DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

Report on the Derailment that occurred on 6th June 1975 at Nuneaton

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LONDON MIDLAND REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£1·60 net

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RAILWAY INSPECTORATE,
DEPARTMENT OF TRANSPORT,
2 MARSHAM STREET,
LONDON SW1

27th September 1976

SIR,

I have the honour to report for the information of the Secretary of State, in accordance with the Order dated 10th June 1975, the result of my Inquiry into the derailment of a passenger train that occurred at about 01.54 on Friday 6th June 1975 at Nuneaton in the London Midland Region of British Railways.

The train was the 23.30 Euston to Glasgow night sleeper train comprising 12 sleeping cars, 2 passenger brake vans, and a buffet car, hauled by a Class 86 electric locomotive. It had left Euston, on time, on 5th June but some 28 minutes later, having just passed King's Langley, the locomotive failed and the train came to a stand. Another Class 86 locomotive was provided to take the train, including the failed locomotive, forward and the train restarted at 00.58 having been at a stand for just over an hour and being then some 75 minutes late.

Between King's Langley and Nuneaton the train was driven at its maximum permitted speed but it was still some 66 minutes late as it approached Nuneaton, running at about 80 mile/h on the Down Fast line. While still over a mile from the station the train passed the lineside board giving advance warning of a 20 mile/h temporary speed restriction through the station but the lights on the board were out and the driver, on his evidence, wrongly assumed that the speed restriction had been lifted and allowed the train to continue at speed down the falling gradient. Just before entering the station he saw the oil-lit board marking the actual commencement of the speed restriction and made an immediate emergency brake application but it was by then too late and the locomotive became derailed on a length of curved temporary track that had replaced the 100 mile/h Down Fast line at the south end of the station whilst the permanent way layout was being remodelled.

The leading locomotive was followed into derailment by all except the rear coach of the train and many of the sleeping cars in the front half of the train were severely damaged, some being thrown onto their sides. I much regret to report that four persons, two passengers and two Sleeping Car Attendants, were killed in the derailment and two further passengers died later in hospital as a result of injuries received. The accident was seen by the signalman and a Supervisor on duty in Nuneaton Signal Box and they alerted the emergency services who reacted with commendable speed, the Police, Fire Brigade and Ambulance Services all being at the scene within about six minutes of the alarm being raised. A total of 38 people were conveyed to the Manor Hospital, Nuneaton, of whom ten were detained with serious injuries. The damage to the sleeping cars made rescue difficult and it was 07.39 before the last injured person could be released and taken to hospital. The last body was not removed until 17.28 and the search of the wreckage continued until 11.45 on Saturday 7th June when it was finally established that no one else was trapped. Through the long hours of the rescue operations valuable help was given by the Women's Royal Voluntary Service, who set up an emergency centre, and by the Salvation Army and other voluntary groups.

The derailment caused extensive damage to the track and to the overhead line and signalling equipment. All lines through Nuneaton were blocked and work on restoring the damaged track and overhead line equipment was necessarily delayed whilst the rescue operations were still in progress. The Down and Up Slow lines were eventually reopened to electric traction at 22.00 on 10th June but the Fast lines remained blocked until 14.30 on 12th June. During the period of blockage main line services were diverted via Birmingham and emergency road services were provided for local services. In addition, linking services using diesel multiple-units were operated to Polesworth and Coventry.

The damage caused to the overhead line equipment was such that the electric traction supply was automatically isolated throughout the Nuneaton area. The isolation was recorded in the Electrical Control Room supplying Nuneaton as occurring at 01.54.

DESCRIPTION

Layout and Signalling

1. Nuneaton Station is situated on the Trent Valley line section of the West Coast Main Line between London (Euston) and Glasgow. From Trent Valley Junction, Rugby, (83 miles 26 chains from London) where the line to Coventry and Birmingham diverges from the West Coast Main Line the railway runs roughly north-west towards Nuneaton and consists of four tracks these being, from west to east, the Down Slow, Down Fast, Up Fast, and Up Slow lines. At Brinklow (87 miles 72 chains) the Down Slow line merges with the Down Fast to become the Down Main line, the railway thereafter consisting of three tracks as far as Attleborough (95 miles 49 chains) where a facing connection in the Down Main line leads to a reintroduced Down Slow line. The railway then continues with four tracks until Nuneaton Station is reached at 97 miles 10 chains. Just to the south of the station there are junctions with, on the Down side, the freight-only line from Coventry and, on the Up side, the line from Leicester via Hinckley. All tracks of the West Coast Main Line are electrified at 25kV on the overhead system.

2. Drawing No. 1 at the back of the Report shows the general layout of the railway on the approach to Nuneaton from the south together with the gradients and the location of the relevant signals. The detailed layout at Nuneaton and the positions in which the various parts of the train came to rest after the accident are shown on Drawing No. 2.

3. The lines between Rugby and Nuneaton are fully track circuited and are worked in accordance with the Track Circuit Block Regulations. Running signals are modern 4-aspect colour lights and are provided with the standard BR automatic warning system. The signalling on the approaches to Nuneaton is controlled from a power signalbox situated on the Up side of the line at the south end of the station. The signalling system was installed in 1963.

Speed Restrictions between Rugby and Nuneaton

4. At the time of the accident the maximum permissible speed on the Main/Fast lines between Rugby and Nuneaton was 100 mile/h. The slow lines were limited to a maximum of 75 mile/h. There were no permanent restrictions of speed on the Down Fast and Down Main lines between Rugby and Nuneaton, the full permissible line speed of 100 mile/h thus applying but, on the night of the 5/6th June 1975, a temporary restriction of speed to 20 mile/h applied on the Down Fast line at Nuneaton between 96 miles 68 chains and 96 miles 78 chains. This restriction had become operative at midnight on Saturday/Sunday 24/25th May 1975 and was necessary because extensive alterations to the permanent way at the south end of the station were being undertaken as part of a track remodelling and rationalisation scheme. The work covered by this restriction was the 9th stage of the remodelling scheme, which had been in progress, by stages, since January 1975. Parts of the Down Slow line were also affected by the scheme, and a temporary restriction of speed to 40 mile/h applied to this line between 96 miles 60 chains and 97 miles 20 chains.

5. Details of all the restrictions, permanent and temporary, operative between Trent Valley Junction and Nuneaton on 5th/6th June are as follows:

Permanent Speed Restrictions

	Down	*Up*	
Trent Valley Junction	60	60	Slow lines between 83¼ and 84 MPs
		45	Fast to Slow lines
		25	Nuneaton Slow to Fast lines
		45	Nuneaton Fast to Slow lines
		30	Fast line to Nuneaton Slow line
		60	Fast/Main lines from 83¾ MP to 81 miles 65 chains
Brinklow	30		Down Slow to Down Main
Nuneaton (Station)	50		Down Slow line from 96¾ MP to 97¼ MP
	15	15	Over "Up and Down" Platform No. 1
		50	Slow line from 97 MP to 96¾ MP
Temporary Speed Restrictions			
Nuneaton	40		Down Slow from 96 miles 60 chains to 97 miles 20 chains
	20		Down Fast from 96 miles 68 chains to 96 miles 78 chains
		30	Up Slow from 97 MP to 96¾ MP

Notification of Temporary Speed Restrictions to Train Crews

6. The basic element in the British Railways system for notifying train crews of the presence of pre-planned temporary speed restrictions is the "Weekly Engineering Notice". This is a printed document which lists temporary speed restrictions, permanent way operations, signal alterations, and certain special instructions. Copies are forwarded directly from the printers to the depots, stations, offices etc. early in each week, arriving normally on Tuesday or Wednesday for distribution to train crews and other staff concerned on the Thursday prior to the coming into effect of the notice at 00.01 on the following Saturday. Each member of a train crew receives his own copy, of which he is required to acknowledge receipt. Appropriate administrative arrangements at depots, stations etc., ensure that this is done.

7. The Weekly Notice lists, for each stated line, the temporary speed restrictions in force during the period covered by the Notice. Details are given of the location of each restriction, the lines affected, mileage, speed restriction, reason for the restriction, time and date of the commencement of the restriction, and, where this is known, the time and date of its lifting. The speed restriction column also shows, for each restriction, whether the Warning Boards are to be lit with propane gas or other means, and whether the Boards are likely to be moved as work on the line progresses. The section in the Weekly Notice dealing with temporary speed restrictions is headed:

TEMPORARY SPEED RESTRICTIONS

(Until further notice unless otherwise specified)

8. On the ground, the commencement of the restricted section of line is marked by a SPEED INDICATOR. This is a square or circular indicator mounted at the lineside and showing, in black numerals on a white background, the actual maximum speed permitted. The Speed Indicator must always be illuminated. The termination point of the restriction is similarly marked by a TERMINATION INDICATOR, which is a square indicator also mounted at the lineside and showing a white 'T' on a black background. It also must be constantly illuminated. Finally, at a distance in advance of the commencement of the restriction that is specified in the Rule Book, a WARNING BOARD is erected at the lineside. This consists of a yellow painted horizontal board in the form of an arrow (with the point directed towards the track), fixed to a vertical post and surmounted by a square speed indication panel showing, in white numerals on a black background, the maximum speed permitted over the restriction. In the horizontal board there are two lamps which, in the case of gas-lit Warning Boards, show white lights. Both these lamps and the light in the speed indication panel must be illuminated after sunset and during fog or falling snow. The appearance of the Warning Board and Speed Indicator Board, as installed at Nuneaton, is shown on Drawing No. 1 at the back of the Report.

9. Details of the various temporary speed restriction boards, together with instructions on their placing and the action to be taken in various circumstances (including failure of one or more of the lights) are given in the Rule Book. Extracts from the Rule Book relevant to the present Inquiry are given in Annexure 'A' to this report.

Notification of the Temporary Speed Restriction at Nuneaton

10. The relevant Weekly Notice was issued at Crewe on Tuesday 20th May 1975. It covered the period Saturday 24th May to Friday 6th June (both inclusive). This period was longer than usual because Monday 26th May was a Bank Holiday. The item relating to the restriction on the Down Fast line at Nuneaton showed it to be between 96 miles 68 chains and 96 miles 78 chains, the maximum speed to be 20 mile/h, and the Warning Board to be lit by propane gas. The Remarks column read "Reballasting and relaying points and crossings. Commencing 00.01 Sunday, 25th May". No time or date was given for the lifting of the restriction, and the heading of Section 'A' of the Notice stated "Until further notice unless otherwise specified".

