walking pace.

17. Driver Bland was 61 years old and had been driving for 19 years and had a good record. He said that he wore spectacles when driving and assured me that he was wearing them at the time. He also told me that he had driven on this line regularly for about 5 years, and could not recollect ever having been stopped at Great Coates Up Home signal before.

18. *Guard J. H. T. Pepper, of Cleethorpes*, was the guard of 2D97 involved in the accident. He told me he signed on at Cleethorpes at 14.30 having signed off the previous day at 23.00. He travelled to Lincoln where he took over and worked the 2D97 16.29 Newark to Cleethorpes. It was an uneventful journey to Great Coates except that they were stopped by signals at Wickenby. The train was full when it left Lincoln but many people got out at Market Rasen and from then on all the passengers had seats but there were not many seats empty. They last stopped at Habrough, and on approaching Great Coates he was standing in the parcels compartment with another guard travelling as passenger, when he felt the brakes go on, which he thought was the normal braking for the train to stop at Great Coates. He then went to the nearside guard's compartment door and heard the driver sounding his horn. After about half a dozen hoots he lowered the window and looked out and saw that they were about 75 yards from the signalbox and that the gates were across the railway and he could see traffic moving from left to right across the level crossing. He estimated the train's speed as between 20 m.p.h. and 30 m.p.h. at that time.

19. When they had come to a stand he got out of an offside door and found himself a yard or two short of the level crossing. He saw the driver get out, and as passengers were alighting he went straight to the signalbox where the signalman told him that both the lines were protected. He had been a guard for 4 years, and had been on that line most of that time. His train had never to his recollection been brought to a stand at the Great Coates Up Home signal before.

20. *Driver N. J. Shrimpling, of Immingham*, was driving the 2J78, 17.41 two-car diesel multiple-unit train from Cleethorpes timetabled to depart from Great Coates at 17.57. He said that they were running a minute or two late when they stopped at Great Coates Station. Signal No. 9 was off before he got his guard's "Right Away" and he then accelerated away in the usual manner. Because he had been concerned with platform duties and gear changing he did not notice the other train until it was almost opposite him, and he estimated that their cabs passed when his was 150 yards to 200 yards clear of the level crossing. He said that he was clear of a farm and some trees on his left hand side but had not reached the colour-light Starting signal No. 10. (Measurements taken since the Inquiry have confirmed that the farm buildings are some 200 yards beyond the level crossing as shown in figure 2). He thought that he was still in second gear at that time and doing about 20 m.p.h. He told me that as they passed, the other driver was "popping" his horn,

(that is blowing his horn single tone intermittently). He also noticed sparks from the other train's brakes and thought that perhaps there were pedestrians crossing the line that should not have been. When I asked him if he thought it was an emergency brake application he replied "I thought he was making a braking ready to stop at Great Coates".

21. *Police Cadet M. Kendall, of Grimsby Constabulary*, was one of the passengers who got off the Down train and was waiting to cross the lines through the wicket gate. He told me that he had been using that train for about 15 months. There were three ladies with shopping bags at the gate with him, and he tried the gate as the Down train left the platform and it was locked. One of the ladies then opened the gate and he held it open while they passed through. When they were about halfway over the lines he heard the gates striking the "open" gate stops, and then heard two hard blasts on the train's horn and he saw its cab almost opposite the signalbox and knew there was going to be an accident. He urged the ladies over the lines and held the far side wicket gate open for them but did not have time to go through himself before he was trapped by the lorry's container being thrown onto him.

22. Kendall said that when he first saw the train he thought it was travelling at a fair speed, and when I questioned him on whether it was going at more or less than 10 m.p.h. as it hit the gates he replied "I would have said more sir, they tend to stop up the Platform so that the signalman can open the gates to traffic". He said he thought its speed was somewhere between 10 m.p.h. and 15 m.p.h. as it hit the first set of gates.

