DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

Report on the Collision that occurred on 26th January 1985 near Micheldever

IN THE
SOUTHERN REGION
OF BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£3.70 net

RAILWAY INSPECTORATE
DEPARTMENT OF TRANSPORT
2 MARSHAM STREET
LONDON SW1P 3EB
1st February 1986

SIR,

I have the honour to report for the information of the Secretary of State, in accordance with the Direction dated 1st February 1985, the result of my Inquiry into the collision between a light locomotive and a passenger train that occurred on 26th January 1985 at Popham, near Micheldever, in the Southern Region of British Railways.

At about 04.50 on Saturday, 26th January 1985, the 03.30 Bournemouth to Woking electric multiple unit (EMU) train, 2B04, conveying a number of railway staff as passengers, struck a minor chalk slip on the Up line in the cutting between Popham No.2 and Popham No.1 Tunnels. Some of the train's collector shoes were damaged causing it to lose power and it came to a stand with the leading two vehicles outside the north portal of Popham No.1 Tunnel. The guard went back to protect his train and to summon assistance, using an Up line signal-post telephone to speak to the signalman at Basingstoke. Arrangements were made for a Class 33 locomotive to be sent to assist the disabled train from the front.

The assisting locomotive was dispatched from Worting Junction to run in the wrong direction on the Up line to Popham, its driver having been instructed by the signalman at Basingstoke to look out for detonators and a red handsignal. The disabled train had not been properly protected, however, and when it came into view, it was too late for the locomotive driver to prevent the collision. Although he made an immediate emergency brake application, the brakes had no time to act before the locomotive struck the stationary train at a speed estimated to be about 30 mile/h. The time was about 05.30.

On impact, the leading cab of the Class 33 locomotive was badly crushed, spreading sideways to foul the Down line and trapping the driver and his assistant in their seats. Fortunately, there were no fatalities; the most serious injury was to the trapped driver whilst his assistant and the 11 persons on the EMU suffered various degrees of shock and bodily injury. The emergency services were called by the EMU guard who advised the signalman at Eastleigh from a Down line signal-post telephone. Because of the very steep sides of the cutting, those giving assistance had to descend to the formation level by ropes and were not able to reach the site until about 06.15. All the injured persons were conveyed from the site by special train at 08.22 with the exception of the trapped driver of the locomotive. He was freed about an hour later and removed to hospital at 09.40. Of the 13 persons involved, 11 were treated by the medical services on site or at Basingstoke District Hospital and discharged the same day. One was released two days later and by 28th February, when I heard evidence in public, the injured driver had also been released although neither he nor his assistant were fit enough to resume work. Clearance of the obstructed lines continued throughout the morning and early afternoon. The Up line was reopened at 14.30 and the Down line was clear by 14.45 when normal working was resumed.

At the time of the accident there was no moon and, although there was an intermittent fine drizzle, the night was clear.

DESCRIPTION

The Site

1. Popham Tunnels lie about a kilometre north of Micheldever Station on the main line from Southampton to London. The line, which is electrified on the conductor rail system, is double-tracked and runs more or less south to north in the Up direction; Popham No.1 Tunnel, the northernmost, is 242m long whilst No.2 Tunnel is 182m long. The tunnels are 120m apart and between them and to the north, the formation lies in a steep-sided chalk cutting some 15m in depth.

2. Approaching Popham No.1 Tunnel from the north, the line is on a 2440m left-hand curve about as far as milepost 57. Thereafter it runs straight through the tunnels before curving slightly to the left approaching Micheldever Station. From Litchfield Tunnel, a little over 2km to the north of Popham Tunnels, as far as and beyond the point of collision, the line falls on a gradient of 1 in 251. Looking north from Popham No.1 Tunnel, an approaching train can be seen at a distance of about 450m. The maximum permitted line speed is 90 mile/h.

3. Details of the line and its surroundings are shown on the plans at the back of this report.

The Signalling and Telephones

4. The line between Micheldever and Basingstoke is worked under the Regulations for Train Signalling by the Track Circuit Block System, the signals being three- or four-aspect colour-light. Five signals, whose numbers are prefixed 'E', on the Down line approaching Micheldever are controlled by Eastleigh Signal Box and all other signals are controlled by Basingstoke Signal Box. Each signal is provided with a signal-post telephone communicating with the signal box concerned; there are also telephones to the north and south of Popham tunnels and between them which enable calls to be made to the electrical control operator at Eastleigh for traction current purposes. The line is equipped with the British Railways Standard Automatic Warning System (AWS).