Recognition Marks on the approach to Nuneaton

11. On large parts of the railway system the disappearance of many of the old mechanical signal boxes has led to a corresponding loss of 'landmarks' for drivers. Long stretches of the railway are now relatively featureless, but this is not the case on the lines between Rugby and Nuneaton. Obvious landmarks on this part of the line are the change from four lines to three at Brinklow and the reappearance of the Down Slow line at Attleborough. Others are provided by the Oxford Canal, which runs close to the line between Brinklow and Shilton (and is a notable feature by night) and numerous bridges. In the area, about 1½ miles before Nuneaton, where the Warning Board for the speed restriction on the Down Fast line was located the line passes over or under a number of bridges. These include one over the Ashby-de-la-Zouch Canal followed by a substantial road-over-rail bridge located just under a quarter of a mile before the Warning Board. Just past this latter bridge a large works, with several tall chimneys, is located on the Down side of the line. Some 276 yards past the site of the Warning Board the connection for the re-emerging Down Slow line gives another reference point.

The Train

12. The train was 1S26, the 23.30 (5th June 1975) Euston to Glasgow. At the time of the accident it was marshalled as follows:

Class 86/0 Electric locomotive No. 86 006
Class 86/2 Electric locomotive No. 86 242 (not under power)
M 81389 Bogie Brake Van
M 2637 Sleeping Car Two Berth Pantry
M 2008 Sleeping Car First
M 2454 Sleeping Car Composite
M 2027 Sleeping Car First
M 2632 Sleeping Car Two Berth Pantry
M 1846 Restaurant Car Miniature Buffet
M 2011 Sleeping Car First
M 2663 Sleeping Car Two Berth Pantry
M 2024 Sleeping Car First
M 2629 Sleeping Car Two Berth Pantry
M 2032 Sleeping Car First
M 2662 Sleeping Car Two Berth Pantry
M 2616 Sleeping Car Two Berth Pantry
M 81530 Bogie Brake Van

13. The overall length of the train was 1,096 ft 9 in and its total weight was 749 tons, of which the two locomotives accounted for 165 tons. The train was vacuum braked throughout and the available brake force was 561·4 tons, representing 74·9 per cent of the total weight. The coaches were all of comparatively modern design, their dates of manufacture varying from 1957 to 1964. They were coupled together throughout by buckeye couplers and the leading Brake Van was attached to the original train locomotive by the locomotive's screw coupling.

The Course of the Derailment and Damage Caused

14. The train was still travelling at about 80 mile/h when the leading locomotive passed the oil-lit Speed Indicator marking the commencement of the 20 mile/h speed restriction and ran onto the curved section of temporary track. At that speed there was virtually no chance of the locomotive remaining on the line and it left the rails only yards after entering the realigned section. In so doing it burst the track and continued forward, damaging the line as it went. Immediately behind it, the second locomotive became derailed at the point where the first had burst the track and, behind the second locomotive, in turn all but the rearmost vehicle in the train left the rails. The train continued forward, with coaches slewing sideways and striking lineside structures, for a distance of about 340 yards. When it came to rest the last vehicle in the train, a bogie brake van, was standing over the point where derailment of the leading locomotive had commenced. At the head of the train, the two locomotives had become divided from each other and from the train, the leading one continuing more or less in a straight line until it stopped in the six-foot space between the Up and Down Fast lines about half-way through the station, whilst the second veered sideways, struck and damaged about 150 feet of the Down Fast line platform, and finally mounted the platform, coming to rest with its front end on top of the platform and in contact with the platform awning.

15. Behind the second locomotive the first three coaches remained coupled together but zig-zagged over what remained of the Up and Down Fast lines, the first coach ending up with its leading end jammed against the south end of the Down Fast platform. The first coach, a bogie brake van, remained more or less upright but was damaged beyond repair and was eventually cut up on site. The second vehicle, a sleeping car, also remained upright but its bodywork and undergear were severely damaged. The third vehicle, also a sleeping car, turned over onto its side. Its bogies were torn away and the whole of its trailing end was crushed beneath the following vehicles: it too had to be cut up on site.

16. The next two vehicles, both sleeping cars, also turned over onto their sides and came to rest at right angles to the track and on top of the third coach. Both were badly crushed and had to be cut up on site. The remaining ten vehicles in the train remained coupled together and more or less in line with the front vehicle, originally the sixth in the train, finishing on its side across the Up Slow line and alongside the fourth and fifth coaches. All of them except the last vehicle were derailed. The damage grew progressively less severe towards the rear of the train, all except the first vehicle in this part of the train remaining upright and most being capable of repair.

17. As might be expected, most of the casualties occurred in the first half of the train. All the fatal injuries were to passengers and staff travelling in the 3rd, 4th, 5th, and 6th coaches, these being the most heavily damaged vehicles in the train. Even so, some passengers near the very back of the train suffered injury and needed hospital attention.

18. The accident resulted in considerable material damage in addition to that sustained by the train. The piers of a large road bridge crossing the line just south of the station were struck and damaged, though not badly enough to endanger its structural stability: three overhead line equipment structures were demolished with consequent collapse of the overhead wires: several signals, point machines, and lineside telephones were destroyed: and extensive damage was caused to the permanent way, 455 yards of the Fast lines and 175 yards of the Up Slow line being virtually destroyed. In the station, some 150 ft of the Down Fast line platform coping was damaged, with more extensive damage where the second locomotive had mounted the platform. In addition, damage was caused to the locomotive of a freight train that was travelling along the Down Slow line as the accident happened and which was struck by a falling overhead line structure.

Evidence

19. *Assistant Permanent Way Supervisor P. R. Batkin* was in charge of the track alterations at Nuneaton. He had been concerned with all the previous stages of the work, which had been under way since January 1975. He explained that Stage 9 of the scheme, which had started on the weekend of 24th/25th May 1975, involved the removal of point and crossing work in the Down Fast and Down Slow lines at Nuneaton and its temporary replacement with plain line. This plain line was to be removed at a later date and replaced by a new crossover between the Down Fast and Slow lines. It was laid to conform with the planned new alignment and this meant the introduction at each end of short curved lengths to join up with the old alignment. It was the presence of these relatively sharp curves that dictated the severe restriction of speed. In work of this nature a restriction to 20 mile/h was normal, and this limit had been imposed since the beginning of Stage 9.

20. During the ten days or so following the introduction of the speed restriction, Mr. Batkin had watched a number of trains pass over the temporary track. He thought that some of them may have been exceeding the speed limit by about 5 mile/h—not more—but the track showed no undue movement and trains ran through smoothly. He considered that the track should have been safe at speeds even as high as 40 mile/h and this view

was supported by the *Divisional Civil Engineer, Crewe, Mr. R. Roscoe* who told me that calculations had shown that trains would only be at real risk at speeds above about 45 mile/h.

21. Mr. Batkin explained that the 20 mile/h restriction on the Down Fast line was planned to be of long duration: he thought that it might have been about four months before the line was restored to full 100 mile/h running. In work of this nature it was customary for the speed to be increased in stages, going initially from 20 mile/h to 50 mile/h so that the new track could have a chance to consolidate before full speed running was reintroduced.

22. The placing of the Warning Boards in readiness for the speed restrictions on the Down Fast and Down Slow lines was carried out on 23rd May under the direction of *Assistant Permanent Way Supervisor W. S. Evans.* On the Down Fast line, with its normal permissible speed of 100 mile/h, the Rules required the Warning Board to be placed at a distance of a mile and a quarter from the commencement of the restricted section of track, plus any necessary allowance for falling gradients. Mr. Evans calculated, correctly, that the board should be placed near the 95½ mile post, but he in fact placed it at 95 miles 36 chains. He did this because he had been aware for some time that the line in the area of the 95½ mile post was subject to trespass: chain link fencing erected by both the Railway and the local Council was regularly battered down and there were signs that both adults and children made a practice of crossing the line at this point. The boards for the Down Fast and Down Slow lines were each erected immediately to the left of the line concerned: their position is shown on Drawing No. 1.

23. The Warning Boards were the standard gas-lit equipment. That for the Down Fast line was supplied with two of the large 42 lb gas cylinders: these fit inside the wooden box provided, but are too tall to allow the lid to be closed and secured by padlock. Mr. Evans assured me that he had checked that both cylinders were fully charged on 23rd May: both were fitted with unbroken seals, fitted when the cylinders are charged. He thought that one cylinder should provide enough gas to light all three lamps in the warning board, burning day and night, for between a week and ten days. He was not present when the lamps were lit on 25th May, the day that the speed restriction came into force.

24. Mr. Evans agreed that, with the standard Warning Board, the correct procedure is to have both gas cylinders turned on. Supply is then taken from one cylinder and when that cylinder loses pressure an automatic changeover valve switches the supply to the second, full, cylinder. Instructions explaining how the equipment should be connected are provided inside the lid of the box containing the cylinders. Notwithstanding these instructions, Mr. Evans told me, it had been the practice in the Nuneaton area to turn on one cylinder only and to rely on regular inspection by the patrolman, who would switch manually to the second cylinder when he judged that the first one was becoming low: he would judge this either by feeling the weight of the cylinder in use or by looking at the visual indicator on the cylinder, which changes colour from white to red as the cylinder empties. As far as Mr. Evans was aware, this 'single cylinder' method had been in use ever since the current design of gas-lit warning boards was introduced, that is to say about 8 or 9 years. During this period he knew of no occasion when a lack of gas had led to the lamps on a Warning Board becoming extinguished.

25. Mr. Evans told me that the patrolman on the section of line concerned would normally patrol the Down Fast lines on Mondays, Wednesdays, Fridays, and Sundays. Should the patrolman find that a cylinder at a Warning Board was becoming low, he would switch over to the other cylinder and report to either the Track Chargeman, or to Mr. Evans himself, and arrangements would be made for a new cylinder to be supplied. Mr. Evans did not know if any report had been made on the Nuneaton Warning Boards because he had been away on leave between the 2nd and 7th June. The patrolman was also responsible for checking that the oil lamps illuminating the Speed Indicators and Termination Indicators, marking respectively the commencement and end of the sections of line subject to speed restriction, were kept filled with oil.

26. During all the time that the current design of Warning Board had been in service, Mr. Evans knew of no case where all the lights had become inadvertently extinguished. On occasions, one of the three lamps had failed, this being usually due to a broken mantle.

27. The patrolman responsible for the lines south of Nuneaton Station was *Leading Trackman D. Costello.* He patrolled all the lines between the 91¼ and 97 mile posts on Monday, Wednesday, Friday, and Sunday of each week. One of his duties was to examine any speed restriction Warning Boards within his area. He told me that in the case of the gas-lit Warning Boards his usual practice was to look through the circular glass front to the two warning lights in order to ensure that the mantles were in good condition and to lift the sliding front plate on the speed indication for the same purpose: he would not open any of the compartments containing the gas burners for fear of damaging the mantles. He would then check the gas cylinders by looking at the gauge: if this was showing red he would operate the valve to change the supply to the other cylinder and would either inform his supervisor or telephone the signal box to say that a new cylinder was required. In the case of the oil-lit Speed Indicator and Termination Indicator boards his normal practice was to lift the sliding front and examine the oil lamps: he would also clean the glasses if this was required. At the time of the accident Costello had not been aware that the correct procedure was to have both gas cylinders turned on. He had never heard anyone suggest that the way he had always worked—changing the gas supply over manually when one cylinder became low—was not the correct one.

