DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

Report on the Collision that occurred on 3rd February 1984 at Wigan North Western Station

IN THE
LONDON MIDLAND REGION
OF BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£3.70 net

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The Freightliner wagon embedded in the locomotive of the Speedlink Train.

RAILWAY INSPECTORATE
DEPARTMENT OF TRANSPORT
2 MARSHAM STREET
LONDON SW1P 3EB

9th April 1985.

SIR,

I have the honour to report for the information of the Secretary of State for Transport, in accordance with the direction of 10th February 1984, the result of my Inquiry into the collision between two freight trains that occurred at about 02.14 on 3rd February 1984 at Wigan North Western Station in the London Midland Region of British Railways.

DESCRIPTION

The Accident

2. A Freightliner train, 4M51, was standing at signal WN 44 on the Up Main line at Wigan when it was struck from behind by a Speedlink train, 6M79. The force of the collision pushed the Freightliner train forward 16.3m and lifted the end of the rear (unladen) Freightliner wagon from its bogie whereupon the wagon underframe rose over the buffers of the locomotive of the Speedlink train and destroyed its cab. Of the two occupants of the cab, Driver B. Leonard died instantly and Guard J. A. Young was trapped in the wreckage and was given medical aid whilst attempts were made to free him; he eventually died at 04.25 and his body was finally cut free and removed from the wreckage at 05.30.

3. The electrical overhead line equipment was isolated at 02.23 and the first ambulance and fire appliance arrived at 02.27 and 02.28 respectively. The police and an emergency team from Wigan Royal Alhert Edward Infirmary, led by a casualty consultant, arrived shortly afterwards. The Wigan breakdown train was ordered at 03.17 but, due to the delicate nature of the rescue operations, was not moved to the site until 07.40.

4. The front portion of the Freightliner train proceeded on its journey at 10.18 and the vehicles of the Speedlink train at 09.26. During the rerailing operations, Up trains were diverted via the Down Platform Loop and both Up and Down trains were diesel locomotive hauled due to the isolation of the overhead line equipment, power being restored at 12.38. Signals and points were restored at 13.15 with the exception of signal WN 11 which was restored, after testing, at 19.14, when normal working was resumed.

5. The accident occurred on a dark night and it had been raining just prior to the collision. There was no mist or fog.

The Trains and Damage

6. Train 4M51 was the 22.50 Freightliner train from Glasgow to Dudley. It was hauled by two locomotives working in multiple, Nos. 86039 and 87030, and consisted of 10 Freightliner vehicles. The total weight of the train was 630 tonnes, the air brake force was 371 tonnes and its overall length was 238m. The last two vehicles of the train sustained damage as follows:

FGA601410 (rear vehicle)	—	Both bogies detached, buffers, coupling and brake equipment damaged.
FFA602765 (next to rear vehicle)	—	Damaged bar coupler housing and tail pin assembly bent.

7. Train 6M79 was the 21.05 Speedlink train from Mossend to Bescot. It was hauled by locomotive No. 86032 and consisted of 14 loaded and 7 empty wagons, all equipped with air brakes. The total weight of the train was 658 tonnes, the air brake force was 393 tonnes and its overal length was 256m. The locomotive only was damaged, as follows:

No. 1 end cab, the cab to equipment room bulkhead and all cab equipment destroyed.
No. 1 end blower motor, brake/power switch compartment and main fuse/circuit breaker panel severely damaged.
No. 2 end 'D' link of coupling snapped.

8. There was minor damage to track circuit cables.

The Site and Signalling

9. Wigan is 208 miles from Glasgow on the West Coast Main line. The track layout in the vicinity of Wigan North Western Station, the relevant signals and the positions of trains are shown on the plan at the back of this report. The position of the collision, also marked, was on the Up Main line and 94m beyond the south or London end of the ramp of No. 4 platform.

10. The station platforms at Wigan are illuminated to a high standard by pairs of 5ft fluorescent lamps mounted transversely to the track on standards placed on the platforms. On No. 4 platform the standards are spaced at intervals of 18 to 19.5m; the southernmost one is situated 8.5m from the foot of the platform ramp so that not only is the entire platform well illuminated but also the ramp. To the south of the platforms there is no illumination of the tracks.

