



MINISTRY OF TRANSPORT

RAILWAY ACCIDENT

Report on the Collision that occurred on 20th September 1966 near Connington

IN THE
EASTERN REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

FOUR SHILLINGS NET

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1967

MINISTRY OF TRANSPORT,
ST. CHRISTOPHER HOUSE,
SOUTHWARK STREET,
LONDON, S.E.1.

25th January, 1967.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 30th September 1966, the result of my Inquiry into the collision of a freight train with the rear of an express passenger train at 0504 hrs on Tuesday, 20th September 1966, near Connington, between Huntingdon and Peterborough, on the East Coast Main line, in the Eastern Region, British Railways.

In the early hours of the morning, when fog had reduced visibility in the area to about 50 yards, the 2230 hrs Edinburgh to King's Cross express passenger train, consisting of 13 coaches including sleeping cars, was brought to a stand by the driver at Connington South Up Home signal because a fault had developed in the locomotive. Arrangements were then made for the train following the express, a fully fitted, diesel hauled, freight train, which had been halted at Connington North, to be used to propel it to Abbots Ripton, four miles to the south, where a fresh locomotive would be attached.

The guard of the passenger train went back to Connington North to join the freight train and to pilot it cautiously on to the rear of his train. The collision occurred whilst this operation was being carried out, the locomotive of the freight train striking the rear of the express heavily while travelling at about 6 m.p.h. There was no actual derailment, but all the coaches of the passenger train suffered some damage, and the 8th coach, a sleeping car, telescoped into the coach in front of it, also a sleeping car, and became detached from its leading bogie.

Ten passengers and two of the sleeping car attendants were slightly injured, and five of the former were conveyed to hospital at Huntingdon in ambulances, the first of which had arrived at the site at 0604 hrs, having been called at 0527 hrs. Of the passengers treated in hospital, four were discharged the same day and the 5th the following evening. The remaining passengers were also taken to Huntingdon whence a special train, departing at 0820 hrs, conveyed them to King's Cross.

The obstruction caused by the two trains necessitated the diversion of Up trains via Cambridge, but trains continued to run on the Down Main line at extreme caution, apart from a short period from 0925 hrs to 1010 hrs whilst the Peterborough breakdown crane replaced the 8th coach on its bogie. Normal working was resumed at 1104 hrs.

DESCRIPTION

The Site

1. The East Coast Main line between King's Cross and Peterborough runs roughly north and south. Figure 1 shows the layout of this line between Abbots Ripton, 4 miles 49 ch. north of Huntingdon, and Yaxley, 3 miles 56 ch. south of Peterborough. It will be seen that north of Yaxley there are four tracks and that these are, from east to west, the Up Goods, the Up Main, the Down Main and the Down Goods. Between Yaxley and Connington North there are only two tracks, while at the scene of the collision, between Connington North and South, there are three, the Up Main, the Down Main, and the Down Goods. South of Connington South the line again reverts to four tracks.

2. The Up Main line on which the collision occurred is level between Connington North and South, and then rises steadily at a gradient of 1 in 200 to Abbots Ripton. Figure 2 shows the layout of the lines between Connington North and South and also the locations of the signals on this section of the Up Main line. Connington North Up Main Home, which is combined with Connington South Up Main Distant as a three-aspect colour light signal, is located 37 yards to the north of the signalbox, and Connington South Home, also a colour light signal, is located 1315 yards south of the North box and 313 yards to the north of the South box. There are berth track circuits at both these signals. Throughout this section of the line, absolute block instruments of the three position type are in use on the Main lines.

The Trains

3. The Edinburgh-King's Cross express train was hauled by English Electric Deltic Type 5 Co-Co diesel-electric locomotive No. D.9006, of 3,300 h.p. and weighing 100 tons. The train consisted of 13 bogie vehicles, which were in order from the front, a brakevan loaded with parcels and mail, a brake composite corridor coach, 6 sleeping cars, a composite corridor coach, 3 second class corridor coaches and a corridor brakevan. All the vehicles, with the exception of the leading brakevan, were of British Railways standard design, fitted with buckeye couplings and Pullman type gangways. The combined brake power of the locomotive and train was 73.2% of their total weight of 577 tons and their length was 913 feet.