28. Costello remembered the Warning Boards being brought into use on Sunday 25th May and he confirmed that he had checked them during his normal patrols from Monday 26th May onwards. On Monday 2nd June he had topped up the paraffin lamps—three in each—in the Speed and Termination Indicator boards, and he said that he would have expected them to burn for at least a week without further attention. On Wednesday 4th June he had started his patrol at Nuneaton and worked south. At about 09.30 he passed

the Warning Board and carried out the checks already described and repeated them on his return at about 13.30. On both occasions the lights were burning well, the mantles appeared to be in good order, and the gauge of the cylinder supplying gas was showing a full white. He could not remember whether the right or left hand cylinder had been supplying gas. He had also examined the Speed Indicator Board marking the commencement of the speed restriction and this also was giving a satisfactory light. The lamp glasses were clean although he thought it possible that the burners may have been smoking a little. All the lamps were well supplied with oil. His next patrol would have been on Friday 6th June but by then the accident had happened.

29. Costello had been a patrolman at Nuneaton for about ten months at the time of the accident. During this time he had never found a light out in a Warning Board although he knew of cases where the mantle had deteriorated and the light was consequently impaired. He knew that the area near the 95½ mile post was subject to constant trespass and he had had occasion to chase away children who were playing on the embankment in this area.

30. Leading Trackman Costello's immediate superior was *Track Chargeman H. J. Merrick*. At about 11.00 on Thursday 5th June Mr. Merrick was walking the line towards Nuneaton and he noted that all three lights on the Down Main Warning Board were clear and bright when seen from the area of Gipsy Lane bridge, to the south. In passing, he went over to the Warning Board and examined it. The three mantles were in good condition and the gauge on the cylinder that was supplying gas was showing white, although he could not remember which of the two cylinders was actually in use at the time. Like Evans and Costello, Merrick regarded the 'one-cylinder' method as standard practice and said that it had been used ever since the gas-lit boards had been introduced. He himself had never read the instructions on the inside of the cylinder box lid and claimed that not all the boxes had the instructions. He knew of no prior case where the lights in a Warning Board had failed due to a shortage of gas. He knew of cases where one or even two of the three lights had failed but this had always been because of faulty mantles.

31. In the early morning of 6th June, after the accident had happened, Merrick was told to go and inspect the Warning Board. Accompanied by an Inspector, Assistant P. W. Section Supervisor Simpson, he arrived at the Board at about 05.00. The board was in its correct position but all three lights were out. The mantle of the lamp behind the 20 speed indication was broken, with only the bottom part still attached to the burner, and one of the two mantles of the 'bulls-eye' lamps had a hole in the top: the third one was sound. There was a strong smell of gas and a very faint hissing sound. After conferring with the other Inspector, Merrick turned the valve on one of the cylinders to the 'off' position and the hissing stopped. He could not be sure which of the two cylinders he had turned off. Apart from lifting the front cover of the speed indication and turning the valve of one of the cylinders neither he nor Inspector Simpson had interfered in any way with the Warning Board equipment.

32. Less than half an hour after Merrick and Simpson had left the Warning Board it was inspected by *Mr. F. W. Young, British Railways Divisional Manager, Stoke-on-Trent*, whose area of responsibility includes Nuneaton. Mr. Young noted that all three lights were out and that the mantles were as described by Track Chargeman Merrick. He also observed that both gas cylinders had their control knob in the 'off' position.

33. A further examination of the Warning Board *in situ* was made that afternoon by *Mr. D. E. Morris* a Senior Technical Officer on the staff of the Divisional Civil Engineer, Crewe. Mr. Morris had been concerned with the use of propane gas equipment within the Crewe Division for some six or seven years. He described the correct method of connecting up a pair of gas cylinders so that changeover between the two cylinders would be automatic and he confirmed that all propane equipment used in the Division since about 1966 had had this automatic changeover facility. Mr. Morris told me that he had for some time suspected that an incorrect method of using the cylinders—the so called 'one cylinder' method—was being employed in the case of propane point heaters and that he had spoken to supervisors about this, reminding them of the correct procedure.

34. On arrival at the Warning Board at about 14.15 Mr. Morris found the situation to be as already described by Mr. Young, both cylinders being turned off. The changeover valve was pointing towards the cylinder furthest away from the line. Morris attempted to lift both the cylinders. The one nearest to the line was very much lighter than the other and he concluded that this cylinder was virtually empty whilst the other was full. He next opened the valve on the 'empty' cylinder, leaving the other closed, and obtained a sufficient flow of gas to light the right-hand mantle, this being the one with a hole in its top. The light was reasonably bright and, after allowing it to burn for about half a minute, he extinguished it by closing the valve.

35. The Warning Board gas equipment was later removed and examined in collaboration with the manufacturers, the Calor Gas Company. It was found that the net weight of the lighter of the two cylinders was 4 ounces and the Calor Gas representative told Mr. Morris that virtually all of this weight would be 'heavy ends' which had collected in the cylinder over past usage and would not be capable of vapourising. At the same time, it could be expected that a nearly empty cylinder that had been closed for some hours would, on re-opening, produce sufficient pressure to light a lamp for several minutes, especially if the cylinder had been warmed. Mr. Morris confirmed that at the time he had re-lit one of the lamps it had been very warm, the ambient air temperature being then about 25°C. The other cylinder was found to have a net weight of 42 lb 4 oz. This meant that it was overfilled by 4 oz, a figure that was within the permitted tolerance. It was also ascertained that the changeover valve was in proper working order and would have functioned properly if the equipment had been set up correctly.

36. Mr. Morris subsequently carried out tests to find out the effect of falling pressure on the brightness of the lamps. Using standard Warning Board equipment he found that 36 in of water pressure, which was the

standard pressure specified by the manufacturers, gave a normal bright light. Reducing the pressure, a slight dimming effect first became apparent at 28 in water pressure. Below this the light became increasingly dim until, at about 4 in pressure, the light was hardly visible even though it had not gone out completely.

37. Finally, Mr. Morris said that, in answer to questions put to the Calor Gas Company, it was established that normal air temperature differences between night and day, such as might have been experienced at the time of the accident, would have had no measureable effect on the internal pressure of a cylinder that was supplying gas.

38. Before taking evidence from the crews of the last three trains to pass safely through the Down Fast line speed restriction at Nuneaton on the night of the accident, I asked *Mr. F. W. Young, the Divisional Manager, Stoke-on-Trent,* to summarise the results of questions put to the drivers and secondmen of other trains that had passed through Nuneaton on the Down Fast line that night. He told me that, between 22.23 on 5th June and 00.58 on 6th June, fifteen trains had passed through, all of them negotiating the restriction at or close to the correct speed. Of the crews of these 15 trains, six had said that the light in the Warning Board speed indication, that is the light behind the figure 20, was out when they had passed. Their times of passing ranged from 22.30 on 5th June to 00.49 on 6th June. Of the remaining 9 trains, the crews of 4 had thought that the speed indication was illuminated but dimly lit, 4 that it was bright or well lit, and one professed not to have noticed whether it was alight or not. All the crews reported that the two 'bulls-eye' lights were illuminated, although opinions differed as to their brightness. Mr. Young concluded that the weight of evidence suggested that the two 'bulls-eye' lights were both giving at least an adequate light until about 00.58, but that the speed indication light had been out for most of the night, probably since at least 22.30. In reply to similar questioning about the Speed and Termination Indicator Boards, at the beginning and end of the actual restriction, all crews agreed that these were illuminated although the majority considered that the lights in both were poor.

39. In commenting on the requirements of Rule T.25.5, dealing with the action to be taken by drivers when they observe that a light in a Warning Board is out, Mr. Young said that, of 4 trains which passed the Warning Board between 00.17 and 00.49 and whose crews saw that the speed indication light was out, the driver of the train which passed at 00.17 should have reported on arrival at Crewe at 01.25: the driver of the second train, which passed at 00.24, should similarly have reported at Crewe at 01.21: that of the third train, which passed at 00.46, on arrival at Stafford at 01.15: and the fourth driver, who passed at 00.49, on arrival at Crewe at 01.42. In fact, none of these drivers, nor any of those who had passed earlier in the night, had made any report.

40. Between 00.59 on 6th June and the time of the accident (approximately 01.54), four other trains passed the Warning Board, including finally the one that derailed. The first of these was 1P54, the 23.45 Euston to Barrow sleeping car train. It was driven by *Driver C. W. Ireson*, based at Euston, and comprised 11 vacuum-braked coaches hauled by a Class 86 electric locomotive. Ireson, who was driving without a secondman, left Euston on time and travelled on the Fast line as far as Watford where he was diverted to the Slow line. Near King's Langley he passed the 23.30 Euston to Glasgow sleeper train which was at a stand on the Fast line: in passing he sounded his whistle and the driver of the other train answered. He passed through Rugby at 00.59, about 11 minutes late, and continued on the Fast line towards Nuneaton.

41. Driver Ireson told me that he was very familiar with the Fast line between Rugby and Nuneaton. He had driven on this line on at least four occasions since the 20 mile/h speed restriction was applied at Nuneaton, most of these journeys being in the week leading up to the 6th June. He knew exactly where the Warning Board was located and considered that the lineside features and the signal controlling the divergence of the Down Slow line at Attleborough provided more than adequate markers for a driver to know his position. He considered that the approach view of the Warning Board was not ideal because of the curvature of the line, but that it was adequate.

42. On the night of the accident Ireson was driving at about 90 mile/h as he approached the Warning Board. The time was about 01.12. He had just shut off power as the Board came into view. He saw the two horizontal lights, but the '20' speed indication was not illuminated. The two horizontal lights were equally bright but were distinctly dimmer than he had seen them on previous nights. Shortly afterwards the other Warning Board on the Down Slow line came into view and Ireson noted that the lights on it were noticeably brighter than those on the Fast line Board he had just passed. The general visibility at the time was good. He brought the speed of his train down to the required 20 mile/h at Nuneaton and saw the Speed Indicator Board, the light in which was illuminated but dim. Regarding the speed restriction, Ireson said that, having previously seen it in daylight, he considered it to be an unusual one because of the way the track was sharply curved: most temporary speed restrictions applied to straight lengths of track.

43. Finally Ireson said that he was familiar with Rule T.25.5 and realised that he should have reported that the light was out in the speed indication of the Warning Board on his arrival at Crewe. He had not done so.

