DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

Report on the Collision that occurred on 16th January 1982 in East Croydon Station

IN THE
SOUTHERN REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£2.45 net

RAILWAY INSPECTORATE
DEPARTMENT OF TRANSPORT
2 MARSHAM STREET
LONDON SW1P 3EB
17th January 1985.

SIR,

I have the honour to report for the information of the Secretary of State in accordance with the Direction dated 5th February 1982 the result of my Inquiry into the collision between an engineers train and a mail and parcels train that occurred at 01.23 on Saturday 16th January 1982 in East Croydon Station in the Southern Region British Railways.

As the 23.18 (15th January) mail and parcels train from Brighton to London Bridge was standing at Platform 1 at East Croydon while station duties were carried out, it was run into violently at the rear by the 00.22 Three Bridges to New Cross Gate Civil Engineers Departmental freight train which had passed at Danger the protecting 4 aspect colour-light signal CW3.

The rear three vans of the mail and parcels train were derailed and severely damaged as were the locomotive and the first 5 vehicles of the engineer's train. The platform canopy and coping stones were damaged in the area of the collision. The driver of the engineer's train was trapped in the wreckage of the locomotive cab until 08.45 when, despite strenuous efforts on the part of the Fire Brigade, part of one leg had to be amputated in order to release him. The guard of the engineer's train, a member of the platform staff, and 6 Post Office employees attending the mail train suffered slight injuries. The traction current was discharged in the course of the accident.

The emergency services were on the site within 6 minutes of being summoned. The line was re-opened at 22.30 on Sunday 17th January 1982. At the time of the accident it was dark, and freezing and there was some snow on the ground. The platform lighting at East Croydon was illuminated as were street lamps in the area.

DESCRIPTION

The Site and Signalling

1. The track and signalling described in the following paragraphs is as existing at the time of the accident. It was replaced in April 1984 by an altered track layout and new signalling controlled from Three Bridges Signal Box. East Croydon lies on the London (Victoria and London Bridge) to Brighton line 16.5km from Victoria. Redhill Station is 33.8km from Victoria, and the line lies generally north/south. Northwards from Redhill Station towards London (the Up direction) there are two tracks as far as Coulsdon South whence there are four tracks to South Croydon Signal Box (CV), which lies to the south of the station on the east side of the line. There are then five tracks through South Croydon Station towards East Croydon. Reading from west to east, they are the Up and Down Local, Up and Down Through, and the Reversible. At the London end of South Croydon Station platforms there are double crossovers allowing trains to run from the Up Through to the Up Local and from the Down Local to the Down Through lines. All the lines are electrified on the third rail system at 750V d.c.

2. Between South and East Croydon there are four overbridges carrying from south to north, Coombe, Barclay, Hazledean and Addiscombe Roads. Between Barclay and Hazledean Road Bridges the Up Local enters a left-hand curve with a retaining wall to the left facing in the direction of running. Under Addiscombe Road bridge the curvature reverses and Platform 1 lies to the right on a right-hand curve with a fence and open car park to the left. Just to the south of Addiscombe Road bridge a facing connection from the Up Through leads to the Up Loop forming a sixth track through East Croydon Station. East Croydon Signal Box (CW) is on the west side of the line some 20m to the north of the London end of the platforms. The lines rise at a gradient of 1 in 265/270 from Redhill to a summit between Merstham and Star Bridge Signal Boxes and then fall at 1 in 263 to South and East Croydon.

3. The maximum permitted speed of a Class 6 train was 45 mile/h to South Croydon, 30 mile/h over the crossovers, 40 mile/h from thereon, and 30 mile/h from a point between Barclay and Hazledean Road bridges through East Croydon on the Up Local.

4. Trains are signalled under the Track Circuit Block Regulations and controlled by 4-aspect colour-light signals with 3-lamp junction indicators at the junctions. At the time of the accident none of the signals was equipped with AWS, but work had commenced on the re-signalling of the Brighton line and this had led to certain track connections and signals being put out of use. Work had begun on wiring and the erection of new signals.