4. The freight train was the 2215 hrs from the Tees area to Temple Mills, hauled by a BR-Sulzer Type 4 1-Co-Co-1 diesel-electric locomotive No. D.168 of 2,500 h.p. and weighing 138 tons. The train was fully braked and consisted of 34 wagons and 2 brakevans, which was equivalent to 61 Basic Wagon Units. Most of the wagons, including 8 bogie bolster "C" wagons near the rear of the train, were loaded with steel. The total weight of the locomotive and the train was approximately 865 tons and their combined brake power 456 tons or 52.8%; their total length was 1192 feet.

The Damage

5. As already mentioned, the 8th coach of the express was forced up over the buffers and was telescoped into the coach in front of it, with the result that both coaches sustained considerable damage. The body and framing of the trailing end of the 7th coach was knocked in, the gangway was badly damaged, and the buckeye coupler and draw bar were also damaged. The leading end of the 8th coach similarly had the gangway badly damaged, the underframe head stock was bent and the buckeye coupler damaged, in addition to the bogie's becoming detached. Both bogie centre castings were also broken on the 10th coach, while the trailing end of the last coach, which was actually struck by the locomotive of the freight train, had its two buffer saddles and all axle boxes broken. All coaches also suffered minor internal damage such as broken mirrors and displaced wash basins.

6. The impact of the collision caused no damage to the freight train apart from fracturing an air pipe in the driver's controller in the rear cab of the locomotive. Damage to the permanent way was negligible and the signalling equipment was not affected in any way.

RULES

7. The following extracts from Rules from the British Railways Rule Book 1950 are relevant to this accident:—

Protection of Obstruction

Rule 178 (a) Should a train be stopped by accident, failure, obstruction or other exceptional cause the Guard must then protect the rear of the train in accordance with Rule 179

Rule 178 (b) Should the train have arrived at the home signal or any line be obstructed within the protection of home signals worked from a signal box, the Guard or Fireman nearest to the box must immediately advise the Signaller of the circumstances, and if no train is approaching on the obstructed line or lines, the instructions contained in Rules 179 and 181 need not be carried out

Protection of Train when only one line is Obstructed

Rule 179 (a) Should the train not foul or be dangerously near to any other line, the Guard must go back not less than $\frac{3}{4}$ mile, unless he arrives at a signal box within that distance, exhibiting a hand Danger signal to stop any train approaching on the obstructed line, and he must place detonators upon one rail of the obstructed line as under, viz:—

- 1 detonator $\frac{1}{4}$ mile from his train,
- 1 detonator $\frac{1}{2}$ mile from his train, and
- 3 detonators, 10 yards apart, not less than $\frac{3}{4}$ mile from his train.

Rule 179 (b) In order to secure as quickly as possible the safety of the line and to obtain assistance, the Guard, after protecting his train by detonators, as above directed, must go to the signal box in rear

Assistance Obtained from Rear

Rule 179 (c) Should assistance be obtained from the signalbox in rear, the Guard must ride on the engine of the assisting train, and indicate to the Driver the position of the disabled train. The assisting train must run at reduced speed and great caution must be observed by all concerned.

Rule 179 (d) On double lines of railway during fog or falling snow, the assisting train must be detained at the signal box, automatic stop signal or semi-automatic stop signal working automatically in rear of the disabled train until the Guard of the disabled train has arrived thereat, when he must so advise the Signaller.

Protection of Train — Guard arriving at Signal Box

Rule 181 (a) Should the Guard, in carrying out the instructions in Rule 179 (a) or (b), arrive at a signal box within or beyond the $\frac{3}{4}$ mile point from the obstruction, he must place 3 detonators, 10 yards apart, on the obstructed line in such a position as to prevent any train entering the obstructed section without passing over the detonators, and inform the Signaller of the circumstances

EVIDENCE

8. *Signaller E. Platts*, who was on duty at Connington South, received Train Entering Section for the express at 0423 hrs, and realised that something was amiss when it did not pass his box within about a minute. His Up Home signal berth track circuit was showing occupied, but he could not see the train because of the thick fog. He heard the Deltic engine being revved up and shut down several times, and then there was silence, from which he assumed that the locomotive had failed. He informed the signaller at Connington North and the District Controller at King's Cross, and it was agreed that a fully fitted freight train, which had been following the express and was then approaching Connington North, should be used if necessary to propel the passenger train to Abbots Ripton, where another locomotive would be attached.