44. The train which followed Driver Ireson's was 1S15, the 23.30 Kensington to Stirling motorail train. It was driven by *Driver W. Sharpes* who was based at Crewe. The train should have been hauled by an electric locomotive but on this occasion a Class 50 diesel locomotive had been provided. This locomotive was attached to the train at Willesden. Driver Sharpes had received the weekly notice giving details of the temporary speed restrictions and he had previously travelled on the Down Fast line between Rugby and Nuneaton on 27th May. On this occasion he had had no difficulty in seeing the Warning Board for the 20 mile/h restriction at Nuneaton.

45. On the night of 5th/6th June Sharpes had left Willesden on time but had then gradually lost time because of the inability of the diesel locomotive to maintain the proper speeds with a train of 604 tons. At about 01.40 he approached the site of the Warning Board, having brought the speed of the train down from about 75 mile/h to 65 mile/h. Visibility was good and he was watching out for the Warning Board. He saw nothing as he approached the place where he knew the Board to be but then caught a glimpse of it and saw that none of the lamps was illuminated. His locomotive carried no headlights, only the indicator panel which on a Class 50 locomotive is mounted high up on the front. He remarked to his secondman: "Its out" and continued to reduce speed in anticipation of the speed restriction. Just before Nuneaton Station he saw the Speed Indicator Board which was illuminated but rather dim. At this point he had reduced speed to about 20 mile/h.

46. In answer to my questions, Sharpes said that at no time did he consider that the speed restriction might have been lifted. On 27th May he had seen the nature of the track work being undertaken in the station area at Nuneaton and he knew that it was going to be a long job. He had had no doubt that, in spite of the lights being out in the Warning Board, the restriction would still be in force and he had acted accordingly.

47. Driver Sharpes assured me that he had been well aware of the requirements of Rule T.25.5. He agreed that, having seen that all the lights in the Warning Board were out, he should have stopped and advised the signalman, and that, having reduced the speed of his train to 20 mile/h on approaching Nuneaton Station, it would not have been difficult to have stopped the train and telephoned the signalman from the signalpost telephone at the north end of the platform. But for some reason he had not done so, possibly because he was running late.

48. On arrival at Crewe at about 02.47, some 34 minutes late, Sharpes saw the breakdown train going out and learned about the accident. He told me: "Then everything dropped into place and I knew that I should have stopped and reported that the lights were out".

49. Driver Sharpes' evidence was corroborated by his secondman, *Senior Secondman F. S. Roddy*, also based on Crewe. Roddy had travelled on the Down Fast line between Rugby and Nuneaton on four occasions during the week before the 6th June, on each occasion at night. He had had no difficulty on these earlier occasions in seeing the lights of the Warning Board. As the train approached the site of the Warning Board at about 01.40 on 6th June he was looking out for it, and his driver had already started to slow the train. He saw no sign of the Warning Board and Driver Sharpes made a remark to the effect that the board had not been lit. Shortly afterwards Roddy saw the lights of the Warning Board on the Down Slow line and then the Speed Indicator board marking the start of the speed restriction at Nuneaton, which was lit but dim.

50. Like his driver, Roddy admitted that he was fully aware of the requirements of Rule T.25.5. He attributed their failure to stop and report to the signalman to the fact that they had had a poor run, losing time despite working their diesel locomotive to its maximum.

51. The next train to pass along the Down Fast line was the one running immediately ahead of the sleeper train that became derailed. It was 6F72, the 22.20 Willesden to Runcorn freight train consisting of a Class 85 electric locomotive and 29 empty 15 ft wheelbase oil tank wagons. It was limited to a maximum speed of 45 mile/h. Its driver was *Driver R. K. Turner*, based at Rugby. The train was single-manned but, shortly after leaving Rugby, Turner had been joined in the front cab by a guard who had joined the train at Rugby in order to travel back to Crewe. During the week or so before the 6th June Turner had driven over the Down Fast line between Rugby and Nuneaton three times and on each of these occasions he had seen the Warning Board displaying its proper lights.

52. At the public hearing held on 20th June 1975, Driver Turner told me that on the night of the accident he had passed the Down Fast Warning Board at approximately 01.45 and that all three of its lights were then illuminated. He told me that the left-hand of the two horizontal lights was more brilliant than the one on the right and that he saw the indication of the speed, the 20 numerals, which were "quite bright". I reminded Turner that at the Railway's own internal Inquiry he had said that possibly the right-hand of the two horizontal lights might have been out, but he maintained that he had seen all three lamps alight. I put it to him that Driver Sharpes, whose train had preceded his by only a short margin, had given clear evidence that all the lights were out, and I suggested that he might have confused the Fast line Warning Board with the one on the Slow line. He discounted any possibility that he might have been mistaken and instead suggested that the lights might have been "extraordinarily low" as Driver Sharpes went by and that the vibration of the train had somehow caused them to burn more brightly by the time he, Turner, had arrived at the scene. He assured me that he had been aware of the requirements of Rule T.25.5 at the time, and he told me that he had in fact reported that the Speed Indicator Board at Nuneaton Station was displaying a poor light on his arrival at Crewe: by then he knew that there had been a derailment at Nuneaton.

53. On 5th January 1976 Driver Turner submitted, at his own request, a signed statement to the Railway Officers in which he withdrew all the evidence he had given at the Railway Inquiry and at my public Inquiry in respect of the Warning Board. In his new statement he said that shortly after observing the green aspect in Signal NN 82 (located some 300 yards before the Warning Board) it had occurred to him that he might have forgotten his hand lamp and he therefore bent down to see if it was in his bag. When he looked up again the train had passed the Warning Board. He had seen nothing of the Warning Board or its lights. He admitted that all the previous evidence he had given in respect of the condition of the Warning Board on the night of the accident had been false but he was not prepared to say why he had not previously told the truth.

54. The guard who had accompanied Driver Turner in the cab was *Guard D. L. Simcoe*, based at Crewe. His evidence at the public Inquiry did little to establish the true facts of Driver Turner's observance or non-

observance of the Warning Board. He had joined the train at Rugby in order to travel back to Crewe and had at first travelled in the rear cab of the locomotive. Shortly after leaving Rugby he went forward into the front cab in order to make some tea, there being no stove in the rear cab. Apart from asking Turner's permission to use the stove he claimed that there had been no conversation between them, either before or after passing through Nuneaton and that, being fully occupied with his tea making, he had not seen anything of the Warning Board on either the Fast or Slow lines. He knew of the 20 mile/h speed restriction at Nuneaton and confirmed that Driver Turner traversed it at the correct speed.

55. The driver of 1S26, the 23.30 Euston to Glasgow sleeper train, was *Driver J. McKay*, based at Euston. At the time of the accident he was 36 years of age and had been a railwayman for just over 20 years. He had qualified as a driver in 1967 and since then had been based first at Cricklewood and then at Euston. He had thus had many years experience on the West Coast Main Line and he told me that he was very familiar with the lines between Rugby and Nuneaton.

56. On Saturday 24th May McKay received and signed for the WE.1 notice of temporary speed restrictions, permanent way operations etc. covering the period 24th May to Friday 6th June inclusive. He did not have occasion to drive on any of the Down lines between Rugby and Nuneaton until the night of the 4th/5th June, the night before the accident. On this occasion he drove the 23.00 (4th June) Euston to Glasgow night sleeper from Euston as far as Crewe. Before starting this journey he had studied the WE.1 Notice and noted the 20 mile/h temporary speed restriction at Nuneaton. He told me that, in accordance with his usual practice, he kept the Notice in front of him in the cab and turned the pages as he went along. On this night he was driving a Class 86/2 electric locomotive and the journey was trouble free. The weather was clear with good visibility. After passing Rugby his speed was about 90 mile/h and, approaching Attleborough, he shut off power so as not to exceed this speed on the falling gradient: this was his normal practice with a fast train on this section of the line. He looked out for the speed restriction Warning Board and saw it, with all three of the lights illuminated and bright, as he came round the curve. Thereafter he reduced speed and was travelling at just below 20 mile/h when he saw the 20 mile/h Speed Indicator Board on the immediate approach to Nuneaton Station. It was reasonably conspicuous although its light was somewhat dim. The passage of the restricted section of track was reasonably smooth until near its end when the locomotive appeared to 'turn' abruptly as it negotiated the curved length. Driver McKay described this length of track as "unusual, but not particularly alarming".

57. The following night, Thursday 5th June, McKay signed on duty at Euston at 23.00. He reported to the Time Clerk and received a wallet with details of the working, after which he examined the notices. At this stage he was joined by his secondman, Senior Secondman Norman, with whom he had worked before and whom he knew well. After about ten minutes they went together to Platform 15 where they met their guard, Guard Shore. He gave them details of the train—15 vehicles, 584 tons, first stop Crewe. The locomotive was already coupled to the train and McKay and Norman completed the normal preparation of the train. They left, on time, with Norman driving. There was no special reason why Norman drove: he was qualified to do so and McKay had agreed when Norman asked to do the driving. All went well until they were near King's Langley, when the locomotive failed and the train came to a stand. Norman went forward to protect the line and McKay spoke to the Watford signalman from a signalpost telephone. He was told to wait for assistance, and shortly afterwards the signalman told him that a relief locomotive would be coming from Willesden. In due course this locomotive, another Class 86 electric locomotive, arrived and was coupled onto the front of the train. McKay himself created the vacuum for the brakes from the leading cab of the relief locomotive and checked that the brake was properly connected throughout the train.

58. The train was restarted, having been at a stand for just over an hour. It was then 75 minutes behind its booked timing. McKay himself took the controls and set about the task of making up as much of the lost time as he could. He first had to slow down almost to a stop at Hemel Hempstead to allow the two men who had brought the relief locomotive from Willesden to alight. But thereafter signals were generally clear and he drove as fast as he was allowed. The authorised maximum speed of the train was 90 mile/h: all the sleeping car coaches were permitted to run at 100 mile/h but the two bogie brake vans in the train were limited to 90 mile/h. The normal timings of most night sleeper trains are so arranged that a speed of 80 mile/h need not be exceeded but McKay knew that in order to make up lost time he was allowed to use the train's maximum permissible speed. He therefore drove at 90 mile/h whenever he was able. At times this was difficult because with an already heavy train the additional weight of the original locomotive (which was being hauled 'dead' since it would have involved further loss of time to have removed it at King's Langley) restricted the speed on rising gradients. At the same time, McKay thought it possible that at one or two points, such as coming down the bank at Castlethorpe, his speed might have been slightly above 90 mile/h.