11. The tracks through Wigan Station and to the south of it are raised on an embankment and on a falling gradient of 1 in 115 towards the south.

12. The lines are equipped with colour light signals and trains are signalled in accordance with the Track Circuit Block System. The area is controlled from the signalbox at Warrington. The system was brought into use in 1972.

13. Signal WN11 is a four-aspect colour light signal with positions 1 and 4 junction indicators, a route indicator and a position light signal, referred to hereafter as WN 11 (p.l.); there is an Automatic Warning System (AWS) magnet associated with Signal WN 11. Signal WN44 is also a four-aspect colour light signal with two junction indicators and a position light signal. Amongst the routes that can be set from signal WN 11 is route WN 11(2c) towards signal WN 44. This can be set in certain conditions of occupancy of the tracks up to WN 44 and, when set, clears signal WN 11(p.l.).

14. Permissive working on platform lines for passenger trains only is allowed under the authority of subsidiary signals.

15. The maximum permitted speed through the station area on the Up Main line is 70 mile/h.

Evidence

Evidence as to the course of the Accident

16. *F. N. Brocklehurst* told me that he reported for duty as signalman at Warrington Signalbox at 21.30 and took over control of the section of the panel that included Wigan at 01.40. After signalling a shunting movement he found that he was unable to set points No. 626 A for a locomotive to proceed from the Up Main line to No. 1 Platform line and, in consequence, the Freightliner train, 4M51, was stopped at signal WN 44. Behind that, standing at signal WN 11, was the Speedlink train, 6M79, and further back still a Glasgow to Euston sleeping car train, 1M09. No. 1 platform line was occupied by train 4F01 from Manchester Victoria to Liverpool and its locomotive, which had been detached to run round its train, was standing on the Up Main line at signal WN 49. Another train, 4M54, was standing at No. 6 platform. In order to try to pass the sleeping car train through on the bi-directionally signalled Down Passenger Loop whilst the technicians attended to the fault on points No. 626, he called forward the Speedlink train, by setting route WN 11(2c) which cleared signal WN 11(p.l.), to occupy the same section as the Freightliner train. At 02.14 the driver of the Freightliner train telephoned to say that his train had been run into from behind. Brocklehurst sent out the 'Emergency Alarm' to Preston Signalbox and, following a telephone call from the Station Supervisor at Wigan, requested an ambulance.

17. I questioned the signalman about his telephone conversation with the crew of the Speedlink train. He replied that either the driver or the guard of the Speedlink train had telephoned to him from signal WN 11 and that he had informed him of the points failure but not that he intended to move the train into an occupied section since he had not at that time decided to do so. He remarked that there was no need to mention that there was a train in the section ahead as the clearing of the position light signal would indicate this to the driver. Although he did not know it at the time, Brocklehurst said he now knew that permissive block working at Wigan was only allowed for passenger and not for freight trains.

18. *E. A. Fildes, the Area Supervisor at Warrington Signalbox*, told me that the revised working arrangements at Wigan were displayed in the signalbox in accordance with normal procedure; individual copies were not issued to signalmen.

19. *T. W. Layland* told me that he was the driver of the station shunting locomotive at Wigan. He was taking his locomotive into No. 3 platform to pick up a van when he noticed that the tail lamp on the rear of the

Freightliner train, then standing at signal WN 44, was out. After coupling up to the van he asked the shunter to tell the Station Supervisor about the lamp and said he would re-light it on his way back. He took his locomotive back out of the platform and as he was slowing down preparing to stop and travelling at, he thought, about 4 mile/h, he was overtaken by the Speedlink train and saw it crash into the rear of the Freightliner train; at that time he was about one coach length away from it. He estimated the speed of the train as it passed him to be about 5 to 7 mile/h. He did not see any sparks from the wheels as the train passed him and he noticed that the cab lights were not on.

20. *A. Mockford* was the shunter on duty at the time of the accident. He told me that he was standing on Platform 3 when the shunting locomotive driver told him that the tail lamp was out on the Freightliner train. He looked in that direction but could not distinguish the train in the darkness. As he was about to enter the Station Supervisor's office the Speedlink train passed him travelling at, he estimated, 5 to 8 mile/h.