9. The second man of the express then arrived and reported that the locomotive had failed. Platts told him of the plan of action and instructed him to tell his guard to go back to Connington North, protecting his train en route, and to report to the signaller before bringing on the freight train to assist.

10. The freight train left Connington North at 0459 hrs and a short time later Platts heard three detonators explode at intervals that were consistent with their being 10 yards apart and with the train travelling at walking pace. He then heard a considerable bump and immediately informed the signaller at Connington

North. With all his Down signals at Danger and leaving Signalman James, who was learning the duties at Connington South, in the signalbox with strict instructions that he should let no trains proceed on either Down line to Connington North, Platts went to investigate what had occurred. On coming across the damaged and displaced coaches in the middle of the train, he returned as quickly as possible to his box, sent the Obstruction Danger signal, informed Control, and alerted the emergency services.

11. Platts said that the visibility at the time of the collision was 40-50 yards and had been consistently so for the previous hour. He had been given Train Entering Section for the freight train at 0459 hrs, but had not noticed at what time the detonators had been exploded or the bump had occurred.

12. *Signalman E. N. Jinks* at Connington North box confirmed the arrangements that had been agreed for the freight train to assist the passenger train. When the second man of the freight train came to the box to carry out Rule 55 Jinks told him that his train was going to propel the passenger train to Abbots Ripton and that the guard was coming back to accompany them into the section ahead. He then sent the second man back to the train to inform his driver and guard. When the passenger guard arrived he told him that the crew of the freight train knew they were going to assist his train and that when Connington South was ready to accept the assisting train he would give a green hand signal to authorise the driver to pass the signal at Danger. The freight train had entered the section at 0500 hrs and the next thing that Jinks heard was the noise of the collision, but unfortunately he did not record the time when this occurred. He then received the Obstruction Danger signal from Connington South. He also estimated visibility to be 40-50 yards at the time of the accident.

13. *Driver A. W. Rees*, the driver of the express passenger train, had a normal journey as far as Peterborough, but immediately after leaving there the warning light for No. 1 engine of his Deltic locomotive became illuminated. He then pressed the earth fault button, which should have shut down No. 1 engine and enabled him to get full power from No. 2 engine, but he found that he was only able to get between 200 and 500 amps. Consequently he decided to stop the train at Connington South Up Home signal, because he did not think that the locomotive could haul the train up the long gradient to Abbots Ripton.

14. He sent Second Man Fenny to Connington South box to report the failure and to carry out Rule 55, and by the time Fenny returned with the news that assistance was going to be provided from the rear, Guard Thorne had also come forward to the locomotive. He instructed Fenny to go back with Thorne to assist him and to make sure that protecting detonators were laid. Rees remained in the cab of his locomotive, holding the train with the locomotive's air brake and with the vacuum brake in the running position. After the collision occurred, a sleeping car attendant came to the locomotive and told him that some passengers had been injured, so he immediately went back along the train to investigate what had happened. On finding the telescoped coaches, he went to Connington South box, where he found that the emergency services had already been alerted.

15. *Second Man S. Fenny* confirmed his driver's evidence up to the point where he himself went to the rear of the train with Guard Thorne. His driver had instructed him to make sure that the train was protected with detonators and generally to help the guard. During their walk back along the train Thorne asked him to stand at the rear of the train with a light and act as a guide for the assisting train. Thorne told him that he intended to place the first detonator about 70 yards from the rear of the train, but said nothing about where he intended to place the others.

16. In due course, whilst still standing by the rear of the train, he heard first one and then a second detonator explode, and just as he heard a third one he could see the locomotive of the freight train coming through the fog. When it was about 45 yards away he realised that it was travelling too fast and he waved his electric torch with its white beam violently as a danger signal. He did not see the actual collision, as he tripped over a signal wire when moving back from the track, but he estimated that the train, which was being braked hard, was travelling at about 10 m.p.h. shortly before the impact. After inspecting the damage he went forward to report to his driver.

