DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

Report on the Collision that occurred on 4th July 1977 near Hall Road Station

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LONDON MIDLAND REGION
BRITISH RAILWAYS

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RAILWAY INSPECTORATE,
DEPARTMENT OF TRANSPORT,
2 MARSHAM STREET,
LONDON SW1.
20th March 1979.

SIR,

I have the honour to report for the information of the Secretary of State, in accordance with the Order dated 8th July 1977, the result of my Inquiry into the collision that occurred between two electric multiple-unit passenger trains at 20.52 on Monday, 4th July 1977, near Hall Road Station on the Southport–Liverpool Central line, in the London Midland Region of British Railways.

The 20.15 Southport–Liverpool Central train, consisting of a 3-car electric multiple-unit, was just starting away from Hall Road Up Main Home 1 signal, where it had been detained, when it was struck in the rear by the 20.30 Southport–Liverpool Central train, also an electric multiple-unit, comprising five coaches, at a speed of about 20 mile/h. There was no derailment of either train, but all the vehicles were damaged and slight telescoping occurred. The accident occurred as the direct result of irregular block working on the part of the signalman on duty at Eccles Crossing Signal Box.

The emergency services were summoned by the Electrical Control Operator, who was on duty at Hall Road Electrical Control and heard the sound of the collision, and both the Ambulance and Fire Services were at the scene of the accident within 7 minutes. I am glad to report that there were no fatal injuries, but a total of 35 persons, including the driver of the 20.30 train from Southport, were taken to hospital. Apart from two passengers who were detained overnight for observation, all were discharged after treatment. The uninjured passengers from both trains involved in the collision were taken forward to Liverpool at 22.14 by a diesel multiple-unit train.

Single line working was instituted over the Down Main line between Hall Road and Eccles Crossing at 22.30 and withdrawn at 00.02 on Tuesday, 5th July. The Allerton breakdown train arrived at the site of the accident at 00.19. All the telescoped and damaged vehicles were made fit to travel by 05.30 and placed in the carriage sidings at Hall Road by 06.35. It was necessary for various isolations of the conductor rails to be carried out in connection with the single line working and the work of the Allerton breakdown train. Both Up and Down Main lines were fully re-energised at 06.35 and normal working was resumed at 06.55.

The weather at the time of the accident was fine and clear, and visibility was excellent.

DESCRIPTION

The Site

1. Hall Road Station lies on the Liverpool–Southport line approximately 7¼ miles from Liverpool. Figure 1 at the back of this Report shows the track layout in the station area and the positions where the two trains came to rest, while Figure 3 shows the gradients between Formby and Hall Road Stations, and a location diagram is at Figure 4. The line from Liverpool to Southport is electrified on the conductor rail system at 650 volts DC, and the Working Instructions for DC Electrified Lines in the Liverpool area apply.

The Signalling

2. The signalling on this line is under the Absolute Block System on both the Up and Down Main lines from Bootle Junction at Liverpool to the termination of the line at Southport, Chapel Street. The majority of the signals are mechanically operated upper quadrant semaphores controlled from mechanically interlocked frames. There are no less than 11 public level crossings between Bootle Junction and Southport, one of these gated crossings being at Eccles Crossing Signal Box, which is also a block post some 300 yards on the Liverpool side of Formby Station. At the time of the accident no electrical or mechanical signalling controls existed at Eccles Crossing Signal Box other than the direct mechanical interlocking between Distant and Stop signals, the crossover and protective signals (both Main and subsidiary), and the level crossing gates and protecting signals. In particular, there were no controls on the block instruments.

3. Similarly, at Hightown Signal Box between Eccles Crossing and Hall Road Signal Boxes, there were Distant, Home and Starting signals on both Up and Down Main lines, but no electrical or mechanical controls existed at this signal box other than the direct mechanical interlocking between Distant and Stop signals. The block instruments had no controls at the time of the accident although a block switch was provided to allow the signal box to be closed.

4. Hall Road Signal Box, like Eccles Crossing Signal Box, controls a level crossing with wheel-operated gates interlocked with the signals protecting the crossing. On the Up Main line, on which the accident

occurred, a track circuit exists at the Up Main Starting signal (No. 6) which locks electrically the Up Main Home 2 signal (No. 5) in the 'Normal' position when the track circuit is occupied. Sequential interlocking in mechanical form exists between the Up Main Home 2 signal (No. 5) and the Up Main Home 1 signal (No. 4), and in electrical form between the Up Main Starting signal (No. 6) and Up Main Home 2 signal (No. 5). 'Home Normal' and Distant interlinking controls exist on the Up Main line block instrument and a Line Clear release, one pull, is provided on the Up Main Starting signal (No. 6). Controls of basically the same nature are provided on the signalling on the Down Main line at Hall Road.

5. The signal boxes referred to in this report, together with the approximate distances between the boxes, are as follows:

Name	*Approximate Distance*
Freshfield	
	1 mile
Eccles Crossing	
	2 miles
Hightown	
	2 miles
Hall Road	
	1⅝ miles
Waterloo	

6. At the time of the accident, because Hightown Signal Box was switched out, the lines between Eccles Crossing and Hall Road were being operated as one section under the Absolute Block System. The instructions to the signalman at Eccles Crossing Signal Box state that it is only necessary for the signalman to record the passing times of trains when Hightown Signal Box is open, but that full recording in accordance with the Absolute Block System must be carried out when that box is closed. At Hall Road the Instructions to the signalman specify that full recording must be carried out in the Train Register for all trains other than the electrical multiple-unit train service, for which only the arrival and departure times of trains need be recorded.

7. A diagram giving details of the signalling between Eccles Crossing, Hightown, and Hall Road Signal Boxes is given at Figure 2 at the end of this Report. A table summarising the signalling controls provided at Eccles Crossing, Hightown, and Hall Road Signal Boxes at the time of the accident is given below:

Signal Box	Eccles Crossing		Hightown		Hall Road	
Line	Down	Up	Down	Up	Down	Up
Berth Track Circuit	No	No	No	No	Yes	No
Berth track circuit places or maintain block at 'Train on Line'	No	No	No	No	Yes	No
Welwyn Control	No	No	No	No	No	No
Distant Interlinking	No	No	No	No	Yes	Yes
Home Normal Controls	No	No	No	No	Yes	Yes
Sequential Locking	No	No	No	No	Yes	Yes
Line Clear Releases	No	No	No	No	Yes	Yes

The Trains and Damage to Them

8. The 20.15, 2F88, Southport–Liverpool Central train consisted of a 3-car Class 502 electric multiple-unit set with a motor open brake second coach leading, a trailer open second coach in the centre of the train, and a driving trailer open second coach in the rear. Its length overall was 209 ft and its total weight was 90 tons. The 20.30, 2F88, Southport–Liverpool Central train was a 5–car Class 502 set. This again had a motor open second coach leading, followed by a trailer open second, a motor open brake second, a trailer open second and a driver trailer open second in the rear. Its length overall was 348 ft and its total weight was 155 tons. The braking characteristics of both trains were similar, a full application of the brakes producing an average deceleration of 1·5 mile/h/sec.