21. *D. J. Spencer* told me that he was the driver of the Freightliner train and had joined it at Carlisle. After an uneventful journey he received a double yellow signal approaching Wigan, followed by a single yellow at WN 11 and a red at WN 44 where he stopped his train. He telephoned the signalbox at Warrington and was told of the points failure. After no more than 7 or 8 minutes the collision occurred, pushing his locomotive forward from a position about a quarter of a locomotive length in rear of the signal to about half a locomotive length past it. He reported the collision to the signalman and asked his guard to investigate. He was not aware whether the tail lamp of his train was alight or not when they left Carlisle. He remarked that his own train would have obscured the view of signal WN 44 from the driver of the Speedlink train and that signals WN 45 and 47 in the vicinity, which the driver might possibly have mistaken for WN 44, were both showing a red aspect.

22. *L. B. Thomas* told me he was the guard of the Freightliner train and that he joined it at Carlisle where the train stopped for two minutes to change crews; he did not have an opportunity to examine the tail lamp of the train before its departure. He said that the last wagon of the train was unladen and that the one ahead of that had only a low container, about 3 feet high; after that there were full sized containers. He was in the rear cab of the leading locomotive at the time of the collision but did not see the approach of the Speedlink train. After the collision he went back to see what had happened and, after reporting to his driver, arranged protection of the Down line.

23. *J. Rigby* said that he was a guard travelling as a passenger in the rear locomotive cab of the Speedlink train; the train guard was travelling in the front cab with the driver. He said the train stopped at signal WN 11 for about 5 minutes and then moved slowly into the next section; he did not notice the speed indication on the cab speedometer but estimated it at 5–8 mile/h. Before joining the train at Preston he said he spent some 20 minutes with the driver of the Speedlink train, whom he knew, and the guard, and noticed nothing unusual about them.

Evidence about the Braking of the Speedlink Train

24. *N. G. Williamson, the Traction and Rolling Stock Inspector at Manchester*, said that he arrived at the scene of the accident at about 07.00 whereupon he commenced to examine the locomotive and vehicles of the Speedlink train. He found that the rear vehicle of the Freightliner train had penetrated the locomotive cab as far as the cab bulkhead behind the draught screen. He noticed the remains of an oil tail lamp still in position on the end of the wagon. In the cab he found that the switches for the cab light and heater were off and, from the position in which he found the panel on which they were mounted, he thought it unlikely that these switches had been altered since the accident by rescue workers or even by the force of the impact itself.

25. He found the locomotive direct air brake handle in the 'off' position and the automatic train brake handle in the 'emergency' position but could not be sure that the handles had not been moved during the rescue operations. The contactor camshaft motor was in position 3 which indicated that the brake had been applied. There was air pressure on the stock when he arrived but the brakes had leaked off. There was no evidence on the rails or the vehicles that heavy braking had taken place. He had a brake test carried out on the stock before it was moved which was satisfactory except for one vehicle whose brakes were isolated and two brake pads on other vehicles that were not in proper contact with the sides of the discs. Of the 21 vehicles, 7 had tread brakes and the remainder disc brakes.

26. Williamson concluded from his examination that the train brakes had been in working order at the time of the accident and that the deficiencies shown up in his brake test were not significant. He was sure that the brakes had been applied on the train at the moment of impact since the contactor camshaft motor was in position 3. He explained that rheostatic braking is applied automatically on the locomotive in addition to the air brakes at speeds above a nominal 10 mile/h although this speed may in practice lie in the range 8–12 mile/h. As the speed drops below this nominal speed the rheostatic brake becomes ineffective and is automatically released while the air brake pressure is increased to compensate. At normal braking speeds the

camshaft is in position 5 and the fact that it was found in position 3 indicated that it was in the process of either applying or releasing the rheostatic braking at the time of the crash and thus that the locomotive was travelling at least as fast as 8 mile/h.

27. Rigby, who was travelling in the rear cab of the locomotive of the Speedlink train, did not notice any brake application prior to the collision and neither did Mockford, the shunter, who was on the station platform when the train passed him.