The Trains

5. The passenger train was formed of three 4-car EMU as follows:

Leading end. Class 423 (4-VEP) Unit 7754
Class 423 (4-VEP) Unit 7703
Trailing end. Class 421/2 (4-CIG) Unit 7395

The total weight of the train was 444t and its overall length was 242.3m.

6. The assisting locomotive was Class 33/1 diesel-electric locomotive No.33104. It weighed 77.2t and its brake force was 35.6t. Its maximum permitted speed was 85 mile/h.

The Damage Caused in the Collision

7. The Class 33/1 locomotive received extensive damage to No.2 cab, which was leading. Both bogies were displaced, the centre castings being sheared, and the underframe was badly distorted causing damage to the underframe equipment and pipework. Most of the cab structure and fittings had to be removed to free the crew and to bring the locomotive within gauge prior to movement from the site. Photograph No.1 illustrates the amount of damage sustained by the leading end; at the time the photograph was taken, the bogies had been temporarily replaced.

8. In contrast, the leading vehicle of the EMU, Driving Trailer Composite No.S76400, withstood the impact extremely well. Although the leading bogie was displaced, the damage to the vehicle was mainly confined to the buffers, drawgear and gangway connections; Photograph No.2 shows the extent of this.

9. Throughout the EMU, loose items such as sliding doors were displaced and some bodyside doors became jammed due to slight distortion but the majority of damage was confined to gangways and 'Buckeye' couplings, also some bogie to body connecting members were bent. There was little damage to the permanent way.

Rules and Regulations

10. When the EMU failed as the result of striking the slip, the only line that was obstructed was that on which the train was standing, the Up line. In these circumstances, the train crew was required to act in accordance with Sections M.3 and M.5 of the British Railways Rule Book. These instruct the driver and guard to agree how assistance is to be obtained and to protect their train in either direction. Relevant extracts of these Sections are given at Appendix A to this report.

11. The assisting locomotive's driver was required to act in accordance with Sections M.5 and M.6 of the Rule Book and relevant extracts are given at Appendix B. In particular, these instructions direct how a disabled train shall be approached.

12. The requirements of the General Appendix to the Working Timetables and Books of Rules and Regulations also applied to the assisting locomotive. These specify the maximum speeds at which light locomotives may travel over lines with a given line speed unless otherwise specially authorised. In the case of the line between Worting Junction and Micheldever, the maximum speed of a light locomotive is given as 65 mile/h.

13. The Rule Book also lays down the Rules to be followed by the signalman in the signal box giving entry to the obstructed section. In this case, the signalman at Basingstoke was required to act in accordance with Section M.8. He was also governed by the requirements of Track Circuit Block Regulation 10. These instructions are complementary and both stress that a signalman must be assured that a failed train is protected before allowing an assisting train to proceed towards it. Relevant extracts of these Rules and Regulations are given at Appendix C.

PHOTOGRAPH No. 1. Damage to No.2 cab of Locomotive No.33104 — part removed to free crew

PHOTOGRAPH NO. 2. Damage to leading end of Driving Trailer Composite No.S76400

14. The driver of 2B04 was *Driver K. T. Odell* of Basingstoke. He is a man of long experience, having been driving for 28 years and has worked regularly over the London to Bournemouth route. He booked on duty at 23.37 on Friday, 25th January 1985, and after carrying out other duties, took over the 03.30 Bournemouth to Woking EMU as soon as the 12-car train had been formed. The guard made himself known to Odell and, after they had carried out a satisfactory brake test, the train departed on time.

15. The guard was replaced when Odell made a scheduled stop at Eastleigh but he was unaware by whom; he received his normal signal to depart on the train's communication bell. The journey from Bournemouth was otherwise uneventful until the train emerged from Popham No.2 Tunnel. Almost immediately, there was a flash from the cess side of the train, the AWS horn began to sound and traction power was lost. Odell could not cancel the AWS, the brakes were automatically applied and the train decelerated through Popham No.1 Tunnel, coming to a stand with the first vehicle and most of the second north of the tunnel mouth.

16. Odell placed the train brake controller in the 'Emergency' position and, taking his Bardic handlamp with him, descended to investigate what had occurred. He found that there were white chalk marks on the left-hand side of the leading bogie and the collector shoe on that side had been broken off and was jammed against a wheel. He then obtained a short-circuiting bar and tools from the train and went to apply the short-circuiting bar between the running rail and the conductor rail to ensure that traction current would be discharged. As he walked round the front of the train, he noted that in addition to the train lights being out, the headcode was also unlit. He did not, however, place his handlamp in position as a headlamp because, he said, it was extremely dark and he would have not been able to see to deal with the damaged shoegear without a light. When he returned to the jammed shoe, railwaymen from the train had arrived and told him that other collector shoes had also been damaged. They subsequently helped him to deal with these and to make the train safe to move.