23. *Sergeant J. W. Smith, Grimsby Constabulary*, was in his car behind a small van waiting to cross the level crossing from the Down side, opposite to that of the lorry. He told me that he saw people getting off the Down train and several of them waiting at the wicket gate. As the train cleared the crossing he saw them walk across behind it and then the gates opened for road traffic. As soon as it was possible, and while the gates were still opening, the van moved to the centre of the road and crossed over, but because of the lorry coming the other way Sergeant Smith kept to his own side of the road. He said that by the time he arrived at the crossing the gates were fully opened and he then heard a grating and grinding noise and looking to his left saw the train swaying and just about to come through the crossing gates. It passed about one yard in front of him and the front of it seemed to rise up in the air as it swept the lorry before it, coming to rest leaning towards his car and still swaying.

24. He told me that he reversed out of danger, got out of his car and ran to the front of the train and saw that the driver had just got out and was obviously dazed but not badly injured. He then went round the front of the lorry which was in darkness and called to some people who were attending to an injured person and one of them said he was the lorry driver. He helped people to get out of the leading car of the train, and then went to a private house to telephone his Police Headquarters. As soon as a police vehicle arrived he used its radio and asked for road blocks to be placed and bus transport to be provided for passengers. (He also asked for the police photographer to attend and I am grateful to him for copies of the photographs taken). He told me that the road was dry, but it was freezing and there was a slight ground frost on the wooden parts of the crossing and he could see the brake marks of his vehicle in the rime on the crossing. He left the scene at about 19.00.

25. I questioned him on his estimate of the speed of the train as it hit the gates and he said that he thought it was going a good deal faster than 10 m.p.h. and probably between 15 m.p.h. and 20 m.p.h. but it was difficult to judge exactly. He also said that he thought the accident occurred within 20 to 25 seconds of the gates beginning to open, and not much more. He told me that he heard no horn from the train, only the grinding noise which he assumed was its brakes.

26. *Mr. K. Sturdy* was the driver of the lorry involved in the accident, and although he had only just had stitches removed from his head kindly attended my Inquiry. He told me that shortly before 18.00 on 28th November he arrived at the level crossing on the Up side of the line and halted his lorry three or four yards from the gates which were closed to road traffic. He told me that the gates began to open seconds after the Down train had cleared the crossing, but because there were one or two cars coming the other way and because he had to pull out to clear the gatepost, he did not draw ahead until the gates were fully open. Being lightly laden he started in second gear, and was still in second gear and doing about 10 m.p.h. by the time he was halfway over the crossing. Because he was busy looking in his mirror to check his nearside clearance, and because his engine was noisy, he neither saw nor heard the train approaching, and was not aware of what had hit him until his lorry came to rest on its left side in the middle of the line with the top of its cab against the platform coaming. His container had broken loose and had been thrown onto the platform ramp. He then climbed out and was given assistance. He told me that although it was frosty he had seen no ice on the road.

27. *Mr. W. J. H. Burton, S. & T. Supervisor, of Grimsby*, arrived at the scene of the accident at about 20.00. He told me that he went first to the signalbox and found all levers normal except No. 1, the gatestop lever which was in the reverse (unlocked) position. The indicator for No. 30 Up Distant signal was also "On" and he could clearly see the back light of the oil lamp in the signal. He also said that No. 29 Up Home signal arm and lamp could be easily seen and the signal was "On", as was No. 9 Down Home signal on the platform end. He checked the interlocking between the level crossing gates and the signals involved and found all in order. He also checked that the indicator on No. 30 Distant signal was functioning correctly. He told me that both Distant and Home signals were showing very good lights.

28. On the evening of 8th December he timed the opening of the level crossing gates from the moment a Down train had cleared the crossing to the gates being fully open to road traffic, and found the time to be from 14 to 16 seconds. In this time assuming No. 9 Down Home signal had been replaced, the gatestop lever had to be reversed, the wicket gates released and the gate wheel fully wound.

29. *Mr. C. Kelley, Movements Assistant and Mr. K. Micklethwaite, Assistant Maintenance Engineer, Doncaster*, together examined the Up Main line track at about 00.30 on 29th November. At that time the DMU had not been moved following the accident. In a written statement they said that they found the rails still highly polished, clean and dry. It was below freezing point with a slight cross wind, but there was no sign of hoar frost. They found a slight burn mark on the top of both rails approximately $1\frac{1}{4}$ inches wide commencing at a point 125 yards on the approach side of the Up Home signal and these continued to the rear of the DMU at the point of collision. They said that they considered that these burn marks indicated skidding. (The signal being 60 yards from the level crossing, the burn marks must have been about 180 yards long.)