Evidence as to the Signal Indications

28. *F. N. Brocklehurst*, the signalman at Warrington Signalbox who was in control of the Wigan part of the panel, told me that he received a correct indication on his panel of the aspect of signal WN 11 and that apart from the failure of points No. 626 there were no other faults on the system at the time. He said that in addition to the technicians working on points No. 626 there was another watching the panel lights to see if any bulbs required to be changed. He was sure that there was no one in the relay room since a loud alarm would have sounded if its door had been opened. In answer to a question as to whether signals WN 45 or WN 47 could have shown a proceed aspect that might have been mistaken for WN 44 by the driver of the Speedlink train, Brocklehurst said that both of these signals remained at danger after he cleared WN 11.

29. *G. Plant, Supervisor (Signalling and Works) at Chester*, told me that he made thorough tests of the signalling equipment at Wigan following the accident. He was particularly concerned lest the main signal, WN 11, could show a proceed aspect in the circumstances at the time, with track circuit T10 occupied and points No. 626 not properly closed, as they were, due to a blown fuse. He stationed men at signals WN 11 and WN 44 to observe their aspects as various tests were made, but neither signal gave a false indication. He also tested the insulation resistance of various cables, both from core to core and core to earth and all were found to be in order. He tested and found correct the working of the Automatic Warning System magnet at signal WN 11; there had been a fault reported on it two weeks previously but, on investigation, this had been found to be due to a fault on a locomotive and not on the magnet. Finally he tested the banner repeater signal for WN 44, WNR44, and found it functioned correctly; in particular, if WN 44 had been cleared whilst a train was standing on track circuit T10, the repeater would not clear.

30. The only unsatisfactory feature that Plant found was that the interlocking was not in accordance with the signalling control tables in that the signal WN 11 (p.l.) could not be cleared with only track circuit T9 occupied; it could be cleared either with T9 and T10 both occupied or with T10 only occupied. He assured me that this had no adverse affect on the safety interlocking.

31. Plant assured me that the work being carried out by the technicians on points No. 626 could not have affected the aspect of signal WN 11 displayed to the driver of the Speedlink train since they are connected to a different part of the interlocking system and fed from different cables.

Evidence about the Tail Lamp

32. I was given a written report by *G. Gray, the Terminal Attendant at Gushetfaulds Freightliner Terminal at Glasgow*, which stated that he serviced the tail lamp and placed it on the Freightliner train before it left the terminal. I also received written evidence from the guard of the train on the first part of its journey that he saw that the lamp was still alight when he left the train at Carlisle.

DISCUSSION

33. There are a number of matters that call for comment in this accident. First, the discrepancy between the control tables and the control circuits for route WN 11(2c). Second, the signalman's initiation of an unauthorised movement. Third, the failure of the tail lamp of the Freightliner train, and fourth, the manner in which the Speedlink train was controlled.

34. I raised with the Chief Signal and Telecommunications Engineer of the London Midland Region the matter of the controls for route WN 11(2c). He replied that during the pre-commissioning testing of the signalling around Wigan it was decided that there was no requirement to clear signal WN 11 (p.l.) when track circuit T9 only was occupied and therefore this facility was removed; the control tables were not subsequently amended to conform to the actual installed arrangement. This omission had no bearing on the accident since it had always been intended to permit the clearing of signal WN 11 (p.l.) with track circuit T10 only occupied.

35. The signalman stated that he was unaware of the revision of the operating procedures at Wigan. These are given in the British Railways' Sectional Appendix to the Working Timetables and Books of Rules and Regulations (Northern Section) that cover the Wigan area. Up to 6th June 1981 Station Yard Working was authorised that would have allowed two passenger trains or two freight trains to be in a section at the same

time. On that date this was cancelled and permissive working on platform lines for passenger trains only was authorised. I was told that this change was part of a gradual process of eliminating permissive working since it was considered to be no longer necessary for freight trains to be worked permissively on this section of line.

36. Since the accident, the management have reviewed the movements that need to be undertaken at Wigan. It has been decided that permissive movements will be eliminated but that movements for attaching and detaching vehicles will continue to be allowed under the authority of position light signals. There remains one further class of movement which requires retention of the present controls for route WN 11(c). It occurs when the overhead electrical equipment is isolated beyond the station and electrically hauled trains must have a diesel locomotive attached to them before proceeding. The most expedient way of doing this on the Up Main line is for the diesel locomotive to stand at signal WN 44 and for the electrically hauled train to draw forward on the authority of signal WN 11(p.l.) and couple to the diesel locomotive.