17. Odell said that at some stage he conferred with his guard and agreed that the latter should protect the train. He could not recall, however, whether this was before or after work on the damaged shoegear had been started. Odell was also unclear in his mind whether, at that time, he had asked the guard to obtain assistance because he had been preoccupied with the necessity of dealing with the collector shoes.

18. When the first collector shoe had been removed, Odell considered that his train would definitely require assistance. He discussed this with one of his helpers who offered to arrange matters for him and, later, after all the shoes had been tied up, a second man offered to go to meet the guard to tell him that the train was ready to be moved. Odell and the remainder of the men who had aided him then climbed back into the train; they had barely done so when the collision occurred.

19. *Driver R. C. Flood*, one of the men helping to deal with the shoegear, said that he discussed the matter of assistance with Odell and offered to go and make the necessary arrangements. He realised that it was properly Odell's job to do this but considered that, as a personal friend, he should help. Flood knew that the nearest telephone was that at Signal WA315, towards Micheldever, and set off to walk to it. He had got about halfway there when he met the train guard who told him that he had already arranged for assistance to be provided by a locomotive from Worting Junction. The two men then returned to the train where they met a railwayman who told them that it was ready to be assisted. They had reached the eighth vehicle from the front by this time and Flood climbed in through an intermediate driving cab, intending to walk forward along the corridor. He had just gained the corridor when the train was struck and he was flung against a bulkhead.

20. Two others who assisted Odell were *Driver C. Hayward* and *Driver's Assistant S. Nunn*. They were travelling to Basingstoke to work a light locomotive from there to Clapham Junction. When the train came to a stand at Popham, Hayward realised what had occurred and he and Nunn climbed down to the ballast to give such aid as they could. Hayward said that he was aware that the train guard had gone to request assistance and, after work on the damaged shoegear was completed, he told Odell that he would go and meet the guard to tell him that the train was in a condition ready to be assisted. He sent Nunn back to his seat and then set off to walk along the cess to Micheldever. He subsequently met Driver Flood and the guard near the eighth carriage of the train. Hayward was told what had been arranged and he and the guard then walked forward to advise Driver Odell; they had hardly passed two carriages when the collision occurred.

21. *Guard M. G. Northeast* had relieved the guard of the 03.30 Bournemouth to Woking train at Eastleigh. He had signed on duty at 04.05 that morning after his full rest and had joined the train at

04.25, dispatching it on time a few minutes later. He travelled in the guard's compartment at the rear of the second vehicle of the train. Scheduled stops were made at Shawford, Winchester and Micheldever and, shortly after leaving the last station, the lights went out and the train came to a stand. Northeast looked out and saw that his vehicle was outside Popham No.1 Tunnel although most of the train was in the tunnel; he immediately took his handlamp and walked through the train to speak to his driver. Northeast maintained that the two men climbed down to the cess together to find out what had occurred. He understood from the driver that assistance would be required and told him that he would go back to put down protection and to advise the signalman of the situation.

22. Northeast returned to his compartment and, having collected his detonators, set off towards Signal WA315 to use the signal-post telephone there. As he walked past the train he saw other men examining the collector shoes. He continued back through the tunnels, put down the detonators at the tunnel entrance and continued on to the signal where he spoke to the signalman in Basingstoke Signal Box to tell him where the train was and that it required assistance. The signalman replied that there was a locomotive approaching Worting Junction and that he would ask its driver if he would be willing to assist. The signalman added that he would ring Northeast back shortly and, in the meantime, his train was protected by signals. A few minutes later, the signalman advised Northeast that the locomotive that he had mentioned previously to him would be able to assist the failed train and that Northeast should arrange for someone to go forward and meet it 300 yards ahead. Accordingly, Northeast set off to walk back to his train, picking up the detonators he had previously used for protection.

23. Northeast admitted that he had not fully thought out the subsequent actions that would need to be taken by himself and his driver, but said that he intended to advise his driver to go forward to protect the train and to meet the assisting locomotive when it arrived. He told me that as he walked back to his train and after meeting Drivers Flood and Hayward, he "had it in his mind" that the locomotive was actually moving towards his train but he did not realise that it would arrive as quickly as it did.