9. In the leading train, the rear bulkhead of the guard's brake van was extensively damaged by the leading end of the second coach which, located at the rear end of the leading coach, was forced upwards and into it. The coach end was pushed in at the bottom, the guard's van doors on both sides were damaged, as were the buffers, connection boxes, coupling shackles, and cables. The left hand top centre casting bolts were sheared on No. 2 bogie. The leading end of the centre coach was extensively damaged from being forced upwards and into the guard's van. The bolts in the centre casting at No. 1 end had sheared and the side bolster rubbing plates fractured: the brake rigging was damaged. The coach floor was fractured and buckled between door leaves. The rear coach suffered severely from the impact of the collision. The body was lifted off both bogies, No. 1 bogie being 3 ft. to the rear of its normal position and No. 2 bogie being 15 ins. to the rear with its top bolts sheared. The bogie frames were distorted. The driving cab front was damaged and the doors were jammed. The interior of the coach suffered considerable damage including the shearing of seat fastenings, interior sliding doors were displaced and glass broken, and the side panelling split and buckled. The body of the coach as a whole was badly distorted.

10. In the rear train, the frame at the front end of the leading coach was bent, No. 1 bogie centre casting top bolts were sheared and the casting was sloping down towards the rear bogie; the bolster was distorted. No. 2 bogie centre casting and a piece of plate approximately 2 ft. by 1 ft. 6 ins. were torn from the frame support. The guard's van end of the coach was forced up and into the second coach, extensively damaging the bulkhead, which was pushed in at the bottom, both guard's van doors were distorted and the buffers, connection boxes, coupling, and cables were damaged. The leading end of the second coach was extensively damaged by being forced downwards by the rear end of the first coach. Its side panels were ripped and distorted. The right-hand side bolster rubbing plates were broken, the end bulkhead pushed back, the buffers, draw gear, heating equipment, and the lighting boxes were smashed. The body side panelling was distorted. All the other coaches in the train had their side bolster rubbing plates broken and, in addition, the third coach had two bolts from the right-hand No. 1 bogie top and two bolts No. 2 bogie top centre casting sheared.

The Course of the Accident

11. The 20.15 train, running about 15 minutes late, was brought to a stand at Hall Road Up Main Home 1 signal where it was held for about 5 minutes. Just as the train started to move forward it was struck in the rear by the 20.30 train which had been admitted into the section under clear signals.

12. The driver of the 20.30 train, after passing Eccles Crossing, stopped at Hightown Station, after which he let the train's speed rise to the line speed of 60 mile/h. When he saw Hall Road Up Main Distant signal at Caution, instead of immediately reducing speed, he permitted the train to continue running at 60 mile/h and, on travelling round the slight curve near Hall Road Carriage Sidings, he observed a passenger train standing, as he initially thought, in Hall Road Middle Siding. It was not until the 20.30 train was within about 150 yards of the 20.15 train that the driver realised that the train was on his line, and made an emergency brake application. The 20.15 train was moving slowly away from the Up Main Home 1 signal when the collision occurred, which undoubtedly lessened the severity of the impact, but the 20.30 was still travelling at about 20 mile/h when it struck the rear of the 20.15 train.

Evidence

As to the Accident

13. The driver of the 20.15, Southport to Liverpool Central train was *Driver K. Pye*. After leaving Southport some 15 minutes late, the train had a clear run as far as Hall Road where it was held at the Up Main Home 1 Signal. He asked his guard to telephone the signalman from a telephone on the Down side of the track, but the signal cleared before he was able to contact the signalman and so he returned to the Up side of the train and Pye moved the train slowly forward to pick him up. As the train started to move forward, some 4 to 5 minutes after coming to a stand at the signal, the 20.30, Southport to Liverpool Central train collided with the rear of Pye's train. Pye estimated that the collision pushed his train forward approximately a train's length towards Hall Road Station.

14. *Guard D. Bourhill*, the guard of the 20.15 train from Southport, said that his train departed some 15 minutes late from Southport due partly to the late arrival of the incoming train and also because it was necessary to get a fitter to deal with a fault on the train. He confirmed that they had a normal journey from Southport to Hightown and that they had been brought to a stand at Hall Road Up Main Home 1 Signal. Bourhill said that after about a minute the driver shouted back to him to use the telephone at the depot outlet to remind the signalman of the position of the train. This particular telephone was not a normal signal post telephone but a ringing code telephone and Bourhill was able to contact the Hall Road booking office but not the signalman by the time the signal cleared.

15. Bourhill stated that as a result of the collision the centre vehicle was raised off its leading bogie and telescoped into the leading vehicle, and the doors of the former vehicle opened on impact. He immediately

instructed the passengers, some of whom were showing signs of distress, to remain in the train until the electrified third rail had been isolated. The Hall Road Electrical Control Room staff rapidly appeared on the scene from their nearby control room and Bourhill asked them to carry out the necessary isolations and also to summon the emergency services. He subsequently assisted with the evacuation of the passengers.

16. *Driver J. Woodcock*, who had been driving on the Southport line for about 9 years, was the driver of the 20.30, Southport to Liverpool Central train. He said that he left Southport on time with Driver Catterall travelling with him in the cab and he had a more or less clear path to Formby. On his arrival there the Eccles Crossing Up Main Home Signal cleared and he proceeded over the crossing, where he noted that the Up Main Starting signal was also clear. He stopped in Hightown Station, where all the signals were 'off' as the signal box was switched out, and he then proceeded towards Hall Road accelerating the train to about 60 mile/h. He noted that Hall Road Up Main Distant signal was at 'Caution' but allowed the train to coast past it at about 60 mile/h. He first saw the preceding train, which was in fact standing at Hall Road Up Main Home 1 signal when he was some 600 yards from it, but he thought it was in the middle siding adjacent to the running line and thus made no immediate application of the brakes. As he travelled round the slight curve near the Hall Road sidings he saw that the other train was standing on his line and he made an emergency brake application from a point he estimated to be 150–200 yards from the rear of the other train. Woodcock estimated that his train struck the rear of the other train at approximately 20 mile/h. He remained at the controls throughout but luckily only suffered minor injuries as a result of the collision.

17. I questioned Woodcock at length about his method of driving on the Up approach to Hall Road in view of the fact that the Up Main Distant signal was at 'Caution'. He agreed that the sighting distance of the Up Main Home 1 signal was some 400 yards and also that, if he did not see the signal for any reason, as was the case in this instance, he must assume that it was at Danger and brake accordingly. He was unable to explain why he did not apply his brakes at an earlier stage preparatory to stopping at the Up Main Home 1 signal.

18. On further questioning Woodcock agreed that it was rare to be brought to a stand at the Up Main Home 1 signal, although it quite frequently only cleared as a train was approaching it. He was quite unable to explain why he had seen the train and not the signal prior to the collision, even though he accepted that the sighting distance was some 400 yards and that it was at this point he would normally brake if the signal was at 'Danger'.

19. *Mr. T. Q. Noblet, the Electrical Rolling Stock Engineer, London Midland Region*, quoted the average braking distances for Class 502 stock. Travelling at 60 mile/h on a rising gradient of 1 in 400 a distance of approximately 500 yards would be required to bring a train to a stand. Similarly a brake application 220 yards from the back of the train ahead while travelling at 60 mile/h would have resulted in the speed of impact being about 40 mile/h. To reduce the speed on impact to 20 mile/h, as quoted by Woodcock and generally considered to be a reasonable estimate, would have required a full brake application at about 400 yards from the rear of the train. Woodcock was adamant that he did not collide with the train at 40 mile/h, nor did he think that he braked from as great a distance as 400 yards, since he was certain that he was roughly opposite the centre of the middle siding at Hall Road when he applied the brakes. If this was the case, his estimate of 60 mile/h as the speed when he braked must have been excessive and it is likely that he was only travelling at between 45 and 50 mile/h.