5. The signal box at East Croydon was equipped at the time of the accident with a miniature lever frame and an illuminated diagram. The signals in the station area were operated directly from the signal box and full signal aspect indications, fed from the wiring to the aspects, were displayed behind the levers. Train descriptions were transmitted between signal boxes and stepped from track circuit to track circuit automatically. As part of the re-signalling, visual display units had replaced the magazine-type train describers and train descriptions were displayed on them. The arrival of a description transmitted from another signal box was announced by a buzzer.

6. The sequence of signals applying to both trains was as follows at the time of the accident:

CV 25	Approaching South Croydon Station. 684m to: –
CV 21/22	South Croydon Up Through Starting signal with a junction indicator for a route over the crossover to the Up Local. When a route is set to the Up Local, the signal is approach-controlled by occupation of the berth track circuit. 501m to: –
CW 1	On the Up Local line between Coombe and Barclay Road bridges. 418m to: –
CW 3	Approaching East Croydon Station, about 274m to the point of collision. 468m to: –
CW 4	East Croydon Up Local Starting signal at the London end of No. 1 Platform.

Signals CW 1 and CW 3 were mounted on stanchions which supported signal gantries. The stanchions were on the left of the Up Local line.

At the time of the accident a 20 mile/h temporary speed restriction was in force on the Up Local line commencing just to the south of East Croydon Station where the commencement indicator was correctly displayed. The warning boards were at the north end of South Croydon Station, that applicable to trains crossing over from the Up Through to the Up Local was placed at signal CV21.

The Trains

7. The engineers' train (6G32) consisted of locomotive 73115, a 1600/600 hp Class 73 electro-diesel equipped to operate both air and vacuum braked trains, hauling a 51-tonne capacity bogie bolster wagon loaded with rails which was vacuum-brake piped only, followed by 5 empty 4-wheeled open service wagons which were all equipped with the vacuum brake. The train weight was calculated by the guard as 196 tonnes but, because the rails on the bogie bolster formed less than a full load, it was actually 166 tonnes with a brake force of 56 tonnes. The maximum permitted speed of the train was 45 mile/h and the vacuum brake was in operation. The locomotive was equipped with AWS and had been overhauled at Eastleigh in September 1981. It had undergone a 6-weekly examination at Stewarts Lane Depot on 11th January 1982.

8. The locomotive was being driven with the No. 2 end cab leading. Behind the cab is a cross passage the width of the locomotive with the two access doors. A door leads from the cross passage through a bulkhead into the Electrical Equipment Room where a passage runs between the two equipment frames and through a second door into the diesel engine compartment and then through a further door into the No. 1 end cab. The drivers safety device (DSD) consists of a floor mounted pedal with a mushroom shaped top about 75mm in diameter. There are two, one for sitting and one for standing at both the driver's and assistant's positions. Beside and to the left of the driver's seat in each cab is an emergency duplex brake valve for the guard's use.

9. The mail and parcels train (4G48) consisted of a similar Class 73 electro-diesel locomotive No. 73006 hauling 9 vans. From the locomotive these were a covered carriage truck, 4 general utility vans, a non-gangwayed bogie brakevan, a gangwayed brake van and two more general utility vans.

The Course of the Accident and the Damage Caused

10. The mail and parcels train preceded the engineers' train on the Up Through line from Redhill to South Croydon where both were crossed over to the Up Local line because of an engineer's possession of the Up Through line between South and East Croydon. The mail and parcels train had been standing at Platform 1 at East Croydon for about 3 – 4 minutes when 6G32 travelling at about 30 mile/h and having passed the protecting signal CW3 at Danger collided heavily with its rear van.

11. The rear 3 vans of 4G48 were derailed, flung to the left partially into the car park, and badly damaged. The bodies of the next two vans were damaged and the remainder of the train was undamaged. The locomotive and leading 5 vehicles of 6G32 were derailed. The leading cab of the locomotive was crushed right back to

the electrical equipment room bulkhead and considerable damage was done to the electrical equipment. This led to the very severe injuries to the lower trunk and legs of Driver Walton.