30. *Mr. L. Brown, Assistant Design Engineer, Eastern Region*, gave me the theoretical braking distance of a two-car diesel multiple-unit of the type involved in the accident, emergency braked from various points on the 1 in 330 falling gradient, to bring the train to a stand at the level crossing. The figures were as follows:—

from 10 m.p.h.	17 yards
15 m.p.h.	32 ,,
35 m.p.h.	128 ,,
40 m.p.h.	167 ,,
65 m.p.h.	515 ,,
70 m.p.h.	615 ,,

No allowance is made for driver's reaction time, and he told me that up to 20 per cent. could be added to the figures for poor rail conditions and wheel lock.

I am also informed that the theoretical braking distance from 67 m.p.h. wholly on a 1 in 330 falling gradient is 568 yards. All the above are minimum distances under full emergency braking.

31. *Mr. H. C. Smith, Chief Mechanical Foreman, Lincoln*, said that he had inspected the brakes on the DMU on 29th and 30th November. He found 5/16 inch clearance at each block on both units. On car 56031, the trailer car, the blocks were two-thirds worn and there was no flanging, but on the power car, car 50031, there was approximately $\frac{1}{2}$ inch of flanging and the blocks were only one-third worn. He also found that there was a vacuum of 21 to 29 inches when the engine was idling. From the repair book of the DMU he was able to say that the brakes had last been adjusted on 21st November, only one week before the accident. On inspecting the wheels, he found no flats on the power car but flats about the size of a shilling on all 8 wheels of the trailer car which he thought were consistent with its having skidded about 180 yards. He said that they were too small to be heard when running.

32. He helped carry out braking trials with the DMU on a straight and level disused section of the Washingborough Branch. The rails were rusty and damp at the commencement of the tests although the weather was fine. Ten tests were made, 7 under full emergency braking, and 3 under normal braking with the brake lapped at 10 inches of vacuum, and the tests were from 30, 20 and 10 m.p.h. The third and eighth tests were from 30 m.p.h. and 10 m.p.h. from which emergency brake applications brought the train to a stand in 118 yards and 20 yards respectively. (These distances are some 18 per cent. over the theoretical stopping distances.) The other 8 tests gave similar results.

33. He also helped carry out tests on an identical two-car DMU consisting of cars 50021 and 56021 on 2nd December. The first trial was on the Up line approaching Great Coates, and three further tests were made between Great Coates and Grimsby. Prior to leaving Barnetby the brake piston travel was checked and found to be $3\frac{1}{2}$ inches (it was 3 inches on the other unit after the accident) which indicated a slightly worse brake than on the other unit, and the brake block wear was identical to that on the other unit. Heavy rain had preceded the trial but it was not raining at the time although the rails were very wet. It was also very dark.

34. The Great Coates Up Distant Signal was sighted from a point 1,093 yards before it. Although it was hoped to pass the Distant signal at 70 m.p.h. only 67 m.p.h. could be achieved, and in passing it a normal brake application was made (10 inches of vacuum, lapped) for one or two seconds, and then an emergency brake application. There was no feeling of wheel lock and the train came to a stand 109 yards and 1 foot from the Home signal, i.e. in 739 yards. (It should be noted that this is about 19 per cent. further than the calculated stopping distance from 67 m.p.h. of 568 yards assuming that the brake was not applied for 2 seconds, during which time the train would have travelled some 66 yards—paragraph 30 refers.)

35. After passing Great Coates, emergency brake applications from 28 m.p.h. halted it in 99 yards; from 20 m.p.h. in some 50 yards; and from 11 m.p.h. in 18 yards. (Director of Design's calculated figures from these speeds on level track are 85 yards, 50 yards and 18 yards respectively—the gradient on this section of line is mainly level with two short sections of 1 in 660 rising.)

Conclusions and Remarks

36. The accident was caused by Driver Bland passing at Danger the Great Coates Up Home signal GC.29. I am satisfied from Bland's own evidence and from the tests carried out with his train after the accident that the brakes were well up to the standard required, and that his passing the signal was not caused by faulty brakes.