24. *Relief Signalman C. T. Moore* was on duty in Basingstoke Signal Box. He said that he was fully conversant with the signal box at Basingstoke and had carried out relief duties there for over three years; for the previous year he had been rostered at Basingstoke for at least three days each week. He was working the night turn from 22.00 to 06.00 and was alone in the box as was normal on that turn. Moore explained that on the morning and afternoon turns the signal box was manned by two signalmen but at night, unless there were engineering works or other abnormal occurrences of which advance notice was given, one man was able to operate the signalling panel on his own. He said that when he received the telephone call from Northeast at Signal WA315, he noted from his track diagram that a light locomotive was on its way from Salisbury and was approaching Worting Junction. Moore then set Signal YW5 at the junction to Danger and, when the driver of the locomotive spoke to him from the telephone there to ask why he had been stopped, requested him to assist the failed train at Popham. On receiving the driver's agreement, he spoke again to Northeast telling him to arrange to meet the assisting locomotive and advising him that the train was protected by signals in the rear. Northeast acknowledged Moore's instruction and then rang off.

25. Moore then spoke to the locomotive driver again and, after making sure that he was aware of the position of the failed train, sent him off in the Down direction on the Up line. He stressed to the driver that he should "take it easy" and that he would be met by a member of the train's crew. Moore told me that he assumed that by the time the assisting locomotive arrived, detonator protection would have been put down ahead of the failed train; he did not, however, receive an assurance that this was so before allowing the locomotive to proceed.

26. Although Moore reported to Control and others as he was required to do by his instructions, he only recorded in his log the time of his original conversation with Northeast as 05.02 and did not make any other entries. He maintained that, as he was alone in the signal box, he was too busy with telephone calls and controlling other trains in the Basingstoke area to make accurate entries. In his opinion, to put incorrect times in his log, relying on his memory of events, would be worse than to record nothing at all. Moore maintained that, had there been a second signalman on duty that night one of them could have dealt solely with the failure and monitored the movement of the assisting locomotive. In answer to questions, however, he agreed that once the locomotive had permission to leave Worting Junction, nothing could have been done with it because it was travelling "wrong road" without any running signals.

27. *Relief Driver P. K. Wells* was in charge of locomotive No.33104 with *Driver's Assistant A. J. Waters* accompanying him in the cab. Wells had booked on duty at Basingstoke at 02.20 that morning as secondman on the locomotive to run light to Woking and thence work a stone train to Salisbury. After arriving at Salisbury he, together with Waters, was instructed by the supervisor there to take locomotive

No.33104 back to Basingstoke for its next working. Wells set off for Basingstoke travelling, he said, at a speed of 65–70 mile/h. The journey was without incident until, on approaching Worting Junction, he was brought to a stand at Signal YW5. First Waters and then Wells himself spoke to the signalman from the signal-post telephone. He was told that an Up EMU had failed at Popham No.1 Tunnel and was asked if he would assist it forward. Wells agreed and was instructed to proceed to the junction where the locomotive would be crossed over to the Up Southampton line. At Worting Junction, he again spoke to the signalman who repeated the information about the failure and told Wells that detonators would be placed on the Up Southampton line 300 yards ahead of the failed train, also that he would be met at that point by a man with a red handsignal who would conduct him forward to the train.

28. Wells then set off in the Down direction along the Up line. He told me that although he was a young man of 23, he "knew the road well", having worked trains along it either as a driver or assistant for some two years; he had qualified as a relief driver in April 1984. Initially, he ran at a speed of some 50 mile/h until he had passed through Litchfield Tunnel, which he knew was over a mile from Popham No.1 Tunnel. At that point, he shut off power and reduced the speed of the locomotive to around 25–30 mile/h. He was aware that the line was on a falling gradient but he was confident that he could bring the locomotive to a stand within 300 yards. From that point, he maintained, he was keeping a sharp lookout for the red handsignal that he expected and, when there was no sign of it, he began to wonder if the signalman had given him the correct location of the failed train. Shortly after this, the train suddenly came into sight only a few yards away and, although he immediately made an emergency application of the brakes, they had no time to act before the collision occurred and he and his assistant were trapped. Wells maintained that, after leaving Worting Junction, he knew precisely where he was at all times but he admitted that he was unable to recall passing beneath Overton Bridge. He also said that he did not sound the locomotive's warning horn at any time.

29. *Driver's Assistant A. J. Waters* confirmed Wells' evidence as far as he was able. He was not familiar with the line to Southampton west of Worting Junction and did not, therefore, know where the locomotive was at any particular moment. Nevertheless, he was able to assure me that Wells was concentrating on his driving and was not distracted in any way.

30. *Mr J. H. Blundell*, Area Maintenance Engineer (Traction and Rolling Stock) South Western, supplied full details of the examinations and tests carried out subsequent to the accident which indicated that the drivers of the EMU and the locomotive had been operating the controls correctly up to the times when the EMU came to a stand and when the collision occurred respectively. I was also shown a braking diagram which confirmed Relief Driver Wells' contention that he could have brought the locomotive to a stand within 300 yards from a speed of 30 mile/h.