EVIDENCE

As to the Course of the Accident

12. *Motive Power Inspector I Morgan* was on duty at Norwood Junction Depot on the night of the accident. At 22.00 Driver Walton, who was due to travel as a passenger to Redhill to take over his locomotive and drive to Three Bridges to collect the engineers' train, entered his office and asked if the train was running as booked. Mr Morgan replied that it was and Walton then left the office. Shortly afterwards Mr Morgan saw Driver Walton and Driver's Assistant Rowles pass his rear window. At 22.30 Walton telephoned him from East Croydon to say that there had been no trains to Redhill for about an hour; this was because of an industrial dispute which had led to many cancellations. Morgan advised him to ring the Control Office and heard nothing more. He knew Walton quite well, his manner was normal, and he was satisfied that he was fit to do his duty. Later that night Morgan was telephoned and asked for the names of the locomotive crew of the engineers' train as it had been involved in a collision. He provided the names, and when told that Rowles could not be found, spent a considerable amount of time establishing his whereabouts.

13. *Relief Driver N J Rowles* had been a relief driver at Norwood Junction for about 3 years. He was passed to drive Class 33 locomotives but not Class 73 and had not signed for all the routes. On Monday, 11th January 1982 he booked on duty at 21.52 and performed the duty involving 6G32 with Driver Walton. He had not been on duty with Walton before. They chatted and gossiped normally during the journey to New Cross Gate and the return to Three Bridges. Rowles occupied the assistant's seat all the time. He did not call out signal aspects. There was no conversation about the industrial action nor was there any suggestion on that day that he should leave Walton to do the job on his own. They seemed to get on well together, he described Walton as a calm man who handled the train quite correctly.

14. Because of rest days and the industrial action he did not book on for duty again until 21.52 on Friday 15th January, the night of the accident. He sat in the lobby and saw Driver Walton come in at about 22.00 and enter the Supervisor's Office. Walton came out, looked at the notices and re-entered the office. He then reappeared, said "let's go" to Rowles and they walked to Norwood Junction Station. Walton seemed slightly annoyed at having to wait while the Supervisor checked on his duty but otherwise behaved as he had on the Monday night. At the station Walton mentioned in conversation that he had been looking after his children and had done the washing up. After about 10 minutes Walton telephoned the signalmen to find out if there were any trains running and then said to Rowles "go and get your car, I'll meet you outside the front of the station". He did not seem unduly upset. Rowles returned to the station with his car but Walton did not appear for 3 or 4 minutes.

15. Rowles then drove with Driver Walton in his car to East Croydon. They did not chat a lot but he remembered Walton commenting on the weather. He was about to park in the Goods Yard when Walton told him to park in front of the station. There Walton told Rowles that he wanted to get him away and told him to complete his time ticket. Rowles asked "what happens if the train is cancelled?" Walton thought about this and replied "no, there is traffic for it, I'll be all right, I'll do the job". Rowles made out a ticket and Walton got out of the car saying "I will see you later Nick". Rowles told me that he thought he had repeated the conversation accurately and said that he thought Walton was just trying to be friendly. Rowles was concerned about what he should do but did not wish to put Walton in a difficult position by returning to the Depot so he drove home, eventually went to bed, and was woken at about 05.00 by the Supervisor with news of the collision.

16. *Motive Power Supervisor A E Card* began duty at Redhill at 22.00 on 15th January. He recalled Driver Walton coming into his office to ask where his locomotive was. He could not say at what time but was certain it was before midnight. His office was small and there were already two other people in it so that Walton would have been close to him for a minute or two. He was satisfied that Driver Walton was fit to do his duty and that no defects on the locomotive had been reported to the Supervisor's Office.

17. *Guard M Wenham* of Three Bridges had been a guard for 12 years and booked on at 21.12 for a duty which included the 00.22 Three Bridges to New Cross Gate engineers' train. At 23.40 when he went to the Yard to prepare his train, he noticed that it was incorrectly marshalled. At 00.25 when the locomotive arrived he asked Driver Walton to carry out a shunting movement which was done without any difficulty and with the assistance of the shunter.