20. *Driver W. Catterall* was travelling as a passenger with Woodcock in the driving cab of the 20.30 train from Southport. He assured me he talked very little with Woodcock throughout the journey and in no way distracted him from his driving duties. On approaching Hall Road he estimated that he first saw the top of the train, looking across the bend in the line, some 500 yards distant and then saw it more clearly when between 350 and 300 yards from it. Catterall stated that he shouted to Woodcock who immediately applied the brakes. Catterall confirmed that the Hall Road Up Main Distant signal was at 'Caution' but that he had not noticed the position of the Up Main Home 1 signal, which must have been in the 'Off' position by that time, nor was he able to estimate the speed at the point of impact.

21. *Guard I. M. N. Oliver* was in charge of the 20.30, Southport–Liverpool Central train. He said that the journey was uneventful until the train approached Hall Road. He then stated "I remember the train going round the bend approaching Hall Road and feeling the brakes go on severely as if the train had been 'tripped'. I got up out of my seat and walked to open my window; as I did so there was a terrific bang and I was thrown on to the floor." Oliver was quite certain that the brake application was made while the train was still traversing the curve and he thought that the time between the brake application and the collision was 30–40 seconds.

22. Oliver confirmed that the Up Main line signals at Eccles Crossing were 'Off' but he had not observed the Up Main Distant signal as they approached Hall Road, nor did he observe Hall Road Up Main Home 1 signal until after the accident when it was at 'Danger'.

23. *Signalman J. C. Chadwick* was on duty at Eccles Crossing Signal Box on the evening of the accident. He had come on duty at 14.05, and he assured me that he had slept well the previous night, that his general health was good, and that he had no domestic problems; the last time he had gone to a doctor was in 1974. He had worked as a signalman at Eccles Crossing for two years and prior to that he had worked at Duke Street Crossing just south of Southport Station. He did not find the duties at Eccles Crossing particularly arduous, nor did he find them worrying.

24. Chadwick told me that on the night of the accident he received and acknowledged the 'Is Line Clear' signal for the 20.00, Southport–Liverpool Central train from the signalman at Freshfield and then forwarded the 'Is Line Clear' signal to the signalman at Hall Road, the signal box in advance, who acknowledged the signal and accepted the train. He then closed the level crossing gates across the road, cleared his signals and, after the train had passed, gave the 'Train out of Section' signal to Freshfield and sent the 'Train Entering Section' signal to Hall Road. Chadwick said that he followed the same procedure with the 20.15, Southport–Liverpool Central train except that, after giving the 'Train Entering Section' signal to Hall Road, he went to the lavatory. He did not wait to receive acknowledgement of the 'Train entering Section' signal, nor did he see the block instrument move to 'Train on Line' for the 20.15 train before going to the lavatory, which was located at first floor level outside the main door leading to the signal box.

25. He claimed that he heard no bell signals whilst in the lavatory and that, on his return, he received an 'Is Line Clear' signal from Freshfield for the 20.30, Southport–Liverpool Central train, which he accepted. Then he received the 'Train Entering Section' signal from Freshfield and, on looking at the Up Main block instrument for Hall Road, he saw that the needle was in the 'Line Clear 'position. He, therefore, forwarded the 'Train Entering Section' signal to Hall Road which, he assured me, was acknowledged by the Hall Road signalman. At 20.53 he received the 'Obstruction Danger' signal from Hall Road and the signalman there first told him that there had been an explosion on the train and then informed him that the 20.30 train had run into the back of the 20.15 train. He carried out the necessary protection by placing detonators on the Up Main line and maintaining his Up Main signals at Danger.

26. I questioned Chadwick at length about the way he worked his signal box, including the making of entries in the Train Register. He admitted that, at peak times, two or three trains often passed his signal box in quick succession and that he booked them together, trying to memorise the various times. He admitted that he made several entries at once in the period immediately before the accident. In particular, he entered 20.47 as 'Train out of Section' for the 20.15 train, when in fact he had not received a 'Train out of Section' signal nor even an acknowledgement of his 'Train Entering Section' signal from Hall Road, his excuse being that the block instrument was showing 'Line Clear' and "gave me the impression that he had already gone. I just booked what I considered to be the 'Train out of Section' signal."

27. Chadwick agreed that, on his return from the lavatory, as he had not heard the acknowledgement of his 'Train Entering Section' signal to Hall Road, nor seen the block instrument go to 'Train on Line', he had no evidence that the signalman at Hall Road had received and understood his 'Train Entering Section' signal for the 20.15 train. Further, he agreed that he had assumed that, because the block instrument was at 'Line Clear', this was his authority to clear his Up Main Starting signal for the 20.30 train to enter the section to Hall Road, despite the fact that he had never offered this train to the signalman at Hall Road.

28. Finally, I asked Chadwick whether at any time during the period he had been a signalman at Eccles Crossing he had adopted an irregular method of block working using his block instruments in the 'Line Clear' and 'Train on Line' positions only. He agreed that he had done this on occasions, the procedure being that as soon as a train had cleared the section, the signalman concerned turned his instrument to 'Line Clear' without waiting for the other signalman to offer him another train. He was not prepared to state how wide this malpractice was, but agreed that he had used this method of working with the signalmen in the signal boxes on both sides of his.

29. *Signalman F. A. Kershaw* was on duty at Hall Road Signal Box at the time of the accident. He explained that the 20.00 train from Southport passed normally and that he received 'Train out of Section' from Waterloo Signal Box. He was then offered, and accepted, the 20.15, Southport–Liverpool Central train from the Signalman at Eccles Crossing, he thought at about 20.40, although he could not confirm this as only the arrivals and departures of EMU services are booked in the Hall Road Train Register. As far as he could recall, he received a 'Train Entering Section' signal from Eccles Crossing at what he thought was about the normal interval after having been offered the 20.15 train.

30. Kershaw said he had given considerable thought to the events leading up to the collision. He was certain he had received a 'Train Entering Section' signal but was not sure whether this was for the 20.15 or the 20.30 train. It had been his intention to offer the 20.15 train forward to Waterloo but he had also had an empty stock train for Southport on the Down Main line and, as far as he could recollect, he cleared the Down Main line Starting signal and gave the 'Train Entering Section' signal to Eccles Crossing at the same time as he had received the 'Train Entering Section' signal from Eccles Crossing. He then replaced the Down Main

Starting signal and he believed that it was then that he noticed for the first time the train standing at the Up Main Home 1 signal: he then went and opened the level crossing gates and cleared the signal. He went to the block instruments to offer the train to Waterloo, but he then heard the noise of the collision and observed a cloud of dust.

31. Kershaw was adamant that the Up Main line block instrument for the Eccles Crossing-Hall Road section was showing 'Train on Line' at the time of the accident. He was also certain that the 20.30 train had never been offered to him by the signalman at Eccles Crossing. Nor, as far as he was aware, had he received the 'Train Entering Section' signal for it.

32. Even though Kershaw only maintained skeleton bookings in the Train Register for EMU Services, he found that on occasions the bookings could not be carried out straight away and that they had to be filled in from memory later.

33. I questioned Kershaw about his method of block working and, in particular, asked him if he had ever adopted a method of working using only the 'Line Clear' and 'Train on Line' positions of the block instruments. He denied ever being a party to such a method of operating but added "No sir, they always offer a train. The way trains are offered to us it more or less means, with slight delay, that the needle is practically always at 'Train on Line' or 'Line Clear'." When I pressed him about the practice of leaving the instrument at 'Line Clear', he said that he did not think he had done so. When I informed him that Signalman Chadwick had admitted doing this on occasions between Eccles Crossing and Hall Road he agreed that it might have occurred, but be could not recollect any such occasion. Again, while not openly admitting to operating this irregular method of block working, he agreed that he might have done so, but he did not recall any specific occasions when this had occurred.