59. Between Rugby and Nuneaton he was running at 90 mile/h. He told me that his normal driving technique on this section of line was to take power off after the run down the bank from Shilton. He used Bulkington as his landmark and normally took the power off when passing the signal near the site of the former station, making a brake application as the transformer tap changer ran down. This is what he had done on 6th June and his speed had been reduced to about 80 mile/h as he came under the bridge and took the left hand curve leading to where he knew the Warning Board to be located. At this point he was consciously looking out for the Warning Board. He saw Signal NN 82 displaying a green aspect, and shortly afterwards he saw, away to his left, the lights of the Warning Board on the Down Slow line. It was at this moment that he realised that he had seen nothing of the Down Fast Warning Board. It was at this moment also, he told me, that he decided that the restriction must have been lifted and accordingly released the brake which up till then he had kept in the initial position since applying it at Bulkington. His decision, he thought,

had been influenced by the fact that he had seen nothing whatsoever of the Down Fast line Warning Board in spite of having kept a careful watch out for it. He had considered the possibility that the lights in the Board might have been out but had thought that in that case he would have seen at least the outline of the Board itself. He was, in short, convinced that the Board had been removed.

60. Having made his decision, McKay allowed the train to continue down the falling gradient with the brakes released and power off. He estimated that his speed remained very close to 80 mile/h for the rest of the approach to Nuneaton. Just before the station he suddenly saw, immediately in front of the train, the 20 mile/h Speed Indicator Board and realised that the speed restriction must still be in force. He made an immediate emergency brake application and seconds later his locomotive hit the sharply curved section of temporary track. The locomotive lurched violently and he was thrown to the floor and was still there when the locomotive came to a stand.

61. I questioned Driver McKay closely about his knowledge of the rules relating to speed restrictions and he claimed to have been fully conversant with them at the time of the accident. He agreed that the Warning Board is only one part of the system and that the most important element is the Weekly Notice. He told me that he had definitely not received the Notice covering the period 7th to 13th June (which shows the 20 mile/h restriction on the Down Fast line at Nuneaton as continuing) and that, because the Notice he had received expired on 6th June, he thought it possible that the engineers might have completed their work and removed the restriction. He had not been able to gain much of an impression of the work being done at Nuneaton as he passed through at 20 mile/h on the previous night but he claimed that what he had seen was not inconsistent with a lifting of the restriction on the following night. I asked him whether he had said anything to his secondman after passing the site of the Warning Board. He thought that he had said something to the effect that the Board had gone and that the restriction must have been lifted: he could not remember whether Norman had made any reply.

62. I also questioned McKay about his duties during the week leading up to the accident. He had been free over the weekend and Monday 2nd June was a rest day. On Tuesday 3rd June he had signed on duty at 23.23 and worked a parcels train to Northampton, signing off at 07.23 on Wednesday 4th June. He returned to Watford, where he lived alone, and went to bed. He was properly rested when he signed on again that night at Euston to take the 23.00 Euston to Glasgow sleeper as far as Crewe. He got back to Euston at about 05.15 on Thursday 5th June and signed off at 06.00, catching the 06.05 train to Watford. On arriving home he went straight to bed and slept reasonably well until just before 13.00 when he got up. He remained in his flat for the rest of the afternoon, cooking himself a proper meal at 17.00 and resting until leaving at about 22.15 to catch the 22.31 from Watford to Euston. He had no alcoholic drink at all that day and was feeling fit and properly rested when he reported for duty that evening. He was somewhat concerned about his mother, who had been ill, but other than this he had no worries on his mind.

63. McKay told me that, if there had been no accident, he would have been relieved at Crewe and would normally have expected to be given a freightliner train, due to leave Basford Hall at 03.05. On other occasions when he had been delayed this duty had been given to another driver and he had been given a different train. He assured me that he had not been concerned at the prospect of missing this return connection: he had been in no special hurry to return south.

64. Finally, in trying to probe the reasons for his snap decision that the speed restriction had been lifted, Driver McKay agreed that his mind had been very much occupied with regaining as much as possible of the lost time. He had been using his driving skill to the maximum to make up time and he agreed that this preoccupation might have prevented his giving full consideration to the possible implications of the missing Warning Board.

65. *Senior Secondman L. W. Norman*, also based at Euston, confirmed much of the evidence of his driver. When he had met Driver McKay at the booking-on point at Euston McKay had appeared his normal self and fully fit for duty. Norman had himself received the Weekly Notice and he knew about the temporary speed restriction at Nuneaton. He had been over the restriction, in daylight, on 26th May and had appreciated that the engineering works were extensive. On this occasion he had not seen the Warning Board: he thought that he might have been in the engine room at the time.

66. Norman described the journey on the night of the accident. He thought that Driver McKay had driven at only normal speeds after the delay at King's Langley and said that McKay had not seemed annoyed or unduly put out by the delay. Approaching Attleborough they had both been looking out for the Warning Board but he, Norman, had seen nothing until the brightly lit Board on the Down Slow line had come into view. At this point he realised that they must have passed the point where the Fast line Warning Board should have been and, he told me, his first thought had been that the speed restriction had been lifted. Driver McKay had applied the brake but he now released it and the train continued at normal speed, which Norman estimated to have been about 80 mile/h, until, on the immediate approach to the station, McKay called out and made an emergency brake application. Seconds later the locomotive left the rails. Norman had not seen the Speed Indicator Board. From the time they had approached Attleborough until McKay had cried out, Norman was sure that no words had been spoken either by himself or by McKay.

67. I asked Norman on what grounds he had supposed that the speed restriction had been lifted, especially in view of Rule T.21.1., with which he claimed to have been familiar at the time of the accident, which states that in the event of a speed restriction being eased or withdrawn earlier than shown in the printed Notices the Warning Board will be left in place and the speed indication altered to show the higher speed at which trains may run. He said that he remembered two previous occasions when the restriction had

been lifted and the Warning Board had been removed before the expiry of the time stated in the Notice. When pressed, he said that he could not remember where these had been but that both occasions had been "some years ago".

68. After the accident Driver McKay had seemed distressed and Norman had tried to comfort him. They had discussed the speed restriction and had questioned each other about the Warning Board. They had both concluded that the lights in it must have been out. He did not think that either of them had discussed what had gone through their minds after they had passed the point where they should have seen the Warning Board. Shortly afterwards they were questioned together by police officers and both had made statements.

69. The third member of the train crew was *Guard E. A. Shore*, based at Crewe. He had been a guard for over 30 years. On the night of the accident he met Driver McKay and Senior Secondman Norman at Euston. He did not know either of them well. Both seemed perfectly normal and ready for their duty. Before starting the journey he verified that the brake gauge in the brake compartment in the rear vehicle in the train was showing the correct 21 in of vacuum, and he again satisfied himself that the brakes were correct before restarting after the locomotive failure at King's Langley. From there on he remained in his brake compartment at the back of the train. He formed the impression that the train was being driven "pretty fast" but not exceedingly so. He was aware of the 20 mile/h restriction at Nuneaton and, about 11 minutes after passing Rugby and when he would have expected that they were approaching Nuneaton, he felt the brakes apply. It was a slight application and he was expecting a further application for the speed restriction but none came. The next thing he knew was the shock of the derailment.

70. Guard Shore told me that during the last few minutes before the derailment he had not been in a position to know just how close they were to Nuneaton. If he had known that they were running into danger he could have applied the brake in his van, but at no time until the accident happened did he realise that the driver was not going to slow down for the restriction.

71. Evidence was also given by *Regulator J. Marlow*, and *Signalman G. E. Young*, who were on duty in Nuneaton Signal Box at the time of the accident. Young confirmed that the sleeping car train had a clear route through Nuneaton with all signals at Green. Marlow watched its approach, indicated on the signal box illuminated diagram, and gained the impression that it was approaching somewhat faster than usual although he had no way of forming an accurate estimate of its speed. The train then passed the signal box, travelling very much faster than it should have been, and seconds later both men saw the flashes from arcing of the overhead lines and saw track circuits on the panel show occupied on all lines approaching the station. Marlow called Electrical Control and requested that all traction current be switched off and Young called the Emergency Services. Calls were also made to the signal boxes to the north and south.

72. Both Marlow and Young had had many years experience in signal boxes. Both knew of many cases where reports had been received, mainly from drivers, of lights being out in Warning Boards, but neither could recall a single instance in which all three lights in a Warning Board had been reported out.

Discussion

73. The significant events which set the stage for this tragic accident are not in dispute. First, it is reasonably certain that the speed indication light at the top of the speed restriction Warning Board was out during most of the period between 22.30 on 5th June and 01.54 on 6th June, the time of the accident. Between 22.30 and 00.58 the drivers of 6 out of the 15 trains that passed on the Down Fast line were prepared to say that the speed indication light was out, and these six drivers all admitted that they had not reported the fact at the first convenient opportunity as they were required to do by Rule T.25.5. Had any one of the six made such a report it would have been the duty of the signalman at Nuneaton, when advised of the situation, to arrange for the lamp to be re-lit. Had these rules been obeyed a member of the staff would have been sent to the Warning Board where it is possible, though not certain, that the fact that the cylinder supplying gas was about to run dry (as it certainly was) would have been discovered.

74. Then, between 00.58 and about 01.45, a further three trains passed along the line. The first of these passed the site of the Warning Board at about 01.10 and its driver, Ireson, who was alone in his cab, saw that the speed indication panel was not illuminated and that the two horizontal lights were alight but noticeably dimmer than when he had seen them on previous occasions. Half an hour later, at 01.40, another train passed and neither its driver, Sharpes, nor his secondman saw any sign of lights in the Warning Board although the driver caught a glimpse of the Board itself. Following closely behind came the third train whose driver, Turner, at first claimed that all the lights in the Board had been alight, and then altered his evidence to say that he had not been in a position to see the Warning Board at all as his train passed by. It is therefore virtually certain that the remaining two lights in the Board became extinguished sometime between 01.10 and 01.40 and that from then on the Board was not illuminated in any way. Driver Sharpes admitted frankly that he should have stopped, and could easily have done so at Nuneaton, but that he had not. Had he done so, as he was required to do by the Rules, the Nuneaton signalman would have been required, again according to the Rules, to stop and caution all trains approaching the Warning Board until such time as the lights in the Warning Board were re-lit. Driver McKay would therefore have been stopped by signals and advised of the circumstances and the accident would not have happened.

75. In fact, Driver McKay received no warning that the lights were out and in his evidence he maintained that, although he was watching out for the Warning Board, he saw no sign of it whatsoever. Both he and his secondman went on to claim that, independently and without any conversation passing between them,

each decided there and then that the speed restriction must have been lifted. The train was therefore allowed to continue with undiminished speed and derailment on the restricted section of track became inevitable.