31. Mr Blundell explained that the lighting of the vehicles of a Class 423 EMU is normally supplied at 70 V d.c. by a motor generator set mounted on the vehicle underframe of the motor coach and which obtains its supply from the conductor rail. Certain emergency lighting, which includes the headcode panel, can be supplied by current from a battery when the motor generator set is not running; the set maintains the battery in a charged condition through a fused circuit. In the case of the leading vehicle of the EMU, Driving Trailer Composite No. S76400, investigation had shown that the battery charging fuse had ruptured some time prior to the accident and that the battery was discharged. The fuse itself is mounted adjacent to the battery beneath the motor coach and, as long as current is being supplied from the conductor rail, the driver has no means of knowing whether or not the battery charging circuit is functioning. Driver Odell, therefore, would have been unaware that the emergency lighting was defective prior to his train coming to a stand.

Conclusions

32. The cause of this unfortunate accident was a combination of errors by all the staff concerned. There is a conflict between the evidence of Driver Odell and that of Guard Northeast and this leads me to conclude that they did not come to a proper understanding of what each was to do after their train came to a stand. Odell, by his demeanour, struck me as a stolid individual who would proceed slowly, one step at a time. I believe that when Northeast spoke to him, he was concentrating upon the job in hand of removing the damaged shoegear and was not thinking about the next stage of the mishap procedure. From the evidence of Drivers Flood and Hayward, Odell was content that they should carry out part of his duties whilst he concentrated upon the immediate problem. None of them, however, took the action required of the driver under Rule M.3.4, nor did Odell take control of the situation as he should have done.

33. Guard Northeast must also bear a share of the responsibility for the collision. He accepted the

assistance which he was told was coming to the front of the train, well knowing that no protection had been put down. He was also in error in that he lifted the protection in the rear of the train on his return after speaking to the signalman at Basingstoke although this action did not affect the course of the accident.

34. Driver Wells is to be censured for the excessive speeds at which he drove the locomotive, both on his journey from Salisbury to Worting Junction, and thence to the site of the collision. Whilst it is arguable whether these actions were the cause of the collision, the latter certainly contributed towards its severity. Wells had been advised of the position of the EMU and, after passing through Litchfield Tunnel, he should have reduced his speed far below the 30 mile/h which he said he did; he should also have sounded the locomotive's horn at frequent intervals. I accept that he was looking out for a member of the failed train's crew with a red handsignal but I believe him to have lost his sense of his whereabouts after leaving the tunnel. He was unable to recall passing beneath Overton Bridge, a point from which a red handsignal, had it been exhibited, would have been visible. At that point, at the latest, he should have slowed to walking pace and made frequent use of the locomotive's horn. Had he done so, it is probable that the accident would not have occurred.

35. Relief Signalman Moore, however, must bear the major share of blame for what occurred. On no account should he have allowed the assisting locomotive to proceed towards the failed train until he had received an assurance that detonator protection had been put down 300 yards ahead of it and that the locomotive would be conducted forward from that point. Moore believed that there was ample time for protection to be provided and said that he had allowed the locomotive into the section because, knowing the area, he was aware that the EMU driver had a considerable distance to walk before he would be able to reach a telephone and wished to save him this effort. Nevertheless, Moore was entirely in the wrong; had he carried out the requirements of Section M of the Rule Book as he should have done, the collision would not have occurred.

36. I do not consider that the fact that Moore was alone in the signal box at the time affected the course of the accident. He was able to deal with such telephone calls as were necessary and, by his own admission, a second man on duty would have been unable to assist in any way once the locomotive had been given permission to proceed from Worting Junction. That Moore failed to make a proper record of movements had no bearing on the course of events and is entirely a matter for British Railways.

Remarks and Recommendations

37. Subsequent to the public hearing, I discussed Section M of the Rule Book in detail with Railway Officers of both Southern Region and British Railways Board. In my view, the Rules do not require alteration in principle; the procedures that various grades of staff are required to follow are laid down in adequate detail so far as can be foreseen. The layout of the Section, however, is a little fragmentary and the order in which the instructions are presented is not entirely logical. I am pleased to report that the Section M of the Rule Book is being revised by the Railways Board to define more clearly the order of the actions that are to be taken after a train comes to a stand as the result of a failure or other exceptional cause. I have no comment to make, other than to recommend that the revision is published at the earliest possible date.

38. An unusual feature of the situation after the EMU came to a stand was the number of individuals who came to assist Driver Odell. Most of those travelling on the train were footplate staff who were able and willing to give such aid as they could. It may well be that an element of confusion arose in that matters which in other circumstances would have been dealt with in rotation, had only the train driver and guard been available, were obviously being attended to concurrently. It is only natural that railwaymen travelling in a train involved in an incident and having knowledge of the procedures required will offer their services to the train crew. It cannot be expected that such men will stand idly by in such circumstances and allow their friends and colleagues to carry out their tasks unaided.