34. *Supervisor J. W. Mawer,* based at Southport, arrived at the site of the accident at about 21.25. After making the necessary arrangements concerning the introduction of single line working, he visited the signalmen both at Hall Road and Eccles Crossing and, although not officially questioning them, he concluded from their conversations that there had been only one 'Train Entering Section' signal sent for the two trains and only one accepted. (Evidence continued in paragraph 44.)

35. *Mr. J. B. W. Hall, Area Manager, Southport,* having been informed of the accident by Mr. Mawer, first visited Eccles Crossing Signal Box where he found the Up Main block instrument to Freshfield showing 'Train on Line' for the train standing in Formby Up platform, while the Down Main block instrument needle, from Freshfield, was in the 'Normal' position. The Up Main block instrument from Hall Road was at the 'Train on Line' position and there was a collar on the Up Main Starting signal lever (No. 4). The Down Main line instrument to Hall Road was in the 'Normal' position.

36. Mr. Hall said that he questioned Signalman Chadwick as to what had happened and the latter said that he had allowed two trains to be in the Eccles Crossing-Hall Road section at the same time. He asked Chadwick the position of the Up Main block instrument from Hall Road when he cleared his Up Main signal for the second train to enter the section and was told that he had not noticed the position of the needle. Chadwick appeared to be in a highly nervous state and asked Mr. Hall why the Hall Road signalman had not sent the 'Obstruction Danger' signal "when he got my second 'On Line' as I could have done something about stopping the train at Hightown".

37. Mr. Hall said he examined the Eccles Crossing Train Register, paying particular attention to the entries for the last two Up trains. He could not remember all the details, but he did notice that an entry in the final column showing the time of 'Train out of Section' for the 20.15 train from Southport as 20.47 coincided with the time of the 'Train Entering Section' signal for the 20.30 train from Southport. The entries were not in a firm hand like the previous ones and looked as though they might have been made by Chadwick in his nervous state after the accident.

38. Mr. Hall subsequently visited Hall Road but concentrated his attentions on the site of the accident and ensuring that all the necessary arrangements had been made for dealing with the passengers and for the introduction of single line working. He visited the signal box during the course of the evening but did not pay any further attention to the position of the block instruments or the signal levers, nor did he examine the Train Register. (Evidence continued in paragraph 54.)

39. *Signal and Telecommunications Supervisor D. Jackson* visited Hall Road Signal Box at 22.23 on the evening of the accident. He found all the levers 'normal' with the exception of Nos. 1 and 2 gate lock and Nos. 25 and 26 facing point lock levers which were reversed: both block instruments were showing 'Train on Line' and the block switch was open. Accompanied by Mr. Arling, the Operating Officer, he tested the signalling at Hall Road, establishing that No. 4 lever, the Up Main Home 1 signal, had to be 'Normal' before a 'Line Clear 'signal could be given to Eccles Crossing, as did the arm of No. 3 lever, the Up Main Distant signal. A test of the Up Main Distant signal lever against the Up Main Home 1, Up Main Home 2, and the Up Main Starting signal levers proved that the Distant signal lever could not be reversed until all three of the other

signal levers had been reversed sequentially. To check the absence of controls on the Eccles Crossing Up Main Starting signal, he turned the Up block instrument at Hall Road to the 'Line Clear' position and asked the signalman at Eccles Crossing to check that he could pull and replace the lever (No. 4) more than once; this the signalman confirmed to be the case.

40. Supervisor Jackson also confirmed that he had carried out sighting tests on the Up Main Home 1 signal at Hall Road. In daytime, when visibility was good, the signal could be clearly seen from the Up Main Distant signal, a distance of some 835 yards, although one had to look slightly across a field as the line was on a curve between the Distant and Home signals.

41. *Senior Technical Officer R. Nield* said that he had visited Hall Road Signal Box on 5th July to test the signalling controls on the Up Main line. He confirmed the evidence of Mr. Jackson and carried out insulation tests on the block instruments to check for possible contacts between the Up and Down instruments, but all was found to be in order.

42. Mr. Nield then visited Eccles Crossing Signal Box where tests confirmed that the locking was limited to that described in paragraph 2 and the controls to those shown in the table in paragraph 7. Thus, there was no physical or electrical restraint to prevent the signalman from allowing any number of trains into the Eccles Crossing-Hall Road section in quick succession if the Absolute Block Regulations were not strictly observed. Mr. Nield also confirmed that the block instruments were working correctly when Hightown Signal Box was closed. From all the tests carried out he was satisfied that there was no fault in the signalling equipment that could have contributed in any way to the collision.

43. *Mr. A. R. Brown, the Chief Signal and Telecommunications Engineer, London Midland Region,* stated that he was satisfied that the tests carried out by his staff had proved that the signalling equipment, including the block system, was in good working order. The line was signalled under the Absolute Block Regulations, and, when these were correctly applied, they ensured that only one train was permitted in each section of line at any one time. Electrically operated block instruments were provided in the signal boxes at the ends of each section which enabled the signalman to accept or to refuse a train into his section. In mechanical signal boxes additional electrical controls could be added which gave further safeguards against possible human error. These prevented the signal into the section ahead being cleared unless the instruments had been placed to 'Line Clear' and then that signal could be cleared only once for each acceptance. After the passage of a train the protecting signals had then to be replaced to the 'On' position before a further acceptance could be given. These controls were known as 'Line Clear, One Pull' and 'Home Normal Contact'. These controls were installed at Hall Road and in most of the mechanical signal boxes on the Liverpool–Southport line. This was not the case at Eccles Crossing, however, or at Hightown or Waterloo, the block instruments not being interlocked with the signals at any of these signal boxes. It was the British Railways Board's policy to equip all mechanical signal boxes with these block controls as finance and resources became available, and the three signal boxes referred to above had, prior to the accident, been programmed for modification in 1978.

Evidence as to the Operation of the Signalling on the Southport–Liverpool Line

44. Continuing his evidence, Mr. Mawer stated that he had been acting as a relief Area Movements Inspector for about ten months prior to the accident. He accepted that the records, which showed that he had visited Eccles Crossing Signal Box 18 times between 4th January and 3rd July 1977, were correct and, in answer to my questions, he said that his normal practice on these occasions was to check that the signalman had arrived on duty at the correct time, that the entries in the Train Register book on his arrival at the signal box corresponded with the indications on the block instruments, and that the entries in the Train Register book for the previous few days appeared to be correct. The main irregularities that could be picked up from such an examination were whether a man was late on duty, any discrepancies in the times that adjoining signal boxes should open and close, any alterations in the Train Register, any emergency signals which had been exchanged and the reason for them, and miscellaneous entries in the book which might contain relevant information concerning the operation of the line. He could not recall finding any irregularities in either the Eccles Crossing or the Hall Road Train Registers.

45. I asked Mr. Mawer if he was aware that an examination of the Train Register at Eccles Crossing over a period of two weeks immediately before the accident, had revealed 5 fictional entries, 17 missing lines of entry, 5 missing items of entry and 68 discrepancies; also entries that had to be checked with the Train Registers of the adjacent signal boxes revealed 19 irregular entries, one wrong 'Is Line Clear' record and 6 irregular 'skeleton' entries. At Hall Road during the same period there had been a total of 2 fictional entries, 8 missing lines of entry, 7 missing items of entry, 45 discrepancies in train times and one wrong 'Is Line Clear' record. He told me that he was not aware of these irregularities, nor did he think that he would have picked them up during a visit to a particular signal box, but he agreed that the extent of the irregularities

which had now come to light did not fill him with confidence concerning the safety and efficiency of the operation of the line. He still felt, however, that the checks he had carried out at Eccles Crossing and Hall Road Signal Boxes had been correct, but he agreed that the figures quoted indicated that the supervision of the signalmen on the Liverpool–Southport line had not been effective.