76. Other factors, less direct, also played their part in the sequence of events. One of these is the fact that Driver McKay's train should have passed through Nuneaton more than an hour earlier and that McKay was driving at, and at times possibly slightly over, the permissible limit in order to make up some of the time lost at King's Langley. Another is the fact that for years the wrong procedure had been in use in the Nuneaton area (and possibly beyond it) for connecting up the propane gas cylinders at Warning Boards. Although the method actually used had proved reliable it was inherently less so than the correct way and sooner or later it was likely that the lights on a Warning Board would become extinguished due to a lack of gas.

Conclusions

77. The accident happened because the 23.30 Euston to Glasgow night sleeper train was driven at a speed of approximately 80 mile/h over a section of track that was subject to a speed restriction of 20 mile/h and which could not be traversed in safety by the train at any speed above 45 mile/h.

78. Information about the speed restriction was correctly published in a printed Notice. Each of the three members of the train crew received the Notice before Sunday 25th May, the day the restriction came into force. The Notice carried the usual statement that the speed restrictions listed would remain in force "until further notice unless otherwise specified". The Notice differed in one respect from the generality of such notices in that it covered a period of 14 days instead of the customary 7 days: this was because the first week included a Bank Holiday. Such 'longer period' Notices were quite normal and drivers were accustomed to them.

79. The Warning Board, Speed Indicator, and Termination Indicator were each correctly sited according to the Rule Book. At the Warning Board, however, the propane gas equipment used for lighting the warning lamps and the speed indication panel was not being used in the manner laid down in the instructions supplied with the equipment: the gas supply was being taken from one only of the two cylinders and the valve which allows automatic changeover of the supply should one cylinder become empty had been isolated.

80. The light in the Warning Board illuminating the 20 mile/h speed restriction panel went out at about 22.30 on 5th June. This was almost certainly due to a failure of the gas mantle.

81. The remaining two lights in the Warning Board began to dim at about 01.00 on 6th June and went out sometime between 01.10 and 01.40. They went out because the cylinder supplying gas became empty. The Warning Board, including the gas cylinders, had been inspected by the patrolman at 09.30 and 13.00 on Wednesday 4th June, and by the track chargeman at 11.00 on Thursday 5th June. It was not inspected again until after the accident. There is no inconsistency in the track chargeman having seen the cylinder indicator showing white, and the cylinder having become empty some 13½ hours later. There was no evidence that the Warning Board had been tampered with at any time, before or after the accident.

82. As discussed in paragraphs 73 and 74, a number of drivers, whose trains preceded the 23.30 Euston to Glasgow, saw that one or more of the lights in the Warning Board was out, but none of them reported the fact as they should have done according to the Rules.

83. The driver of the 23.30 Euston to Glasgow train, Driver McKay, claimed that he was keeping a careful watch out for the Warning Board and that when he saw no sign of it he decided there and then that the speed restriction had been lifted and therefore allowed the train to continue towards Nuneaton at speed. If he did consciously make such a decision it was this that led directly to the derailment. I am not however entirely convinced that it was a conscious decision that led him to continue at speed that night. Driver McKay was, and is, a very experienced driver. As such I would regard it as completely out of character for him to have made a deliberate and reasoned decision to carry on at speed merely because he had not seen the lights at the Warning Board. He had seen the Warning Board in position and correctly lit on the previous night: he had seen the nature and the extent of the work on the Down Fast line at Nuneaton: he knew that the temporary speed restriction concerned was, according to the printed Notice, supposed to remain in force "until further notice": he knew that, if the restriction had been lifted prematurely, the Rules required the Civil Engineers to show the new permissible speed limit at the Warning Board and not to remove the Board completely and without warning: and on his own admission he realised that it was possible that the lights might for some reason have failed. In the light of all this it seems incredible that a driver of his long experience and undoubted competence should have come deliberately, even on the spur of the moment, to such a completely unjustified conclusion. It is of course possible that he did so decide and I cannot say that he did not: only that I consider it unlikely.

84. I consider it more likely that, without the positive reminder given by the lights in the Warning Board, Driver McKay momentarily forgot about the speed restriction and only realised his mistake when closely approaching Nuneaton. It is quite clear that he was concentrating hard on his driving and had been doing so since the hour's delay at King's Langley. In these circumstances it is quite possible that, driving at speed under clear signals, the presence of the restriction at Nuneaton might have escaped his mind during the vital few minutes. An over-concentration on his driving, or alternatively a momentary lack of concentration, would have been enough.

85. Although Driver McKay's secondman, Norman, claimed that he also, independently of his driver, came to the conclusion that the restriction had been lifted I think that this could have been a view formed after the accident and after he had conferred with McKay. I regard it as more likely that he too failed to

realise that they were approaching a restriction at speed: he may have been otherwise engaged, or his thoughts might have been elsewhere since he was not driving. Norman is some 5 years younger than McKay but I do not think that he would have hesitated to advise his driver if he had thought the the latter had missed something or had made a wrong decision and was driving into danger.

86. I accept Guard Shore's evidence. He was not in a position to know precisely where the train was in relation to Nuneaton and the speed restriction, and there was no reason for him to suppose that the driver was not handling his train properly.

87. The major share of the responsibility for the accident must lie with Driver McKay who, in the absence of any visual warning at the Warning Board, either forgot about the temporary speed restriction or came to a decision concerning its removal which he was not entitled to make. But he does not carry the responsibility alone. All those who failed to use the Warning Board propane gas equipment as it should have been used, or who condoned its mis-use, must share some of the responsibility. Those drivers and secondmen (and included in these there must be some who were not prepared, as others were, to admit to what they had seen) who saw lights out in the Warning Board and who took no action must share a larger proportion. And, in all probability, Senior Secondman Norman failed to give his driver his full support in observing signals and lineside features.

Remarks

88. In closing the public part of the Inquiry, on 20th June 1975, I said that part of my task would be to examine the present arrangements for the control of temporary speed restrictions. I emphasised that there were no grounds for supposing that the present system was inherently unsafe or inadequate: until the Nuneaton accident, it had been many years since the warning arrangements for temporary speed restrictions had last featured as a contributory factor in an accident. Nevertheless, I considered that the possibility of providing additional safeguards should be carefully examined. These Remarks are concerned with this examination.

Number of Temporary Speed Restrictions on British Railways

89. At any one time there are approximately five hundred published temporary speed restrictions in force on British Railways. This is a reasonably constant figure, there being no pronounced seasonal variation. The average duration of a published temporary speed restriction varies slightly between Regions but in total nearly half are for two weeks or less whilst a substantial percentage of the remainder average between two and three weeks.

Reliability of the existing Warning Boards and Indicator Boards

90. Soon after the accident the Stoke Division of London Midland Region carried out a survey of identified light failures at temporary speed restriction Warning Boards and Indicator Boards. The period covered by the survey was from 1st June 1974 to 31st May 1975. During this period there were 72 verified cases of light failures. Of these, 47 applied to Warning Boards (42 cases of one light having failed and 5 of two lights), 20 applied to Speed Indicator Boards, and 5 to Termination Indicator Boards. The reasons for failure of the Warning Board lights varied widely, from lamps being blown out by high winds to leaking or blocked gas-pipes, and from damaged mantles to vandalism. It was stressed that these were the cases that had been reported by train crews or otherwise identified and that the true total might be higher. At my request the Railways Board conducted similar surveys in other Regions and the results showed that the situation in the Stoke Division was probably not unrepresentative.

Previous Accidents in which the Warning Arrangements were a Contributory Factor

91. The last serious accident, before Nuneaton, in which the warning arrangements for a temporary speed restriction were an important factor was that at Cheadle Hulme Station, London Midland Region, on 28th May 1964. In this accident a Passed Fireman, who had not driven over the line concerned for some months, apparently forgot about the restriction, failed to see the Warning Board, and drove his train at about 45 mile/h onto a temporary bridge that was subject to a speed restriction of 10 mile/h. Three people, including 2 children, were killed in the ensuing derailment.

92. Other than this serious accident there have been occasional reports of trains having negotiated temporary speed restrictions at excessive speed, either because the driver had missed the Warning Board, or had failed to react to it properly. Remarkably, one of these occurred on the restricted section of the Down Fast line at Nuneaton only ten days before the accident under Inquiry. On this occasion the driver of the 11.45 Euston to Glasgow passenger express apparently misread his Notice and was under the impression that the temporary restrictions were on the Down Slow line only: he realised his mistake sometime after passing the Down Fast Warning Board and reduced his speed to about 40 mile/h before entering the 20 mile/h restriction. The train was not derailed but a passenger was badly scalded by spilled refreshments as a result of the shock to the train as it negotiated the curved part of the track at excessive speed. Since the Nuneaton accident the derailment of a freight train between Rowlands Castle and Havant (Southern Region), and an incident at Hadley Wood (Eastern Region) have both been attributed to a failure on the part of the driver to react to the Warning Board. Both these accidents occurred in daylight, and in both cases the Warning Board was correctly sited and the lights were burning.

Warning Arrangements for Temporary Speed Restrictions used by other Railway Administrations

93. During the months following the public Inquiry the Inspectorate, on my behalf, corresponded with the technical departments of the French, German, Swiss, Belgian, Dutch, Italian, Swedish, and Japanese railways in order to establish how each dealt with the warning arrangements for pre-planned speed restrictions. In each case our enquiries met with a speedy and generous response and we were given a great deal of helpful information.

94. All the railways questioned use some form of printed notice or book, equivalent to the British Railways printed Weekly Notice, to warn drivers of the existence of temporary speed restrictions and to give details. All the railways regard this as the essential basis of the warning system. All the railways also use lineside boards or markers, equivalent to the BR Warning Boards, Speed Indicators, and Termination Indicators. In most cases these boards are made of, or covered with, some form of reflective material and most are either externally illuminated or provided with steady or flashing lights.

95. The French, German, Swiss, and Belgian railways each has a widely used automatic warning system the equivalent of the British Railways AWS, linked to its signalling system. Each of these administrations uses its automatic warning system in conjunction with the advance warning boards for temporary speed restrictions. The Italian and Japanese state railways both have a fully developed cab signalling system in operation on their high speed lines and this is used to give full warning to the driver of all restrictions, permanent as well as temporary. The Swedish and Dutch railways are working actively towards the implementation of similar cab signalling systems.

96. Of the railways using their automatic warning system in conjunction with the Warning Boards, the German and Swiss Railways were of most direct interest since both employ an inductive system, similar in many respects to the BR system. The French and Belgian railways use a direct contact system. In March 1976, therefore, I accompanied a small party of senior officers from British Railways on visits to the Swiss and German railways. By courtesy of these administrations we were shown the methods used to give warning of speed restrictions and were able to discuss in detail the problems that had arisen in applying the automatic warning system as part of the warning process for temporary speed restrictions. These problems had in some cases been formidable, but they had been overcome.