18. He carried out a satisfactory brake test, told the driver what the load was, and gave him the driver's slip with a maximum speed of 45 mile/h marked on it. He got Walton to draw the train up to the yard departure signal where he telephoned the signalman before climbing into the rear cab of the locomotive where he sat in the assistant's seat. At this time Walton had his cab light on.

19. The train departed at 00.40 and although they stopped at Redhill for about 5 minutes there was no traffic to collect from the yard there. He felt that they were having a good run but not exceeding the maximum permitted speed. He realised that they had crossed over to the Slow lines when they ran alongside the retaining wall approaching East Croydon where he thought the speed was about 35 mile/h. As the train ran through the station at 25 – 30 mile/h there was a tremendous bang and a lurch to the left with the noise of shouting, breaking glass, and escaping air. He thought they had become derailed and instinctively twisted out of his seat to get forward in case the wagons behind crashed into the cab. However he was trapped by his coat when the rails on the bogie wagon slid forward. He had not heard a brake application before the crash.

20. Wenham had worked with Driver Walton on previous occasions, the most recent being on Monday 11th January when the engineers' train was crewed by Walton, Rowles and himself. He thought it unusual that there was no second man on the Saturday morning but did not query this with Walton nor question why the locomotive was late arriving at Three Bridges. He could recollect very little about the journey. He agreed that he had on occasions been asked by drivers on their own to travel in the cab but on this occasion Walton did not invite him up and, because of the industrial dispute, he said that he would not have accepted the offer even if it had been made. So far as he could tell Walton was quite fit to drive the train and handled it correctly.

21. *Rolling Stock Technician D N Brown* examined the wagons forming 6G32 at Three Bridges on the morning of Friday 15th January. He replaced a split vacuum hose on one wagon and noticed that 4 were 'green carded' for attention. He was satisfied that all the wagons were fit and safe to run. His examination was visual and he did not carry out a brake test.

22. *Leading Railman S R Higginson* was cleaning on Platform 1 at East Croydon when the 23.18 Brighton to London Bridge mail train arrived. It stopped with the rear of the train about half a coach length on the Brighton side of the platform 'off' indicator. A few minutes later he was standing level with the front of the rear van when he heard a train approaching. He realised it could not be going into Platforms 3 and 4 because they were under engineer's possession, looked up, and saw 6G32 coming into Platform 1. He took action to shield a passenger, heard a loud bang, and was showered with debris but was unhurt. The horn was not sounded as the train approached, there was no noise of braking, and the cab light was off so that he could not see the driver.

23. *Assistant Divisional Officer R J Franks* of the London Fire Brigade arrived at the scene of the accident at 01.34. He found Driver Walton trapped in the wreckage up to his waist, his hands were free. He was sitting leaning back in the seat and was turned half to the right with his right side against the back of the seat. His right knee, which was bent, was pointing towards the platform and the foot towards the floor. The right thigh was almost horizontal with the inside parallel to the front of the cab. His left leg was facing more towards the front of the cabin slightly bent at the knee with the foot towards the floor. Mr Franks was unable to say whether Driver Walton's attitude meant that he had been attempting to leave his seat or if it was a comfortable position in which to drive. Mr Franks was close to Driver Walton for several hours after the accident. He listened to all the evidence presented at the public hearing in case he heard anything similar to words used by Walton who was incoherent during the rescue attempt. He heard nothing that might have assisted the Inquiry.

24. *Signalman K Bradley* was on duty in South Croydon Signal Box on the night of the accident. He explained that both trains involved in the collision were crossed over from the Up Through to the Up Local line because of the engineer's possession. The South Croydon station platforms were in darkness at the time. Single yellow aspects would have been displayed at Signal CV25 to both drivers because Signal CV21 was approach controlled by the occupation of the berth track circuit. From the signal box he could see to the London end of the Up Through Platform, Signal CV21, and a train passing over the crossing. He did not see the change of aspect of CV21 for the mail train but, because the engineer's train sounded as though it was approaching somewhat faster than he would have expected, he looked out and saw CV21 change to a double-yellow aspect with the white junction indicator lamps illuminated as 6G32 approached it.