37. I turn now to the actions of the driver of the Speedlink train and the signal indications given to him. From the evidence of the tests carried out on the signalling equipment after the accident I have no doubt that the main signal WN 11 would have been showing a red aspect when WN 11(p.l) was cleared so that there would have been no inconsistency in the information displayed to the driver. Also, WN 44 and other signals that he could see beyond the station and that he might have confused with WN 44, that is WN 45 and WN 47, were all showing a red aspect.

38. The meaning of a cleared position light signal such as WN 11(p.l.) is given in Rule C 3.1.3 of the British Railways Rule Book, as follows:

> "Position light signals show two white lights at an angle of 45° for the proceed aspect and when cleared authorise the Drivers to proceed cautiously towards the next signal (or buffer stop when there is no signal in advance) prepared to stop short of any obstruction.
>
> When associated with a main aspect, position light signals are not normally lit and when cleared authorise the Driver to pass that main aspect at red".

39. Thus, the driver of the Speedlink train must have received a clear indication that the section ahead might be occupied and should have been prepared to stop short of any obstruction. The fact that the collision occurred indicates that he did not comply with the Rule but, before condemning him, it is necessary to consider whether it was reasonably practicable for him to have done so in the circumstances prevailing at the time.

40. From the evidence of the driver of the shunting locomotive there is no doubt that the tail lamp of the Freightliner train was out. Any train or vehicle standing on a running line that is open to traffic is required to exhibit a tail light and in my view, which the Railway accept, it is reasonable for the driver of a train called forward into an occupied section to expect it. Nevertheless, I decided to find out for myself whether he might have been able to see the train without the tail light in order to establish whether he was driving with reasonable care.

41. In co-operation with Messrs. Freightliners, British Railways kindly arranged to reproduce for me the circumstances leading up to the accident. A Freightliner train of the same length as on the night of the accident was stopped at signal WN 44 and its tail lamp removed. The rear wagon of the train was unladen as it had been on the night of the accident, and the next wagon to it had a low box container and ahead of it a full height one. The sky was clear without a moon compared with a cloud covered sky when the accident occurred. Looking towards the Freightliner train from the well lit station platform the tail lamp was clearly visible but when the lamp was removed it was quite impossible to see the rear unladen vehicle, the full height box container on the next wagon or the remainder of the train. The only thing that could be discerned was a very slight reflection of light from the end of the low container that had a clean shiny finish. The reflection was so dim as to be unrecognisable as belonging to a train. It was not until I had moved about 25m beyond the end of the platform ramp, or a little under 70m from the rear of the train, that the full height box container became visible as well as the buffers on the rear of the train. I have no doubt that the driver of the Speedlink train could not possibly have seen the Freightliner train any sooner and, when account is taken of the fact that he was viewing the scene through a wet windscreen, the possibility that the rear container of the train was not as shiny as the one I saw and that his eyes would take a few moments to adjust from the well lit area of the station to the darkness beyond it, I do not think he would have become aware of the Freightliner train until he was nearly upon it.

42. There is some conflict of evidence as to the speed of the train just prior to the collision. The driver and shunter with the shunting locomotive and the guard travelling in the rear cab of the locomotive of the Speedlink train each gave estimates of the speed of the train that lay in the range of 5 to 8 mile/h. The

technical evidence of the Traction and Rolling Stock Inspector who examined the locomotive after the accident was that the speed was at or above a critical speed that could have fallen between 8 and 12 mile/h. Finally, British Railway's Research Department made an estimate of the speed based upon the weights of the two trains, the distance the Freightliner train was pushed forward by the impact, the energy absorbed by the brakes of the Freightliner train and the impact damage; the speed was calculated to be between 13 and 15 mile/h. I believe that the technical evidence of the brake examination is conclusive in that the speed must have been at or above the critical speed of 8 to 12 mile/h and, from this evidence and that of the guard travelling in the locomotive's rear cab and of the shunter on the station platform, that the brakes were applied only moments before the collision. With the speed probably in the range 8–15 mile/h I cannot criticise the driver for driving incautiously when he apparently has a clear line ahead of him for a considerable distance and bearing in mind that the minimum stopping distance of the train, even from 15 mile/h, would be less than 80m.