Measures taken by British Railways following the accident

97. As described in paragraph 90, surveys carried out soon after the accident disclosed a degree of unreliability in the lighting of the Warning and Indicator Boards. The Chief Civil Engineer of British Railways analysed the faults and, following discussions with the manufacturers, an improved type of mantle with a double skin was produced. This mantle should be considerably more reliable than the one previously used and it is being introduced as standard throughout British Railways. In addition, a new reporting system has been introduced nationally by the Chief Civil Engineer which enables him to monitor the performance of all temporary speed restriction Warning Boards and Indicators.

Further Measures to Prevent a Recurrence

98. I remarked earlier that there were no grounds for supposing that the present system used on British Railways for informing drivers of the existence and location of temporary speed restrictions is inherently unsafe or inadequate. Nevertheless, the fact that the Nuneaton accident did occur, together with some evidence that drivers have on occasion either misread or misunderstood the printed Weekly Engineering Notice, suggests that some further action is necessary if the chances of a recurrence are to be made sufficiently remote. There is also the fact that train speeds are to increase on an increasing number of the main trunk routes during the next few years, and the potential consequences of a missed speed restriction will be that much more serious.

99. As regards the Weekly Engineering Notice and the arrangements for its distribution to train crews and others, the current system is a well-tried one and I can find little evidence that it is other than satisfactory. Any system of written notification is of course capable of minor improvement but in my view there is little to be gained from tinkering with a well-established system unless the gains expected are real and significant.

100. As regards the various trackside warning and indicator boards there is scope for improvement. The standards at present tend to vary, from the electrically-lit warning boards found on Southern Region through the gas-lit boards as used at Nuneaton to boards lit by oil lamps. And, as shown by the surveys carried out in the Stoke-on-Trent Division and elsewhere, the reliability of the lighting has in the past left something to be desired, although this should improve as a result of the measures already taken and noted in paragraph 97. I am glad to report that the Railways Board are now giving serious consideration to the production of an improved design of warning board, their studies including the design of the board itself, the possible use of reflective material in its manufacture, and the whole question of illumination.

101. These various improvements should reduce considerably the chances of a recurrence of the kind of accident that occurred at Nuneaton, but the basic risk would still remain. The Railways Board have therefore re-examined, in the light of the Nuneaton accident, studies they had made earlier of ways in which additional safeguards might be provided. These earlier studies had concentrated on two main approaches: the special control of signal aspects on the approach to a temporary speed restriction and, as an alternative, the provision of an Automatic Warning System (AWS) magnet in conjunction with the Warning Board. After re-examining these options, and considering the systems used by other railway administrations, the Board decided that the use of an AWS magnet gave the best promise of a practicable solution.

102. The use of an AWS magnet in this way would mean that a driver would receive an audible warning in the cab at or on the immediate approach to a Warning Board. This warning would need acknowledgement by the driver in default of which the train's brakes would be applied automatically. The principle is simple but, as other railways have discovered, there are difficulties. One is the relationship between the magnet at a Warning Board and that at a signal: if these are close together and if the signal is showing a green aspect the driver could be confronted with a confusing or contradictory situation. Interestingly, this particular problem is one that does not arise on the German or Swiss railways since their AWS systems give no cab indication if a signal is clear. Other problems concern the situation at junctions and complex track layouts where the approach to a temporary speed restriction might be from two or more lines and where a driver could receive a warning even though not proceeding over the restriction; and the question of temporary speed restrictions on single lines. There are a number of other practical problems that would have to be solved before a satisfactory system using the AWS magnet could be introduced.

103. In spite of these difficulties, I am pleased to report that the Railways Board has decided in principle to instal AWS permanent magnets in association with Warning Boards on the approach to temporary speed restrictions on lines where AWS is provided. Priority will be given to the high-speed Inter-City lines, and the start of the programme will be dependent on satisfactory solutions being found to the practical problems discussed above. The Board is confident that these problems can be overcome, and has undertaken to keep the Railway Inspectorate informed of the development of plans to implement their decision.

I have the honour to be,

Sir,

Your obedient Servant,

C. F. Rose,

Major.

The Permanent Secretary,
Department of Transport.

Note: Driver McKay appeared at Birmingham Crown Court on 9th June 1976 to answer six charges of manslaughter. After a three-day trial be was found Not Guilty and discharged.

EXTRACTS FROM BRITISH RAILWAYS BOARD "RULES FOR OBSERVANCE BY EMPLOYEES"

SECTION T, PART V. TEMPORARY SPEED RESTRICTIONS

21. *Method*

21.1. Procedure and equipment.

When possible, a temporary speed restriction must be pre-arranged and details included in the printed weekly Notice of Engineering Works. Warning Boards and Speed and Termination Indicators, as shown below, must be erected.

When, however, a temporary speed restriction has to be imposed at short notice, Handsignalmen must be appointed and if the restriction is to continue for a lengthy period a Special Notice must be issued and Warning Boards and Speed and Termination Indicators erected.

Warning Board

The Warning Board is an indication of a speed restriction ahead and the permitted speed is shown by white numerals on a black background above the board . . . . . After sunset and during fog or falling snow two yellow* lights must be placed as shown and the speed indication must be illuminated.

*Gas-lit Warning Boards will display white lights.

In certain cases Warning Boards will, in addition to exhibiting the yellow lights, be flood-lit.

Speed Indicator

Numerals in black on a white background denote the commencement of the restriction and the speed permitted . . . . . This indicator must always be illuminated.

Termination Indicator

'T' in white on a black background denotes the termination of the restriction. This indicator must always be illuminated.

A temporary speed restriction may be eased or withdrawn earlier than shown in the printed weekly Notice of Engineering Works, in which case the Warning Board and Speed Indicator will be altered to show the higher speed at which trains may run.

21.2. Not relevant.

22. *Duties of Track Chargemen*

22.1. Not relevant.

22.2. Not relevant.

22.3. *Positioning Warning Boards and Indicators*

22.3.1. When circumstances require the use of Warning Boards and Indicators, the Track Chargeman must arrange for the Warning Board to be sited a sufficient distance in rear of the Speed Indicator to enable Drivers to comply with the speed restriction, in accordance with the following table:—

Permissible Speed	*Distance*
65 m.p.h. and below	½ mile
70 m.p.h. to 95 m.p.h.	1 mile
100 m.p.h. and above.	1¼ miles

Where necessary, these distances must be extended on falling gradients. Where there is difficulty in maintaining the distance of ½ mile, it may be reduced in suitable circumstances such as on a rising gradient or where the permissible speed is low.
The Speed Indicator must be placed at the commencement of the speed restriction and the Termination Indicator must be placed at the end of the speed restriction.

22.3.2. Should the position of the Warning Board be in the vicinity of a fixed signal applying to the line affected, the Track Chargeman must arrange for the Warning Board to be placed as near as possible to such signal, having regard to the conditions laid down as to the distance from the Speed Indicator.

22.3.3. Not relevant.

22.4. Not relevant.

22.5. Not relevant.

22.6. Not relevant.

23. Not relevant.

24. *Duties of Signalmen*

24.1. Not relevant.

24.2. Not relevant.

24.3. Not relevant.

24.4. *Warning Boards and Speed Indicators—Failure of Lights*

When advised that any light at a Warning Board or Speed Indicator is out when it should be illuminated, the Signalman must arrange for it to be re-lit. Until he has been informed that the lights are again in order, he must arrange for all approaching trains to be stopped and Drivers told of the circumstances. If the Warning Board only is affected, it will not be necessary for trains to be stopped if one light and the speed indication above it, or the two lights without the speed indication, are illuminated.

25. *Duties of Drivers*

25.1. Not relevant.

25.2 *Warning Boards and Indicators*

25.2.1. A Driver observing a Warning Board must reduce the speed of his train to enable him to comply with the prescribed speed restriction over the portion of line between the Speed and the Termination Indicators. The Warning Board will be positioned an appropriate distance in rear of the Speed Indicator.

25.2.2. Not relevant.

25.3. Not relevant.

25.4. *Resuming normal speed*

The Driver must run at the reduced speed until the whole of his train has passed the Termination Indicator or the Handsignalman at the terminating point.

25.5. *Warning Boards and Speed Indicators—Failure of Lights*

If a Driver notices that any light at a Warning Board or Speed Indicator is out when it should be illuminated, he must stop and advise the Signalman. It will not, however, be necessary to stop specially if, in the case of a Warning Board, one light and the speed indication above it, or the two lights without the speed indication are still illuminated, but he should report the circumstances at the first convenient opportunity.

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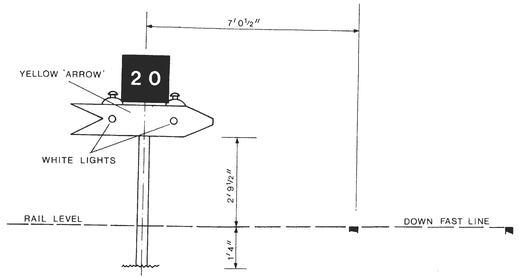
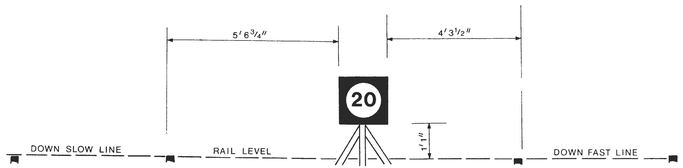
DERAILMENT AT NUNEATON (LONDON MIDLAND REGION) - 6TH JUNE 1975



WARNING BOARD AT 95M 788Y



SPEED INDICATOR BOARD AT 96M 1320Y

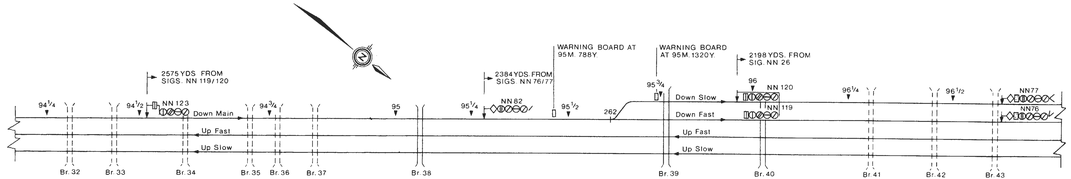
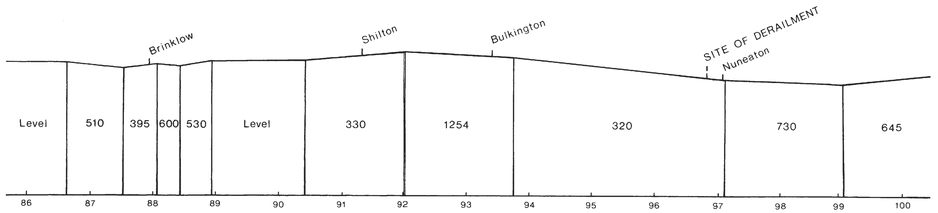
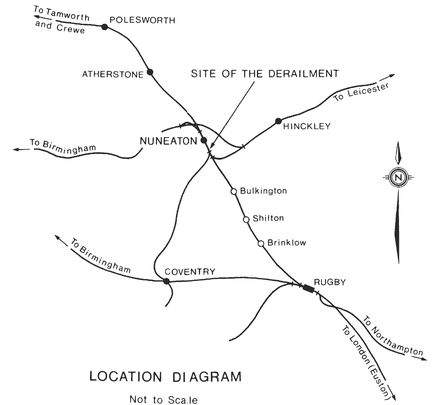