46. I then explained to Mr. Mawer that Signalman Chadwick had frankly admitted to me that on certain occasions in the past he had adopted an irregular method of Absolute Block Working. Mawer stated that he had first come across this irregular method of working in the Wigan area in 1938 and then as a supervisor on the Southport line in 1968 when disciplinary action was taken against one of the signalmen for doing this; he had spoken to the signalman about the danger of adopting this irregular practice. He had not come across any evidence of this type of working, however, since he had been carrying out his present duties on the Southport line, although he admitted that he thought it might have been going on. In these circumstances he agreed that it would have been sensible to have warned all the signalmen that they were on no account to adopt such practices.

47. Mr. Mawer confirmed that, as the relief Area Movements Inspector, it was his duty to call in to check and compare the Train Registers from the various signal boxes in his area; a duty which had originally been laid down in an Instruction issued in 1968. The last time that this duty had been carried out on the Southport line to his knowledge was when he was previously carrying out his present job in 1973. The checking duty appeared to have been discontinued from about that time and he had not called in and compared any Train Registers during the current period of ten months as relief Area Movements Inspector. On being told of the large number of discrepancies and errors found in Train Registers on the Liverpool–Southport line during a two week period prior to the accident, he agreed that, if the Train Register checks had been carried out, the errors and discrepancies would have been found and the low standard of signalling on the line would have been brought to everyone's notice far earlier. Mr. Mawer confirmed that the original Instruction of 1968 regarding the checking of Train Registers was in writing and was still on the file. Thus, he had only to check the file to see if the Instruction was still in force.

48. *Mr. E. Andow, the Traffic Assistant 'D' at Southport*, explained that he was responsible to the Assistant Area Manager for the stretch of line between Birkdale inclusive to Sandhills inclusive which has 9 signal boxes, one crossing box, and 13 passenger stations; his area had only been extended to include Eccles Crossing Signal Box on 2nd May 1977 with the closure of Liverpool Exchange. He said that he had no reason to doubt that between September 1976 and 3rd July 1977 he had visited Hall Road Signal Box 53 times, and between 2nd May and 3rd July 1977 had visited Eccles Crossing Signal Box 8 times. When he visited a signal box his first move was to ensure that the block instruments agreed with the entries in the Train Register. He then checked the Register for correct lines of entry, any abnormal signalling such as 'Obstruction Danger', or 'Stop and Examine', also any engineers' possessions, and the signing on and off duty.

49. I quoted the number of errors (121) that had been found in the Eccles Crossing Train Register during the two weeks prior to the accident, and also the 63 errors found in the Hall Road Train Register over the same period, explaining that the majority could only be found by comparing the Train Registers from both signal boxes. He agreed that this indicated that the operation of the line by the signalmen left much to be desired. He stated that the Train Register six-monthly checks were normally carried out by the Area Movements Inspector who was directly responsible to the Area Manager. He had nothing to do with them and could not explain why they had been discontinued in recent years.

50. Lastly, I asked Mr. Andow whether he had encountered any irregular block working during the period of just over two years that he had worked on the Southport line, informing him of the frank admission by the Eccles Crossing signalman that he had carried this out on a number of occasions. He said he had not encountered any such working but could not explain why it had not come to his notice.

51. *Mr. A. J. Quirke, the Assistant Area Manager, Southport*, said that his duties included both operating and commercial functions; he was responsible for the line from Southport to Sandhills. He considered signal boxes and checking signalmen's working was the duty of his Traffic Assistant, although he also visited signal boxes and agreed with the records that he had visited Eccles Crossing 18 times in the year before the accident and Hall Road 7 times. When he made such visits, he checked the current entries in the Train Register against the block instruments, that the signal box was being visited at the correct periodicity by his staff and that the signalman, while he was there, was working in accordance with the Rules and Regulations. During the period of well over two years that he had been Assistant Area Manager he had only found one incorrect entry in a Train Register and had never found any irregularities in the working of any of the signal boxes.

52. Mr. Quirke was most surprised to learn of the large number of errors found in the Eccles Crossing and Hall Road Train Registers during the two weeks prior to the accident, and said that it clearly showed that the checking of the Train Registers could not have been carried out correctly by the Area Movements Inspector; had this been done, the signalmen's errors would have been revealed. On being asked whether it

was not part of his job to ensure that the six-monthly comparative checks of Train Registers were being carried out by the the Area Movements Inspector, Mr. Quirke stated that he had questioned this soon after taking over his present job. He had asked the Area Manager whose responsibility it was, and had been told that it was that of the Area Movements Inspector. Further, he was told that the checks were not currently being carried out, had not been done since 1973, and were no longer required. Rightly or wrongly he accepted this advice from his Area Manager.

53. Finally, I explained to Mr. Quirke the evidence I had received earlier in my Inquiry concerning the irregular block working that had been going on, in any event between Eccles Crossing, Freshfield, Hightown, and Hall Road, and asked him if he had seen any evidence of this. He said that he had neither come across anything to suggest that irregular block working was occurring, nor had he heard any rumours that irregularities of this type were taking place.

54. *Mr. J. B. W. Hall, the Area Manager, Southport*, was examined at great length about the operation of the signalling on the Liverpool–Southport line in general, at Eccles Crossing and Hall Road in particular, and the duties of his supervisory staff in checking that the signalmen concerned were operating the line efficiently and strictly in accordance with the Absolute Block System. He said that he had been the Area Manager at Southport for three years at the time of the accident and prior to that had worked with the Chief Personnel Manager, Western Region, for a year, had instructed in Management Practices at the School of Transport, Derby, for two years, had been Area Manager, Penzance, and before that Area Manager, Machynlleth. Prior to this he had had no operating experience, having started his railway career as a Motive Power trainee with the Chief Mechanical and Electrical Engineer, mainly concerned with the mechanical side of locomotives. As far as he could recall, he had never attended any course of instruction regarding signalmen's duties or the duties of an Area Manager's staff supervising signalmen.

55. Mr. Hall agreed that, in addition to those of his staff who had a definite responsibility for visiting signal boxes and checking the work of the signalmen, he had paid visits to many signal boxes himself since taking over as Area Manager, Southport, including 3 to Eccles Crossing Signal Box and 4 to Hall Road Signal Box in 1977 prior to the accident. He explained that he regarded his signal box visits as general ones to let the signalmen know who he was and to enable him to get to know the signalmen. He did not consider that it was his duty to check the block instrument indications against the latest entries in the Train Registers. He would merely look at the Train Register to see what trains had been delayed or cancelled, if any delays had taken place, and if so why, or if any exceptional matters had been recorded in the Register so that he could investigate what had happened.

56. I questioned Mr. Hall concerning the cause of the very large number or errors found in the Train Registers on the Liverpool–Southport line during the fortnight before the accident. He agreed it must have come about through carelessness by the signalmen in their basic duties and also by the carelessness of the supervisory staff in checking the signalmen. None of his staff had reported any general shortcomings on the part of the signalmen on the Southport–Liverpool line, although Mr. Mawer, who reported directly to him, had been concerned about the tendency of signalmen not to take action if drivers reported a bump when travelling on the line, and the failure of engineers to take possession correctly in accordance with Section T of the Rule Book. As a result of this, a general letter was sent instructing all signalmen to be more careful, but he did not consider it sufficiently serious to inform the Divisional Office at Liverpool.