39. The fact that the failed train was not showing any frontal lights was explained by Mr Blundell. In the situation in which Odell found himself he should, in accordance with British Railways Rules, have placed his Bardic handlamp on one of the lamp brackets on the front of the train. He said, however, that he required his lamp to see what he was doing. In the course of my Inquiry, I travelled along the line between Worting Junction and Popham Tunnels in similar conditions to those obtaining at the time of the accident and I am quite satisfied that Odell's action was the commonsense one at the time; I was also unable to distinguish anything in the darkness. It may be said that Odell could have borrowed another handlamp from one of the drivers on the train. Whilst this is true, it would not have been the case had Odell's train been a normal passenger train and not a train conveying railway staff. I do not, therefore,

criticise him for omitting to carry out an action which, in other circumstances, he would have been unable to do. In any event, Odell was not expecting his train to be assisted from the front.

40. I discussed the emergency lighting system with Officers of the Southern Region. It was explained that the integrity of the battery charging fuse and the state of the battery itself were checked on shed examinations, the last on vehicle No.S76400 being on 12th October 1984, some three months before the accident. Since that date, the only time in normal traffic that a driver would have become aware of any malfunction would be if the 4-car EMU were to be come 'gapped'. This situation occurs if the unit is in such a position that all of its collector shoes are clear of the conductor rail. At this point, as the motor generator set runs down, the AWS horn sounds and, if illuminated, the driving instrument lights go out. These occurrences are immediately reported by drivers as "tripping out on gaps"; no such reports had been received for vehicle No. S76400 and thus it is likely that the rupture of the fuse and discharge of the battery had occurred relatively recently. The Region had made a check of all vehicles in its fleet, some 4000, for relevant reports during the period July to December 1984; only four reports were noted. In consequence, although there are no plans for the withdrawal of these vehicles from service in the foreseeable future, I do not consider that this failure rate of the emergency lighting, around 0.2%, warrants any action being taken by the Railways Board. In my view, frontal lighting on vehicle No. S76400 is unlikely to have avoided the collision although it may well have allowed Driver Wells to see the stationary train earlier than he did and enabled him to reduce the speed of impact.

41. On the subject of frontal lights, locomotive No.33104 was not equipped with a powerful headlamp as are many other locomotives of British Railways. Had it been so fitted, it is just possible that its approach may have been seen in time for a red handsignal to be exhibited to its driver. This is unlikely to have prevented the collision but could well have lessened its effect. I am advised that there are no definite plans for Class 33 locomotives to be fitted with headlights and a low priority has been given to such a consideration. Although it is conjecture whether or not the presence of a headlight on the locomotive would have affected the course of events at Popham, I consider that a situation where some locomotives are fitted with this visual warning whilst others are not, is inherently dangerous for those persons whose duties take them on to the track. I recommend, therefore, that further consideration be given to the extension of the necessary modification with a view to its being implemented with all speed.

42. The fall of chalk which began the series of events resulted from the heavy rainfall which had been experienced during the winter. It is difficult, if not impossible, to predict where or when such falls will happen but I am pleased to report that the Southern Region has erected stout metal fencing along either cess between the tunnels at Popham in order to contain any similar falls in the future and prevent them from fouling the line.

43. The damage to the cab of the Class 33 locomotive illustrates once again the vulnerability of the design of 'soft fronted' cabs and contrasts greatly with the slight distortion suffered by the leading vehicle of the EMU. In his report of the collision that occurred at Crewe on 7th November 1980*, Major P. M. Olver commented on the cab designs of diesel and electric locomotives used on British Railways but observed that it was obviously impracticable to modify the existing fleet to give greater protection to the drivers and their assistants in the event of a collision. I agree entirely with his remarks and have no further comment. Major Olver also reported that he had received an assurance from the Director of Mechanical and Electrical Engineering, British Railways Board, that the driving cabs of all new designs of traction units would conform with the standards of the International Union of Railways (UIC). The Special Safety Regulations for the Driver's Cabs of Traction Units, UIC Codes 617-5 OR, lay down that the cabs shall be capable of withstanding compression forces of 200kN applied at headstock level and 300kN at the bottom of the windows. That these requirements are adequate is demonstrated by the photograph of the leading vehicle of the EMU, which was built to similar standards.

I have the honour to be,
Sir,
Your obedient Servant,
G. J. LEWIS

The Permanent Under Secretary of State
Department of Transport

*The Report on the Collision that occured on 7th November 1980 at Crewe, HMSO 1983 ISBN 0 11 550600 4.