DIAGRAM SHOWING THE TRACK AND SIGNALS ON THE APPROACH TO NUNEATON

Not to Scale



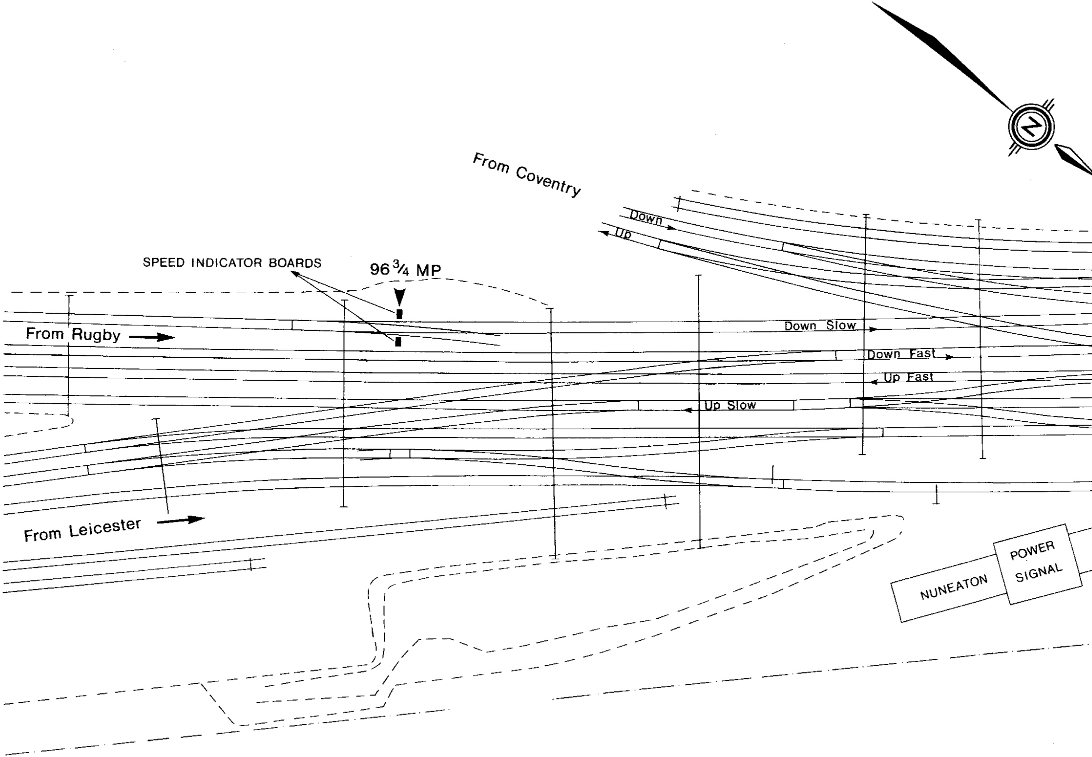
GRADIENT DIAGRAM



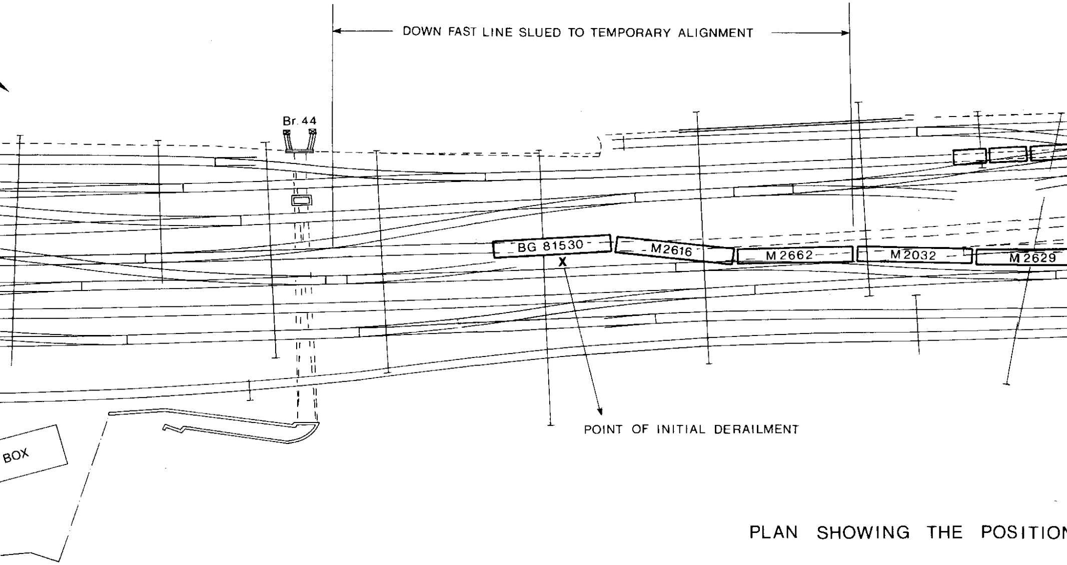
LOCATION DIAGRAM

Not to Scale

Drawing No.1

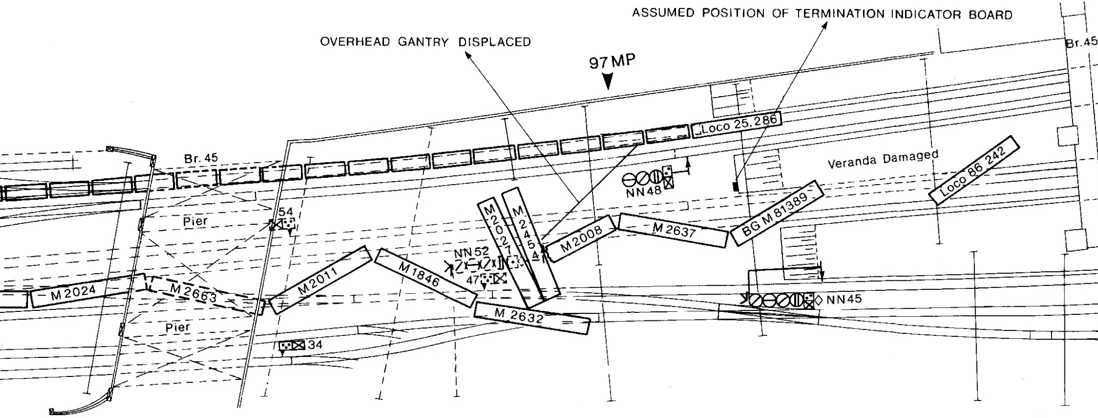

From Coventry
Down
Up
SPEED INDICATOR BOARDS
96¾ MP
From Rugby
Down Slow
Down Fast
Up Fast
Up Slow
From Leicester
NUNEATON
POWER
SIGNAL

DERAILMENT AT NUNEATON (LONDON MIDLAND REGION) - 6T

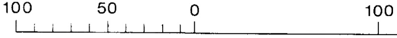

DOWN FAST LINE SLUED TO TEMPORARY ALIGNMENT
Br. 44
BG 81530
M2616
M 2662
M2032
M 2629
X
POINT OF INITIAL DERAILMENT
BOX

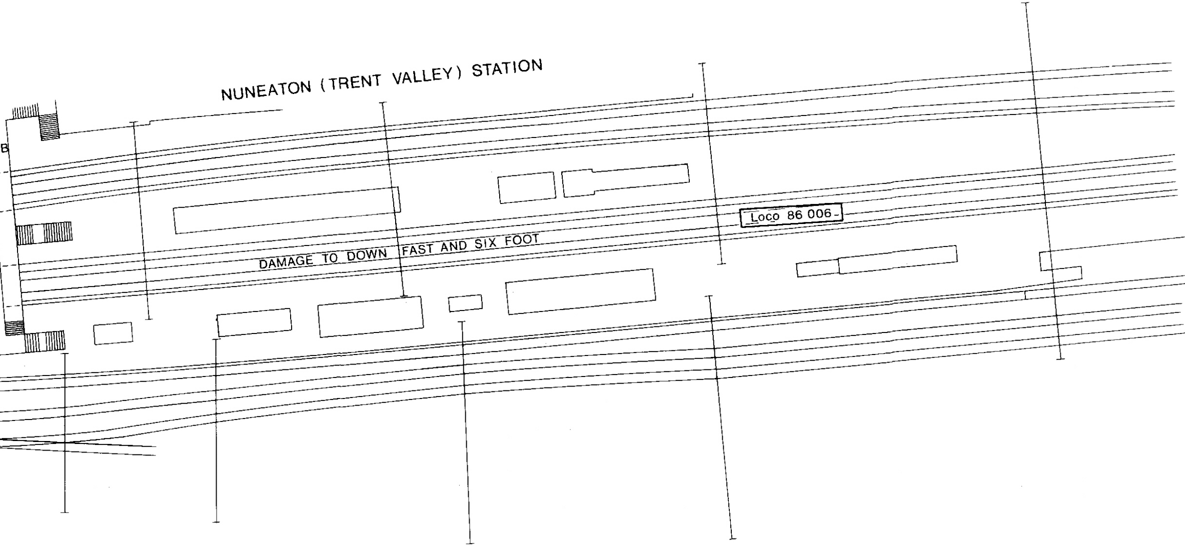
PLAN SHOWING THE POSITION

H JUNE 1975

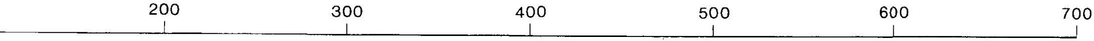

ASSUMED POSITION OF TERMINATION INDICATOR BOARD
OVERHEAD GANTRY DISPLACED
97 MP
Br. 45
Br. 45
Loco 25,286
Veranda Damaged
Loco 86 242
NN48
54
Pier
M 2027
M 2454
M 2008
M 2637
BG M 81389
NN 52
47
M 2024
M 2663
M 2011
M 1846
M 2632
NN45
Pier
34

N IN WHICH THE TRAIN CAME TO REST




NUNEATON (TRENT VALLEY) STATION
B
Loco 86 006
DAMAGE TO DOWN FAST AND SIX FOOT

Scale : 40ft. to 1in.


200
300
400
500
600
700

To Crewe

Drawing No. 2