25. He could not say at what speed 6G32 was travelling but it made a faster approach than the mail train. He said "when it passed the box I thought it was obviously going faster than it should have been. I then watched its passage through and I had the feeling that when it was half-way through the platform it appeared to me that I thought there had been a brake application because the train appeared to jerk". He confirmed that the warning board for the temporary restriction of speed to 20 mile/h at East Croydon, positioned just in front of Signal CV21, was properly illuminated.

26. On duty in East Croydon Signal Box at the time was *Signalman D Stewart*. When the mail train was described he reversed levers CW4, 3 and 1 and saw the indications above the levers in the box change to one yellow, two yellows, and green respectively. After the passage of the mail train he saw that the indications of

Signals CW3 and 1 had reverted to red and he replaced the levers. When 6G32 was described he reversed lever CW1 and saw the indication change to a single yellow. At that time an engineer's train was shunting on the Up and Down Through lines and the mail train was at the Up Local platform. There was then a loud bang and the chargeman at the station telephoned him and told him of the collision. He made sure that the emergency services had been called and he protected the lines.

27. He then looked at the diagram and saw that the only track circuit occupied on the Up Local line was that on the track beside the platform (AF). The visual display unit of the train describer showed 6G32 at the berth of Signal CW3 and Signals CW3 and CW1 were both indicated as red with CW3 lever normal and CW1 reversed. This was because the passage of 6G32 had replaced Signal CW1 to danger. After the collision he replaced lever CW1 normal in the frame and placed a collar on the lever. He personally had not been aware of any failure or defect of Signal CW3 and he had not given any permission on the night of the accident for any signalling disconnections. He considered that if the indication of Signal CW3 had been extinguished or other than red when he reversed lever CW1 for 6G32 he would have noticed it.

28. *Driver B J Hayne* was the driver of the mail and parcels train. He had been driving on the Brighton line for about 15 years. He described the journey from South Croydon to the platform at East Croydon and the aspects that he had seen. He had no difficulty in seeing the double yellow aspect of Signal CW3 and he had observed the 20 mile/h temporary speed restriction on the approach to East Croydon. He had not noticed anything on the approach to Signal CW3 which might have distracted a driver, although there was a large gang of men working over by the Through lines near the platform end and the activity caught his eye.

29. *Supervisor R G Budgen* was acting as Operating Department Supervisor with a rail mounted crane in an engineer's possession between East and South Croydon. As his train departed from East Croydon on the Down Through line he was travelling in the locomotive cab. His driver remarked as 6G32 passed them going in the opposite direction ".....that's moving". A few minutes later he was told by radio of the collision and, realising that the possession would have to be terminated, he returned to East Croydon. On the way back he observed that Signal CW3 was displaying a red aspect, he estimated that this was some 14 – 15 minutes after the collision.

As to the Tests of the Signalling

30. *Mr J Jenkins* was the *Divisional Signal Engineer* for the Central Division of the Southern Region. He described the signalling and the examinations and tests that he and his staff had carried out after the accident. These tests included the wiring, the signal controls, the actual head of Signal CW3, and the track circuit AF and adjacent track circuits. He confirmed that no defects or abnormalities were found, that none of his staff on site that night had actually commenced work, nor were any of them in the relay room concerned with Signal CW3. He pointed out that the signalman could only have returned the lever for Signal CW3 to normal after the passage of 4G48 if the control relay for the signal was de-energised, which meant that the signal must have returned to danger. He described the conditions that would have had to be met for the description of the train to be stepped forward on the train describer; one was that the track circuit in advance of Signal CW3 had to be occupied, the other was that the lever for the signal had to be reversed. The fact that the description 6G32 had not stepped forward even though the track circuit was occupied, confirmed the signalman's statement that he had replaced the lever for Signal CW3 after the passage of 4G48. He was satisfied by the tests that the signalling was in order and had allowed it to be brought back into use without making any alterations. He could find no record of any complaints about the sighting of Signal CW3, there were no reports of any faults, and, according to his records, the signalling had been correctly maintained, the red and yellow aspect lamps having been changed on 9th November 1981. *Mr C Hale, the Chief Signal and Telecommunications Engineer* for the Southern Region, said that he was satisfied that the correct tests had been carried out and the results showed that there were no faults in the signalling which was operating correctly at the time of the accident. He considered that the work carried out in preparation for stage works could not have led to a false operation of the signalling.