17. Fenny was a nervous witness and I found it difficult to obtain definite answers from him on a number of points. But it appeared that, despite the poor visibility, which he reckoned was about 60 yards, he never gave any consideration to going beyond the end of his train to guide the assisting train. Even when the first two detonators were exploded in quick succession the idea of going back to give a final warning to the approaching train apparently never occurred to him.

18. *Guard F. W. H. Thorne* walked through his train when it came to a stand at Connington South Home signal and then went to the locomotive. Second man Fenny then returned from the signalbox with instructions that Thorne was to go back to Connington North box to bring on a train, which would propel their train to Abbots Ripton. Fenny had offered to accompany him to the rear of the train to save him from having to return to the locomotive to inform Driver Rees when the freight train was ready to propel. Fenny said he would remain at the rear of the train and couple up the locomotive of the freight train when it arrived. He then set out for Connington North, placing one detonator at the point where he lost sight of the tail lamp, which he judged was 50 yards from the rear of his train. He placed the second detonator at what he estimated to be 200 yards from the first, and the third 100 yards from the second. Thorne agreed that he neither paced the intervals between the detonators, nor did he count the sleepers, although the judging of distances in foggy conditions at night was extremely difficult. (It was subsequently found that the first detonator had in fact been laid 40 yards from the rear of the train, the second detonator 77 yards from the first, and the third 90 yards from the second). He intended laying three further detonators outside Connington North box, but on arrival there the signalman told him that all was ready for him to take the freight train forward, that the driver knew what he was to do, and that he would be given a green hand signal from the box when they were to start.

19. Thorne told me that on getting up into the driver's cab of the freight train he said "Driver, we stand at Connington South box Home signal, I've got 13 on, I've put one detonator just as my tail lamp disappears, at I have worked out about 50 yards. I've put down another one at 200 yards and I've put down another one 100 yards further" to which the driver had replied "That's all right, Guard". They did not discuss the arrangements for going into the section to assist the passenger train, nor did he suggest that they should stop short of the train to let him get down and guide the driver on foot.

20. Thorne estimated that the speed of the assisting train was 15-20 m.p.h. when going through the section towards his train. He thought that they were going "a little bit too hard", but he did not tell the driver so. When the locomotive exploded the outermost detonator he remarked "That's the first one, Driver", and the driver appeared to make a normal partial application of the brake. The speed had dropped slightly by the time the second detonator exploded and, apart from saying "That's the second one, Driver", no conversation took place, nor did the driver take any action. Just before the innermost detonator exploded, while the train was still travelling at 10-15 m.p.h., Thorne saw the lights and shouted "There's the tail lamp and there's the fireman's light". The driver made an emergency application of the brake, but they struck the rear of the train while travelling at more than walking pace.

21. I questioned Thorne at length concerning the spacing of the three detonators and he told me that, apart from the marker detonator about 50 yards from the rear of the train, he would have laid detonators in accordance with Rule 179 (a) if the section to Connington North had not been so short, and it was purely on this account that he cut down the intervals. He was adamant that he had told the driver of the assisting train about the detonator spacing. On further questioning, Thorne confirmed that he thought that the speed of the freight train was too fast during its course throughout the section and agreed that he should have told the driver so.

22. *Driver H. Thompson* brought his freight train to a halt at Connington North Up Home signal and sent his second man up to the signalbox to carry out Rule 55. On his second man's return he was told that they were to propel a passenger train which had failed in the section in front of them to Abbots Ripton. In due course Guard Thorne of the passenger train arrived and informed him that the failed train was standing at Connington South Up Home signal. Thorne said nothing to him about having protected his train, but explained that the signalman at Connington North had told him that the train crew had already been instructed on what they were to do and consequently he had not placed three detonators outside the box. His second man asked if it was protected, however, and Thorne replied "yes". He did not question Thorne about this, but interpreted it as meaning that he would explode one detonator about $\frac{1}{2}$ mile from the train and a second one about $\frac{1}{4}$ mile from it. He did not have any further discussion with Thorne at that juncture, nor did he agree any detailed arrangements prior to going into the section.