43. There was no evidence that the driver of the Speedlink train was either unwell or inattentive and a blood alcohol test carried out by the pathologist after his death showed no evidence of alcohol having been consumed. He had stopped his train at signal at WN 11 a few minutes prior to the accident and would be well aware of the significance of the position light signal that was cleared for him. I am sure that the collision would not have occurred if the tail lamp of the Freightliner train had been alight and thus I attach no blame for the accident on Leonard, the driver of the Speedlink train.

44. In the previous 5 years 2 other collisions had been reported to the Railway Inspectorate which involved the failure of the oil tail lamp on the rear of Freightliner trains. I asked both British Railways and Messrs. Freightliners whether they had any evidence as to the unreliability of oil tail lamps on the rear of Freightliner trains, especially when the last vehicle in the train is unladen and the lamp is subjected to severe buffetting by the wind. British Railways said they had no such evidence and Messrs. Freightliners said that oil tail lamps were generaly dependable provided they were filled and trimmed correctly and remarked that originally a draught shield had been fitted inboard of the lamp bracket of their vehicles. However, the shield fouled the 'Bardic' battery electric tail lamps that were introduced some 10 years ago and, in consequence, most of these shields had been either distorted or removed.

45. British Railways informed me that 1000 battery electric tail lamps (Bardic) were ordered in 1971 for use on specific trains as they believed they might prove more economical in the long term than oil lamps. They were particularly required for trains carrying highly flammable liquids and were also used on certain trains running to regular schedules, which included Freightliner trains, where their movement and re-charging could be properly controlled. However, the anticipated economies from their use were not achieved so it was decided not to replace those lost or damaged. By 1983 the numbers of these lamps available for service had been so reduced that instructions were issued that their use on Freightliner trains was no longer mandatory.

46. More recently, British Railways have been testing four new types of electric tail lamp that emit a flashing light and which should prove more economical than the earlier Bardic ones. The use of a flashing instead of a steady light increases battery life from 40 hours to many weeks and, being fitted with a state-of-charge indicator, there should be little risk of a battery becoming discharged during a journey. Three of the lamps are variations of the Dorman 'Traffilite' used to protect road works, one of them being extensively used on the German Federal Railways. The fourth lamp has been developed by British Railways' Research Department at Derby and has a light source consisting of a cluster of 8 light-emitting diodes. All of the lamps were of adequate conspicuity but the 'Derby' lamp had the considerable added advantages that there was not a single tungsten filament light bulb to fail and that its battery life was expected to be about 12 months, many times longer than that of the other types.

47. It is the Railways' intention to replace all oil tail lamps with electric lamps in the next 2 or 3 years and, from the information available to me, I would favour adoption of the 'Derby' lamp on account of its potentially greater reliability. I urge the Railway to bring their tests to a speedy conclusion and eliminate the anachronistic oil tail lamps as soon as practicable. As soon as the new lamps become available, their use on Freightliner trains should be given priority.

Summary of Conclusions and Recommendations

48. The conditions that led to the collision were established when the signalman signalled an unauthorised permissive block movement of the Speedlink train. Although contrary to local instructions, this should not have caused an accident since the main signal was not cleared, merely the position light signal, thus indicating to the driver that the section of line ahead might be occupied. The driver proceeded forward at a speed probably in the range 8–15 mile/h but was unable to see the Freightliner train in the darkness beyond the well lit station platform because its oil tail lamp had gone out.

49. Although in these circumstances the Rules require the driver to stop his train short of an obstruction he is, in my view, entitled to expect another train standing on the main line to be exhibiting a tail lamp and therefore I attach no blame for the accident on Leonard, the driver of the Speedlink train.

50. I recommend that the proposals to replace oil tail lamps with flashing electric lights be implemented as soon as practicable and, when these lamps become available, that their use on Freightliner trains be given priority.

I have the honour to be,

Sir,

Your obedient Servant,

J. H. SEAGER

The Permanent Under-Secretary of State
Department of Transport

Printed for Her Majesty's Stationery Office by Commercial Colour Press, London E7. 5/85. C7. Dd.0738665

COLLISION AT WIGAN ON 3rd FEBRUARY 1984

NOT TO SCALE