As to the Examination of 6G32

31. *Mr F R Picknell, Mr D J Seal, and Mr P R King* from the *Chief Mechanical and Electrical Engineer's Department* of the Southern Region described the results of the very thorough examinations and tests that were carried out on the locomotive and wagons after the accident. The locomotive had been badly damaged in the collision and the controls had suffered further in the effort to release Driver Walton. The tests of the wagon and vacuum brake equipment showed that it was in working order and this fact, combined with the evidence of the examination and brake test at Three Bridges, the stop at Redhill, and the absence of any 'flats' on the tyres or indications of an emergency brake application, showed that the wagon brakes would have operated. The brake selector switch in the locomotive was set at 'Vacuum Normal' which is the correct position for the type of train being hauled.

32. The brake equipment on the locomotive bogies was connected to an air supply and a brake application simulated. The leading axle was too badly damaged to be tested, but the brake equipment on the other three operated correctly. The brake controller and all the essential valves were recovered and fitted to a test rig where they operated correctly. The independent emergency duplex brake valve, which vents the airbrake pipe and opens the vacuum-brake pipe to atmosphere directly, was intact except for the loss of the handle. The four DSD floor buttons were recovered and all operated satisfactorily although one required a heavier than normal pressure to hold it down.

33. Although the power controls in the leading cab, like the brake controls, were badly damaged, making it impossible to determine their position at the time of the collision, examination of the electrical control equipment in the engine room showed that the resistance camshaft was positioned on its final notch. This was the position with all the resistance removed from the armature circuit and the traction motors under power. The field weakening camshaft was in a position indicating that field weakening was not being employed. It was considered most unlikely that the collision could have caused a series of false feeds to the resistance camshaft motor such that it was operated to the final notch. Mr Seal felt that it was probable that at the moment of collision the resistance camshaft was in position 20, as it was found, (ie full field full series). Because of the damage and the fact that battery power was still available after the traction current had been discharged, there was still the remote possibility that short circuits might have caused the resistance camshaft motor to operate, although the motor and the surrounding area of the frame on which were mounted the contactors was undamaged by the collision.

34. There was no sign of a flashover on the motors which might have been caused by a sudden reversal of the controller to provide braking and there was nothing evident in the engine room which might have caused a defect which could either have distracted Driver Walton or caused him to lose control of the locomotive. Tests showed that it took approximately five seconds to shut off power, make an emergency brake application, evacuate the driving seat and pass through the door at the rear of the cab, and a further five seconds to reach the diesel engine compartment through the electrical equipment compartment.

35. I was unable to interview *Driver S Walton* until 27th October 1982, some nine months after the accident, when he had recovered sufficiently from his injuries and felt fit enough to answer questions. I explained the sequence of events to him that had been established at the public hearing and outlined the evidence that I had heard before questioning him. However, because of the severity of his injuries and the passage of time, he had no reliable recollection of the events leading up to the collision and only very hazy memories of what he had been doing the day before the accident. I formed the opinion that it would be wrong to use any evidence that he gave although he made great efforts to assist. I felt that there was too great a risk either of my leading him, or of his describing what he normally did rather than the events on this occasion.

As to Calculations and Tests

36. Some days after the accident I carried out two signal sighting and timing runs after dark using a Class 73 locomotive and a saloon. Although Signal CW3 could not be seen from a great distance, a clear view was obtained from a distance in excess of 200m. A driver conversant with the route would have had no difficulty in establishing the position of the signal and, after seeing the restrictive aspects on preceding signals, reacting speedily to the aspect displayed. I was told that the records showed that CW3 had been passed at Danger on one occasion in 1977 by about 20m. Assuming a speed of 30mile/h, the maximum time for which a driver could have a full view of the tail lamp and the rear of the parcels train on the right-hand curve in Platform 1 at East Croydon is 10 seconds. In that time a driver should at least have been able to make an emergency brake application and get clear of the cab as the tests showed.