EXTRACTS FROM BRITISH RAILWAYS' RULES APPLICABLE TO THE CREW OF THE FAILED TRAIN

Section M.3. Duties of Trainmen—Protection

3.2 **When no other line is obstructed**

3.2.1 **Track Circuit Block lines**

Detonator protection is not necessary but where the approach view of the rear of the train may be less than 300 yards, the Guard . . . . . must place three detonators on the line, 300 yards in the rear of the disabled train. During darkness or other conditions of poor visibility, the Guard . . . . . must check that the tail lamp is alight.

3.4 **Additional protection when a disabled train requires assistance**

Trains worked with a Guard

When a disabled train requires assistance, three detonators must be placed on the line on which the disabled train is standing, 300 yards from the train, in both directions.

The Driver will be responsible for placing the detonators at the front of the train and he must then remain there exhibiting a hand danger signal until assistance arrives, unless it has been agreed that he should continue forward to advise the Signalman of the circumstances. The Guard will be responsible for placing the detonators at the rear of the train.

3.9 **Action of Guard after carrying out protection**

3.9.1 After carrying out protection the Guard must return to his train unless he has agreed with the Driver that assistance is to come from the rear, or the quickest means of advising the Signalman is for him to continue back to the signal box in rear or to the nearest telephone.

If, however, after the Guard has returned to his train he is told that assistance is coming from the rear, he must go back to join the assisting train, exhibiting a hand Danger signal.

Section M.5. Duties of Trainmen—Assistance

5.1 **Driver and Guard to confer and agree**

The Trainmen must consider how assistance can best be obtained and the quickest means by which the Signalman can be advised of the circumstances.

The train must not be moved until assistance has arrived or alternative arrangements have been agreed by all concerned.

EXTRACTS FROM BRITISH RAILWAYS' RULES APPLICABLE TO THE DRIVER OF THE ASSISTING LOCOMOTIVE

Section M.5. Duties of Trainmen—Assistance

5.2 **Assisting train proceeding to disabled train**

5.2.1 The Driver of the assisting train will be advised of the circumstances by the Signalman and instructed to pass at Danger the signal protecting the obstruction. Where possible the Driver will be advised the approximate location of the disabled train.

The Driver of the assisting train which is admitted into a section occupied by a disabled train or disabled part of a train must run at such speed as will enable him to stop short of any obstruction. As he proceeds, he must keep a sharp look-out for a Trainman from the disabled train.

5.2.4 The Driver of the assisting train must stop his train on exploding the first detonators protecting the disabled train, and then proceed cautiously to the disabled train. He must bear in mind that these detonators may be only 300 yards from the disabled train. Unless the disabled train is clearly visible from the detonators placed 300 yards away, the Trainman of the disabled train must proceed on foot from that point, guiding the Driver by hand signal.

Section M.6. Duties of Trainmen—Wrong Direction Movements

6.2 **When moving in wrong direction**

When moving in the wrong direction, the Driver must proceed cautiously, travel at reduced speed and make frequent use of the horn by giving a series of short blasts. A lamp must be carried on the trailing vehicle in the direction of travel; the lamp must show a white light after sunset or during fog or falling snow.

6.3 **Frontal lights**

When passing through a tunnel, or after sunset or during fog or falling snow, a white light must be carried on the leading vehicle when moving in the wrong direction to a disabled train or portion of a train. Other wrong direction movements must carry a red light when passing through a tunnel or after sunset or during fog or falling snow.

6.5 **When proceeding to disabled train**

A wrong direction movement proceeding to the assistance of a disabled train or to the rear portion of a divided train, must be conducted from the detonators situated 300 yards ahead of the disabled train.

EXTRACTS FROM BRITISH RAILWAYS' RULES AND TRACK CIRCUIT BLOCK REGULATIONS APPLICABLE TO THE SIGNALMAN AT BASINGSTOKE

Section M.8. Duties of Signalmen

8.4 **Wrong direction movements**

8.4.4 When giving authority for a wrong direction movement to be made, the Signalman must personally communicate with the Driver and:—

(*a*) have a clear understanding with the Driver as to how far the movement may proceed,

(*b*) advise the Driver of any catch points, spring or unworked trailing points on the line concerned,

(*c*) remind the Driver of any level crossings which the movement will require to pass over.

8.4.5 Before authorising a wrong direction movement to a train which has failed, the Signalman must obtain an assurance from a member of the train crew that the failed train will not be moved and that a member of the train crew is either riding with the Driver of the assisting train or stationed at the protection point ready to conduct the assisting train to the failed train.

8.4.6 The Signalman must record in the Train Register details of the movement authorised and the time at which authority was given.