37. At the time of the accident the rails were dry and frosty, and may have had on them traces of oil from previous diesel multiple-unit trains, whereas the trial carried out with an identical unit on 2nd December followed heavy rain which could be expected to have washed the rails clean and so improved the conditions. It is clear from the tests carried out with both trains that the wheels of the trailer cars on these DMU sets tend to "pick-up" or skid more easily than the power cars when conditions are poor. This is because of the different weights of the two cars, their bogie springing, and their different brake leverages. It follows therefore that the rail conditions on the Up line approaching Great Coates were not abnormally bad because had they been so the wheels of the Power car would also have picked up.

38. The Police Sergeant estimated the speed of the train as it hit the gates as between 15 m.p.h. and 20 m.p.h., and in any case a good deal faster than 10 m.p.h. The Police Cadet estimated the speed at between 10 m.p.h. and 15 m.p.h., and said that the speed was similar to a train about to stop at the platform, and the driver of the other train had the same impression. From the accident damage I think it likely that the speed was nearer 15 m.p.h. than 10 m.p.h. Nevertheless assuming that the level crossing gates took 15 seconds to close and the lorry 4 seconds to get onto the crossing (30 feet at an average speed of 7·5 feet per second) a total time that was supported by Sergeant Smith, and assuming an impact speed of only 10 m.p.h. and allowing 20 per cent. over the calculated theoretical stopping distance, the train must have travelled about 290 yards from the time that the level crossing gates began to close, and have been travelling at over 45 m.p.h. at that time. If the rail conditions had been worse than at the time of the trial on 2nd December it might have travelled even further; nevertheless I do not consider that it could have travelled over 900 yards being braked as Bland said it was and still be travelling at 10 m.p.h. when it hit the gates; which is to allow at least 32 per cent. over the calculated braking distance as well as 3 seconds delay at the distant signal before he made his full brake application. I must therefore conclude that excessively slippery rails were not the cause of Driver Bland passing the signal at Danger, and it follows that he must have begun braking his train somewhat later than he said he did.

39. The next signal in advance of signal GC.29 is the Great Coates Starting signal GC.27, and the Distant signal GC.30 cannot be cleared unless both the Stop signals are already clear. The signalman would not clear signal GC.27 until acceptance of a train had been received from Marsh Junction Signalbox. British Railways Rule 39(a) states: "When a stop signal is at Danger the stop signal next in rear of it and worked from the same signalbox must not be lowered for an approaching train until the train is close to such signal and has been brought quite or nearly to a stand". At Great Coates therefore, when a train due to stop at the station arrives before the train has been accepted by Marsh Junction Signalbox, starting signal GC.27 will be on, and the signalman will not clear GC.29 until the train has come nearly to a stand at it. In Driver Bland's experience therefore signal GC.29 must have cleared as he was closely approaching it on very many occasions, and I think it likely that seeing the level crossing gates already closed across the road, he was driving, at least initially, as if he was to stop at Great Coates station beyond the level crossing and not at the Home signal which, I believe, he assumed would be cleared before he arrived at it. The fact that his train was running about 7 minutes late, that he was driving at full speed, and that he had on board a full load of passengers, possibly contributed to his failure to control his train properly.

40. British Railways Rule 176 states that "Inspectors, Shunters, Guards, Drivers, Signalmen and all others concerned, must make every effort to facilitate the working of trains and prevent any avoidable delay" and Driver Bland could reasonably have assumed he would not be further delayed. I cannot find that Signalman Bates, in opening the gates for road traffic in the face of an oncoming train, which was less than 300 yards away and which he must have known was running late, acted in the interests of the working of trains. Although he acted entirely within the Regulations, had he looked carefully along the Up line in the direction of Healing before reopening the level crossing gates to road traffic he must have seen the headlight which these trains carry over their destination boards at the top of their cabs. That the light was on was proved in photographs taken by the Press and Police; and had he seen the train he most certainly would not have reopened the gates.

I have the honour to be,
Sir,
Your obedient Servant,

A. G. Townsend-Rose
Lieutenant Colonel.

The Secretary,
Ministry of Transport.

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