23. On being given a green light from the signalbox, Thompson had started into the section and, on reaching a speed of 8 or 9 m.p.h., he closed the controller and coasted with his hand on the brake. With visibility in his estimation down to about 40 yards, he concentrated on looking out for the rear light of the passenger train and, when the first detonator exploded, he realised that they must have travelled a considerable distance in the section, but he still thought that they were at least $\frac{1}{4}$ mile from the train. He then made a partial application of the vacuum brake to check the train, and shortly afterwards the second detonator exploded. Thompson said that he first saw the tail light of the passenger train and the second man's white light just before he exploded the second detonator (i.e. 117 yards from the rear of the train ahead) and that he immediately made an emergency application of the brake. While he was waiting for the brake to take effect, the train exploded the third detonator and soon afterwards hit the rear of the passenger train at a speed that Thompson estimated to be about 1 m.p.h.

24. Thompson said that, when he took over the train at Peterborough, the driver whom he relieved had told him that the train consisted of 31 wagons, but could not say what its weight was in Basic Wagon Units, whereas in fact it was 34 wagons = 61 B.W.U. Thompson alleged that very few drivers whom he relieved at Peterborough were able to tell him the weight of their trains and that it was the normal practice to take a train on without having this essential information. He agreed that such information was important and that he could, if necessary, have obtained it from the guard, although this would have held up the departure of the train. In reply to further questioning, Thompson admitted that he failed to take advantage of obtaining this information from his guard when the latter came up to his cab while they were standing at Connington North Home signal, prior to going to assist the passenger train.

25. *Second Man N. E. Rimes*, the second man of the freight train, reported to Connington North signalbox where the signalman told him that their train would be used to assist the passenger train which had failed at Connington South. He returned to his locomotive and told Thompson that, on the arrival of the guard of the passenger train, they would be going to give assistance and propel the train to Abbots Ripton. Thorne arrived about 20 minutes later and there was a certain amount of general conversation. There was no mention of detonators, and so Rimes had asked Thorne how many detonators he had put down, to which Thorne had replied "three." He was certain that Thorne had never said at what intervals the detonators were laid, nor did Thompson or he ever query this. He agreed that no plan for going into the section to assist the passenger train was ever discussed or agreed between Thorne, Thompson and himself.

26. Rimes did not look at the speedometer while they were going through the section, but estimated that they were travelling at about 10-12 m.p.h. when Thompson shut off power. The latter had partially applied the brakes after the first detonator exploded, but their speed was still probably about 10 m.p.h. when the second detonator exploded. Rimes said that they saw the rear light of the train immediately before the second detonator exploded and that Thompson then made an emergency brake application, but that they struck the rear coach whilst still travelling at about 5 m.p.h. He agreed that he became apprehensive when they had travelled for two or three minutes into the section without exploding a detonator, since he felt they must be getting near the train and he began to wonder whether any detonators had been laid. However, he never said anything to the others, nor did Guard Thorne make any remarks, even after the first detonator exploded.

27. *Mr. C. N. Morris*, the Divisional Maintenance Engineer, King's Cross Division, confirmed that following the accident the brakes of the freight train were examined and found to be in good working order, with the exception of one vehicle where one brake piston was sticking. The brake system and brake gear of the locomotive, D.168, were subjected to a detailed examination and test and were found to be in good condition. The speedometers of the locomotive were also tested and were found to be accurate within $\pm 3\%$ throughout their range, and within $\pm 1\%$ at 10 m.p.h. The tests also showed that the speedometer needles did not lag when speed was reduced.

BRAKING TEST

28. In view of Driver Thompson's insistence that he had not allowed the speed of his train to exceed 8 or 9 m.p.h. while approaching the disabled train and also that he had made an emergency application of the brakes just prior to the locomotive's striking the second detonator, 117 yards from the rear of the train, I asked for a special braking test to be carried out with a train as like as possible that involved in the collision. In this test, which was carried out on 27th October 1966, the events of 20th September were simulated as accurately as possible from the time when the freight train left Connington North Up Home signal to where it collided with the rear of the passenger train. Driver Thompson was again at the controls, using diesel electric locomotive D.168. A Tees area - Temple Mills fully fitted freight train was again used and on this occasion it consisted of 31 wagons, including 9 bogie bolster wagons, and the train was equal to 63 Basic Wagon Units. Although not foggy, it was raining during the test, so that the rail conditions were similar to those at the time of the accident. The train was started from Connington North Up Home signal and ran at a speed of 10 m.p.h. until it exploded a detonator placed in the same position as the outermost detonator on the night of the accident, where Driver Thompson made a partial application of the brake of 4 ins. of vacuum, then returning the brake valve back to the "running" position. This reduced the speed of the train to 8 m.p.h., which was maintained until the second detonator was exploded. This detonator had in fact been placed, at my request, at the location of the innermost detonator laid on the night of the accident, since I was satisfied, despite the evidence of Driver Thompson and Second Man Rimes, that it was at this point that they had first seen the train and made an emergency application of the brake. A similar brake application was made in this instance and the train came to a stand 27 yards beyond the detonator i.e. 13 yards short of the point where the collision had occurred.