57. On being questioned about the instructions regarding the cross-checking of Train Registers, Mr. Hall could not remember having seen or having had his attention drawn to any such instructions prior to the accident. On being told that Assistant Area Manager Quirke in his evidence had stated that he had specifically raised the question of carrying out the six-monthly checks with him, Mr. Hall stated that he could recall a query but he could not remember in what circumstances it was made. He felt that it was most unlikely that he would have told Mr. Quirke that it was unnecessary to carry out these cross-checks of Train Registers if the latter had given him a strong reminder regarding the instruction issued on 3 April 1968 and the subsequent letter issued in 1974, but that he would have initiated enquiries to find out what the situation was. He was surprised that Mr. Quirke considered that it was "the Area Manager's decision that it was not necessary to undertake them".

58. Mr. Hall agreed that no certificates regarding the checking or cross-checking of Train Registers had been forwarded by his staff to the Liverpool Divisional Office since May 1973, nor could he find any evidence on his file to show that the latter Office had written to him subsequently requesting them to be forwarded.

59. I questioned Mr. Hall on the irregular block working that had been revealed by the signalman at Eccles Crossing and partially admitted by the signalman at Hall Road. He said that he was totally unaware of this practice before the accident, but there had been allegations since then which he had investigated with his staff who stated that they had never come across any irregular block working. Mr. Hall stated, however, that a practice he had come across during the peak hour working was for a signalman receiving 'Train

Out of Section' for one train to offer another train and obtain 'Line Clear' even if he had not yet received the 'Train Entering Section' signal for it from the signal box in rear. He and his Assistant had immediately taken action to stress to all signalmen that this was incorrect and must be stopped forthwith.

60. Finally, Mr. Hall was asked if he was satisfied with the standard of his subordinates on the operating staff side, in particular the Assistant Area Manager, the Traffic Assistant and the Area Movements Inspector, and if they had the ability to undertake effectively the job of supervising the signalmen which was vital to the safe working of the railway. He said that he had no reason to suppose that any of them were incapable of carrying out their duties effectively, and Mr. Mawer's knowledge of and ability in signalling matters was far superior to those of any other member of his staff.

61. *Chief Inspector J. Brownlow* said that he had been the Chief Movements Inspector for the Liverpool Division since 1974. He explained that, although he had no direct responsibility for the signalmen of the Division, as this was delegated to the Area Managers, he did visit signal boxes to check the efficiency of the operating. He had not visited many of the signal boxes in the Southport Area during the year leading up to the accident, since most of his time had been taken up with the commissioning of the Liverpool Loop and Link lines. He had paid visits to Hightown, Hall Road, and Waterloo Signal Boxes, however, and had discovered a signalling irregularity at the last named signal box which he instructed the Area Movements Inspector to deal with as soon as possible: the other two boxes appeared to be operated correctly.

62. Mr. Brownlow had personally checked the Eccles Crossing and Hall Road Train Registers after the accident and was extremely concerned at the large number of irregularities he found. He had subsequently been seconded to Southport and had taken action at the request of the Divisional Operating Superintendent to improve the standard of signalling on the line: subsequent checks had shown that there had been a tremendous improvement in a short period of time.

63. He was unaware that the Train Registers in the Southport Area Manager's area had not been checked since 1974, as the returns of these checks went direct to the Divisional Operating Superintendent's Accident Section and not through him.

64. Finally, Mr. Brownlow assured me that at no time prior to the accident had he found any indication of irregular block working with the signalman merely using the 'Line Clear' and 'Train on Line' positions on their block instruments. Had he found any evidence of this he would have taken immediate disciplinary action with the signalman concerned.

Evidence as to Liverpool Divisional Office control of Area Managers' cross checking of Train Register records 1968–77

65. *Accident Clerk C. W. M. Simpson* said that he had been in his present job with the Accident Section of the Liverpool Division since June 1971; he was responsible direct to Mr Carruthers, the Senior Accident Clerk. He agreed that he maintained the Train Register Check Record Book and that he entered the details of certificates received from the Area Managers. He confirmed that those from the Area Manager, Southport, had ceased to be submitted in 1973 and that he had not drawn this to the attention of Mr. Carruthers, Mr. Arling, the Operating Officer, or any other senior person in the Divisional Office, or the fact that a number of other Area Managers within the Division had also ceased to submit these certificates.

66. Mr. Simpson said that no-one had explained to him why Train Registers had to be checked from time to time, nor did he pay much attention to this work. He did not attend meetings between the Operating Officer or the Divisional Operating Superintendent and the Area Managers, nor did he see the notes of such meetings which might well have referred to Train Register checks. Finally, he had not seen the instructions on this subject issued from the Regional Office to the Divisional Office, or from the Divisional Office to the Area Managers' offices. Mr. Carruthers normally saw the certificates before they were passed to him to record in the book, but he had never commented on their use or importance.

67. *Mr. T. A. Carruthers* said that he had been the Senior Accident Clerk in the Liverpool Division since 1965. He agreed that his duties included the general supervision of Mr. Simpson and another clerk, Mr. Lambert, but that he was able to devote very little time to this due to the pressure of other more important work. He also agreed that he should have examined the Train Register Check Record Book from time to time to ensure that the Area Managers were carrying out their work correctly, although, in his opinion, these certificates were of very little significance and thus not important enough to check. I suggested to Mr. Carruthers that all the certificates were required or none and that he should have approached the Operating Officer with a view to getting a decision. From further questioning it was apparent that he had done nothing despite being reminded of the existence of the certificates by those still passing through his hands. His attitude to the recording of the certificates in the book was summarised by his comment "... until the accident

occurred at Hall Road and someone said 'Are there some papers concerning the checking of Train Registers?', then that started a hunt and these have been revealed".

68. I questioned Mr. Carruthers concerning a certificate from the Area Manager, Southport, dated 3rd September 1970 and signed by Mr. Mawer. The certificate stated that checks on various signal boxes had revealed discrepancies in recorded times which could not be accounted for by differences in clocks, a case of irregular change of duties, and a number of cases of signal boxes being closed before the rostered closing time. Another report, listing many more irregularities, ended by stating that the Area Manager, Southport, had been informed of the irregularities, or that action had been taken against individuals by sending letters drawing attention to their faults. Both these reports were, in my opinion, sufficiently serious to have been shown to the Divisional Operating Officer or to the Divisional Operating Superintendent, but there were no initials or other indication that they had been seen by either Officer. Mr. Carruthers agreed that both his Senior Officers normally initialled all correspondence drawn to their attention and that the absence of any such signature almost certainly indicated that they had not seen the papers.

69. *Mr. J. E. Arling, the Operating Officer, Liverpool Division,* had been in his present post since January 1974. He said that at no time prior to the accident had either he or his Chief Inspector, Mr. Brownlow, observed any irregular block working during their visits to signal boxes on the Southport line, nor had his attention been drawn to any irregularities by the Area Manager.