Track Circuit Block Regulation 10. Admission of Train to an Obstructed Section

10.1

10.1.1 Before a Signalman allows a train to enter an obstructed section for the purpose of proceeding to an obstruction or to assist a disabled train he must:—

(i) have a clear understanding of the location of the obstruction or disabled train,

(ii) agree with the Trainman of the disabled train from which direction assistance will come and ascertain from which point the assisting train will be conducted.

10.1.2 The Signalman may then allow the train to proceed under the following arrangements:—

(i) The Driver must be advised of the circumstances, the position of the obstruction or disabled train and the arrangements which have been made. He must be instructed to pass at Danger the signal protecting the obstructed section and to proceed cautiously.

(ii) In the case of a disabled train:—

(a) The assisting train may be allowed to proceed if information has been received that the disabled train is being protected in the direction from which assistance is being provided but the Driver must be instructed to keep a lookout for the Trainman.

(b) If there is a tunnel between the point from which the assisting train will enter the section and the disabled train, the Driver of the assisting train must be instructed not to enter the tunnel until the Trainman of the disabled train has met him or it has been ascertained that the tunnel is clear and that the Trainman is not in the tunnel.

Until it is known that the tunnel is clear, any train proceeding on an adjoining line must, if practicable, be stopped and the Driver instructed to travel cautiously through the tunnel.

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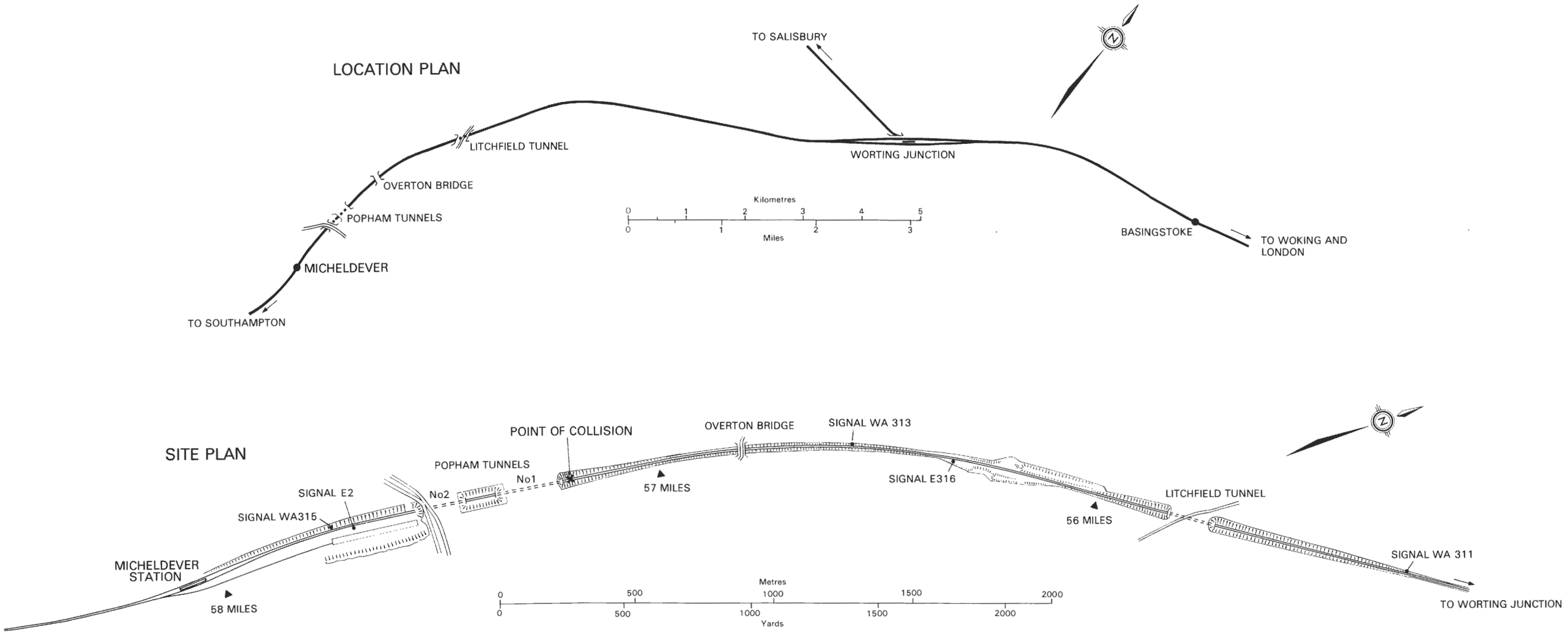
COLLISION NEAR MICHELDEVER ON 26th JANUARY 1985



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