CONCLUSION

29. This collision resulted from the failure of the guard of the passenger train and the driver of the freight train that was to assist it to make satisfactory arrangements for bringing the latter train safely up to the rear of the passenger train in the foggy conditions prevailing at the time.

30. If Guard Thorne had, as he alleged, told Driver Thompson that he had placed detonators at what he estimated to be 50 yards, 200 yards and 300 yards from the rear of the train, he clearly failed to make sure that Thompson understood this vital information. Equally, Thompson, who was a senior driver with nine years experience on the East Coast Main Line, should have questioned Thorne closely about the protection arrangements and made certain that he knew what protection had been carried out. He had no justification for proceeding into the occupied section, assuming that the train ahead was protected by detonators placed $\frac{1}{4}$ and $\frac{1}{2}$ mile from its rear, solely on overhearing Thorne telling Second Man Rimes that the train was protected. In any event, in fog with visibility down to about 50 yards, it would have been prudent to have brought the train to a stand some distance from the rear of the passenger train and then for the guard to have guided the driver from the ground.

31. In the foggy conditions, the speed of the freight train while travelling through the section was certainly too high and considerably in excess of the 8-9 m.p.h. alleged by Thompson. The test carried out with a similar train after the accident (see paragraph 28 above) proved conclusively that no collision should have occurred if the speed had been kept down to 10 m.p.h. It is not possible to prove the exact speed at which the train was travelling, but it was probably between 15 and 20 m.p.h. through the section and at least 15 m.p.h. when Thompson made the emergency brake application. This would have resulted in a speed of about 6 m.p.h. at the point of collision, which is consistent with the damage that occurred to the passenger train.

32. Thorne's reluctance to comment on what he considered to be excessive speed and his failure to take any action to make Thompson reduce speed and stop the train, even after the first two detonators had been exploded, is hard to understand. Such action, even at that late stage, would probably have prevented the collision. Similarly, had Second Man Fenny used his initiative in the foggy conditions and moved back to a more sensible position, even 50 yards from the rear of the train, to display his warning light, he would have given sufficient warning for Thompson to bring his train to a halt clear of the passenger train.

REMARKS AND RECOMMENDATIONS

33. If the express train had failed in section and not at a signal, the guard would have been required to carry out protection in accordance with Rules 179 (a) and 181. Thus, while going back to the signalbox in the rear, he would have placed one detonator $\frac{1}{4}$ mile from the rear of the train, one detonator $\frac{1}{2}$ mile from the rear of the train and three detonators at the signalbox, if this was within $\frac{3}{4}$ mile of the train. Rule 178 (b) however allows this protection to be omitted if a train is standing at a Home signal, since it is felt that the reporting of the second man to the signalbox is sufficient to ensure that the signaller there will not irregularly accept a second train from the box in the rear, even if the controls on the block instruments do not prevent this. In this instance therefore the guard was not required to protect his train because it was standing at Connington South Up Home signal. Nor, in accordance with Rule 179 (c), was he required to place detonators or take any other action to give advance warning of the location of the disabled train when bringing on the train that was to assist it.

34. However, in the dark and foggy conditions that obtained at the time of the accident, neither the driver of the freight train nor the guard of the disabled passenger train who was in his cab would have been able to see the latter train until they were within approximately 50 yards of it. This would have been too close for safety, even when running at a reduced speed and observing great caution, and in these conditions some form of advance warning was essential. The guard sensibly decided to employ an audible warning and place detonators at distances which he judged to be 50 yards, 200 yards and 300 yards from the rear of the train and which he considered were satisfactory intervals to give adequate warning, but for the reasons already stated, this proved not to be so.