70. Mr. Arling, while accepting certain shortcomings within his Accident Section, felt that, with a very experienced Head of Section, like Mr. Carruthers, it was not necessary to lay down in detail what certificates were recorded, or which irregularities should be reported to him. I pointed out to him that in fact two matters had gone wrong in his Accident Section in connection with the submission of Train Register check certificates. First, no action had been taken when certificates had not been received by the Section. This appeared to date back to 1973 or 1974 for nearly all the Areas in the Liverpool Division, with the exception of the Area Manager, Liverpool, and the omission did not appear to have been reported to the Head of Section, let alone to him. Second, and even more serious, in the case of the Southport Area, a number of irregularities found in Train Register checks and reported on the certificates had not been drawn to his attention or to that of Mr. Whelan, who was then Divisional Operating Superintendent. He put the reasons for these failings down first to the inexperience and lack of formal training of Mr. Simpson and second to the excessive pressure of work on Mr. Carruthers during the period.

71. Mr. Arling explained that he was well aware why the cross-checking of Train Registers was introduced in 1958 and that in 1974, within the first three weeks of being in his present appointment, a letter was sent out to all Area Managers to ensure that the checking of Train Registers was still taking place. Subsequently he had left the supervision of this matter to Mr. Carruthers. He now realised that he should have regularly checked that the necessary monitoring was being carried out. He maintained a check list to make sure that he missed nothing when visiting a train crew depot, or some similar installation, and he realised in retrospect that it was unfortunate that he had not kept a check list for the Divisional Office.

Conclusions

The Collision

72. This collision was primarily the responsibility of the signalman on duty at Eccles Crossing Signal Box, Signalman J. C. Chadwick, who allowed the 20.30, Southport–Liverpool Central passenger train to enter the Eccles Crossing to Hall Road section before he had received the 'Train Out of Section' signal for the previous train, the 20.15, Southport–Liverpool Central passenger train, from the signalman at Hall Road Signal Box. According to his evidence, Chadwick went to the lavatory immediately after giving the 'Train Entering Section' signal for the 20.15 train to Hall Road Signal Box. He did not wait to receive the acknowledgement of that signal, nor to see the Hall Road block instrument turn to 'Train on Line', before vacating the operating floor of the signal box.

73. According to Chadwick's evidence, he heard no bell signals whilst in the lavatory and, on his return to the signal box, he accepted the 20.30 train from Freshfield. He noted that the repeater of the Hall Road Up Main block instrument was in the 'Line Clear' position, although he had not offered a train to Kershaw since the 20.15 from Southport, and quite wrongly assumed that this was his authority to clear his Up Main Starting signal for the 20.30 train to enter the section to Hall Road.

74. Chadwick was adamant that he forwarded the 'Train Entering Section' signal to Hall Road for the 20.30 train and that this was acknowledged by Kershaw, who also turned the block instrument to 'Train on Line'; Kershaw's evidence supports this. Unfortunately, the full bookings in the Train Register at Eccles Crossing and the skeleton bookings at Hall Road are valueless as evidence of the events leading up to the accident as the entries were made after the accident had occurred.

75. In my opinion, the events leading to the accident occurred in one of two ways:

(i) Chadwick sent the 'Train Entering Section' signal for the 20.15 train to Kershaw at Hall Road and this was never acknowledged or the block instrument turned to 'Train on Line', possibly because the latter was operating his level crossing gates, or carrying out some other duty. Thus the 'Line Clear' indication on the Hall Road Up Main block instrument in Eccles Crossing Signal Box, seen by Chadwick on his return from the lavatory, was the acceptance given for the 20.15 train. His failure to obey the Absolute Block Regulations and check the position regarding the Up Main line between Eccles Crossing and Hall Road places the responsibility for allowing the second train into the section entirely with Chadwick.

(ii) Chadwick openly admitted that at times he had adopted an irregular method of block working with the signalmen in the adjacent signal boxes, including Hall Road. The irregular procedure being that, as soon as a train cleared a section, the block instrument would be turned to 'Line Clear' without waiting for the signalman in the box in rear to offer another train. Kershaw, while not openly admitting that he had adopted this practice, gave me the impression that he had done so on occasions in the past. If this irregular method of block working had been used on the evening of the accident, Chadwick, on returning from the lavatory and seeing the Up Main line Hall Road block instrument at 'Line Clear', would have assumed that the 20.15 train had cleared the Hall Road section and that Kershaw had immediately turned the block instrument to 'Line Clear', indicating that Chadwick could send another train into the section.

76. There is no evidence, however, that Kershaw had irregularly turned the block instrument from 'Train on Line' to 'Line Clear' while the 20.15 train was still in section, and I consider that the 'Line Clear' indication irregularly taken by Chadwick as authority to send the 20.30 train into the section ahead was that given by Kershaw for the 20.15 train. The full responsibility for this gross irregularity must, therefore, lie with Chadwick.

77. The responsibility for the severity of the collision is also partly that of the driver of the 20.30 train, Driver J. Woodcock, who, after sighting the Up Distant signal for Hall Road at 'Caution', allowed his train to coast past the signal at about 60 mile/h and failed to apply his train's brakes in sufficient time to be able to bring his train to a stand, if necessary, at Hall Road Up Main Home 1 signal. His failure to realise that the 20.15 train was standing at this signal until closely approaching it was possibly understandable in view of the curvature of the line and the fact that passenger trains are often stabled in the sidings adjacent to it. There is no reason, however, why he should not have sighted the Up Main Home signal at 'Danger' as he passed the Up Main Distant signal and braked accordingly. I consider that he was not driving with the attention that a driver of his experience should show, or was expecting the signal to clear, which it did, but for the train ahead.

Signalling irregularities

78. The investigations following the accident reveal that, on the northern part of the Liverpool–Southport line, during a two-week period prior to the accident, there had been a very large number of both deliberate and accidental errors in Train Registers. There is no doubt that this appallingly low standard of maintaining Train Registers, which is so vital when the block instruments of signal boxes are not electrically interlocked with the signals or other electrical controls provided, was a clear indication of the unacceptably low standard of signalling on the line at the time of the accident. The responsibility for allowing the standard of signalling to fall to such a degree, and for failing to detect it, must lie with the Area Manager, Southport, Mr. Hall, and those members of his staff responsible for supervising the operation of the Liverpool–Southport line with particular reference to the supervision of the signalmen.

79. It is particularly relevant that the practice of carrying out regular comparative checks of Train Registers was discontinued in the Southport Area in 1973, despite this being contrary to written instructions from the Liverpool Divisional Office, and I find it hard to understand why this matter was not rectified when Mr. Quirke, the Assistant Area Manager, Southport, queried the position regarding these checks with Mr. Hall soon after the former assumed his appointment. This, in my opinion, should have alerted the Area Manager to check the current instructions on this subject in his own office and, if necessary, raise the matter with the Divisional Operating Officer or the Divisional Operating Superintendent.

80. I also consider that the staff of the Accident Section of the Liverpool Division must bear some of the responsibility for allowing the Area Managers in the Division, apart from the Area Manager at Liverpool, to discontinue in 1973 or 1974 submitting certificates that the Train Register checks had been carried out. The clerk whose job it was to record the receipt of the certificates failed to draw the attention of the Senior Accident Clerk to the fact that they were no longer being received, and the latter failed to supervise the

former's work adequately and thus did not discover the situation. Finally, I believe that the Operating Officer of the Liverpool Division, Mr. Arling, was well aware of the importance of cross checking of Train Registers and, having issued an instruction on it in 1974, should have paid more attention to his Accident Section instead of leaving its supervision entirely in the hands of the Senior Accident Clerk, Mr. Carruthers.