35. To leave it to the guard in these circumstances to decide whether or not to lay detonators on going back to the signalbox in rear and, if he does, at what intervals to place them in order assist in locating the disabled train, is in my opinion most undesirable. I consider that detonators are necessary, even when a train is standing at a Home signal and recommend that they should be placed at the normal intervals laid down in Rule 179, giving the driver of a following train the same warning he would always encounter when going to assist a train that has failed in section.

36. Further, I feel that it is important to ensure that the movement of a train that is going to assist should always be strictly controlled from the $\frac{1}{4}$ mile detonator to the rear of a disabled train. In my view therefore, the train that is going to assist should always be brought to a halt when the locomotive strikes the $\frac{1}{4}$ mile detonator to ensure that the subsequent movement of the train is under proper control. In fog or falling snow, the placing of an additional detonator 100 yards from the rear of the disabled train would enable the train that is going to assist to be stopped again at this point and the guard to proceed on foot, guiding its driver to the rear of the train.

37. I am glad to report that, following discussions with Officers of the British Railways Board, it has been agreed that the Rules are to be amended to cover these points.

I have the honour to be,

Sir,

Your obedient Servant,

P. M. OLVER,

Major.

The Secretary,
Ministry of Transport.

COLLISION AT CONNINGTON — 20th SEPTEMBER 1966

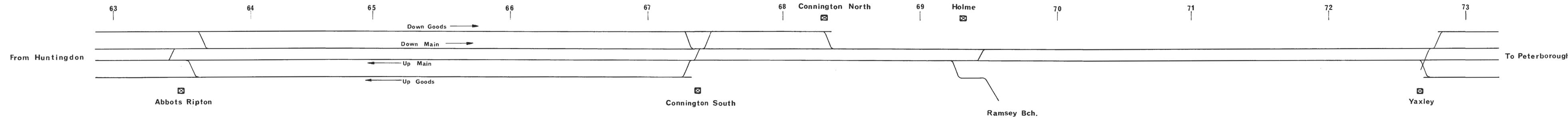
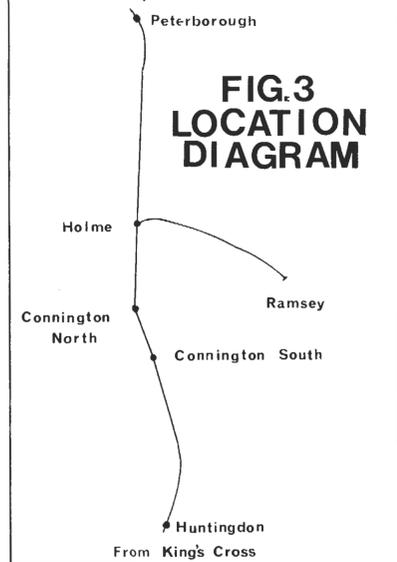
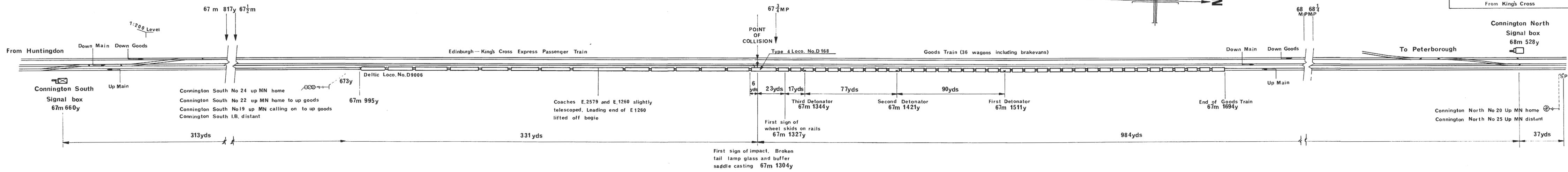


FIG.1. RUNNING LINE DIAGRAM



**FIG.3
LOCATION
DIAGRAM**



**FIG.2. SITE PLAN SHOWING TRACK AND SIGNAL LAYOUT
BETWEEN CONNINGTON NORTH AND SOUTH,
POINT OF COLLISION AND POSITION IN WHICH
TRAINS CAME TO REST**

SCALE: 1 inch = 100 feet