81. Had the Liverpool Divisional staff been alert on this matter, they would have investigated why the various Area Managers were not submitting Train Register check certificates. This undoubtedly would have resulted in the Area Managers, who were not submitting certificates and in many cases not carrying out Train Register checks, investigating the position within their area and re-introducing the checks at six-monthly intervals. Had this been carried out by the Area Manager, Southport, there is no doubt that the low standard of maintaining Train Registers would have been revealed, any irregular block working would have been eliminated, and action would have been taken as a matter of urgency to improve the standard of signalling throughout the area, making it virtually certain that the accident would not have occurred.

Remarks and Recommendations

82. I am glad to report that the Divisional Manager, Liverpool, took immediate action following the accident to strengthen the supervision of the signalmen on the Liverpool–Southport line which, I am assured, resulted in the standard of signalling and block working in particular, rapidly improving. The Divisional Manager also issued fresh detailed instructions to all his Area Managers regarding the checking of Train Registers, specifying the points that should be given special attention, and specifically requesting that details of the checks, together with particulars of any discrepancies found, and action taken, should be reported to him monthly. Again, I am assured that this is functioning well. In addition to the action taken by the Liverpool Division following the accident, the Chief Operating Manager, London Midland Region, shortly after the accident issued guidelines to each Division in the Region for the examination of Train Registers.

83. I have also had discussions with the Chief Operating Manager, British Railways Board, concerning the possibility of ensuring full recording in the Train Registers at all mechanical signal boxes where the Starting signals are not equipped with Line Clear releases. Investigations throughout British Railways established that there were only four signal boxes, all on the London Midland Region, where the Starting signals were not equipped with Line Clear releases and 'skeleton' recording in the Train Register was taking place. I am glad to report that Line Clear releases were rapidly installed on the Starting signals at two of the signal boxes and that the method of operating passenger trains at the other two signal boxes was modified so that all such trains travelled on lines equipped with appropriate signalling controls.

84. A most important matter revealed by this accident was the absence of the safeguards that have been developed over many years to reduce the risk of human error amongst signalmen in charge of signal boxes operated on the Absolute Block System. I consider it particularly unfortunate that no action was taken on the recommendation by Colonel McMullen in his report on the collision at Hall Road on 9th October 1961 that block releases on the Starting signals and Welwyn controls should be provided at the signal boxes not already so equipped on this busy line. More recently Major Rose commented on these shortcomings in the report of his Inquiry into the collision near Whitehaven that occurred in November 1973. As a result of his Inquiry, a survey was made to establish the number of signal boxes on British Railways at which some, but not all, of the Starting signals on passenger lines were Line Clear or Token released, and also the number of boxes in which none of the passenger line Starting signals were so released.

85. Subsequently Major Rose discussed with the Officers of the British Railways Board the question of providing additional controls where those provided were not the same on all passenger lines, or where no controls at all existed. It was clear that the provision of full controls in all the boxes referred to above could not be immediately justified, and it was, therefore, agreed that any programme of improvements should be based on an examination of the particular situation at each signal box and a proper assessment of priorities. Eccles Crossing, Hightown, and Waterloo Signal Boxes on the Liverpool–Southport line were placed high on the list of boxes to be provided with controls and, although the modifications had not been carried out at the time of the Hall Road accident, they have now been completed.

86. The Board's Officers subsequently undertook to carry out a further survey of mechanical signal boxes on passenger lines in order to determine the exact nature of the controls provided in each case in order to draw up the basis for a progressive programme of improvements aimed at producing consistent standards along any given length of line and, ultimately, a common minimum standard throughout British Railways. In addition, a standard block control policy was drawn up, setting out the minimum standards required for various categories of lines. The provision of controls to this standard, as agreed between the British Railways Board and the Railway Inspectorate, will substantially reduce the risk of human error amongst signalmen

and will also prevent deliberate irregular block working as suspected on the Liverpool–Southport line. Work was started on the provision of additional block controls in 1978 and I am assured by the British Railways Board that they should be completed by the end of 1981. The implementation of this programme, in my opinion, is vital to the safety of operating trains on lines with mechanical signalling on the Absolute Block System.

I have the honour to be,

Sir,

Your obedient Servant,

P. M. OLVER,

Major.

The Permanent Secretary,
Department of Transport.

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COLLISION NEAR HALL ROAD STATION,
LONDON MIDLAND REGION, ON MONDAY 4th JULY 1977.

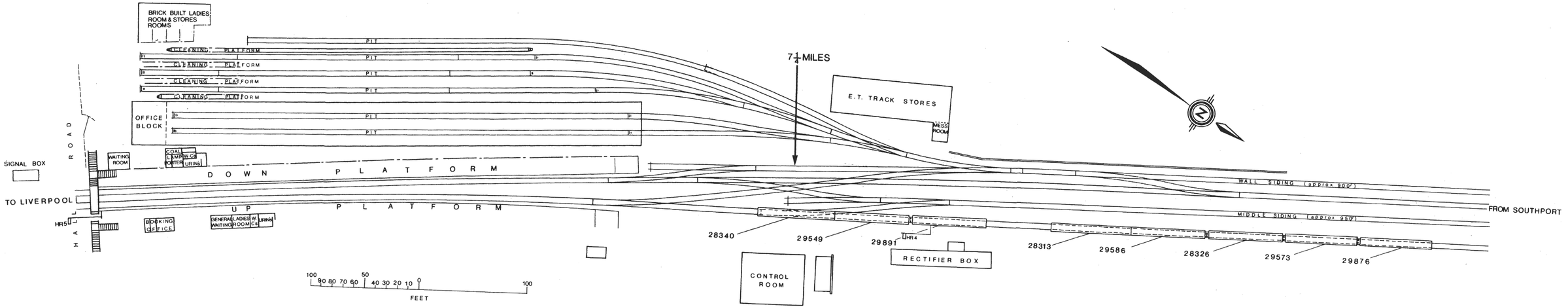

FIG. 1. GENERAL PLAN SHOWING SITE OF COLLISION AND POSITIONS WHERE TRAINS CAME TO REST

FIG. 2. SIGNALLING DIAGRAM, FRESHFIELD-HALL ROAD

UP LINE

(NOT TO SCALE)

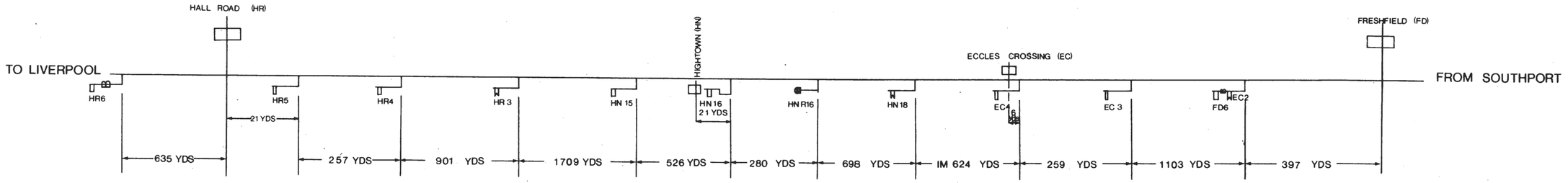

FIG. 3. GRADIENT DIAGRAM
(NOT TO SCALE)

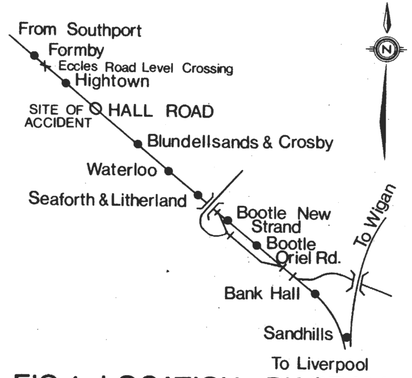

FIG.4. LOCATION DIAGRAM