37. Based on the physical features of the line, the recorded times for the movements of 6G32 (allowing for signal box clock error), the characteristics of the locomotive and train, and the position of the field and resistance camshafts, speed/distance and time/distance performance curves were derived for the journey from Redhill to the collision. The curves are consistent with the series full field controller position determined from the camshafts after the collision and with the signal box timings. They imply an average balancing speed, for the 6.25 miles from Star Bridge to East Croydon, of 42.6 mile/h.

Discussion

38. From the evidence of the signalman, the indications in the signal box, the tests, and those who saw the aspects of Signal CW3 I am satisfied that the signal was displaying a red aspect correctly as 6G32 approached with the preceding signals showing caution aspects. Similarly there was no evidence of any defect in the locomotive which could have led to Driver Walton losing control completely so that no warning or brake application was possible.

39. There are two other factors that must be considered. One is that Driver Walton appears to have been completely unaware of the signal aspects or the possibility of a collision; he was in his seat, the brakes and horn had not been used, and it seems probable that the locomotive was under power. The second is that the speed of the train does not appear to have been correctly regulated. The guard's evidence and the severity of the collision indicate that the temporary speed restriction at East Croydon was not complied with, two witnesses independently remarked that 6G32 was travelling faster than they expected, and the performance curves show that the train was probably driven at or above the maximum permitted speed almost up to the moment of collision and that there seems to have been no reaction to the single yellow aspect of Signal CW1.

Conclusion

40. Because there is no evidence of a defect in the signalling or the locomotive I can only conclude that the accident occurred because Driver Walton failed to control the train in accordance with the signal aspects. I cannot be certain whether this was because he was taken ill, fell asleep, or became distracted. However, Supervisors Morgan and Card, Relief Driver Rowles, and Guard Wenham noticed nothing untoward in Walton's behaviour before the accident; he was conscious after the collision, his behaviour up to the departure from Redhill gave no hint of illness, and the DSD should have operated if he became so ill that he lost control. Accordingly it seems probable that he was distracted in some way or fell asleep.

Remarks and Recommendations

41. Because of the industrial dispute Walton had been on strike on 13th and 14th of January. He had worked from 2152 on 11th January to 0612 on 12th January and had been off duty on 9th and 10th. He certainly slept on the night of 14th January but was busy at home and did not sleep before leaving for duty on 15th January. This must have disturbed his sleep pattern and may have led to him becoming drowsy. Driver Walton's behaviour in dismissing his assistant is quite inexplicable especially during an industrial dispute. He clearly considered at the outset that he was quite competent to drive the train without an assistant and, if he had felt any later doubts, he could have invited Guard Wenham to travel with him from Three Bridges. Accordingly, although it is possible that the presence of Relief Driver Rowles could have prevented the accident, I do not think that the action of Driver Walton in dismissing him was a direct cause of the accident. A driver's assistant was only rostered under the manning agreement between the Board and Unions because the total diagram was in excess of 8 hours, there were two light locomotive movements, and because no formal 'personal needs' break could be included.

42. Although there might have been a risk of Driver Walton automatically cancelling the warning I feel that if AWS had been fitted to the signals he would almost certainly have been alert to the restrictive aspects displayed. This feature has been discussed in a number of Reports by Inspecting Officers and AWS is being provided as part of the resignalling of the Brighton line which should be completed in April 1985. The completion of the scheduled installation of AWS elsewhere in the Southern Region is due in 1987 and I recommend that every effort must be made to achieve this date.

43. The possibility that Walton fell asleep but did not release the DSD raises important considerations. Although with modern multiple-aspect signalling the AWS acts as a form of vigilance device, a risk still exists that the warning may be instinctively cancelled without alerting the driver or will not be heeded and the subsequent brake application may come too late. There will also remain some lines which do not carry sufficient traffic to warrant fitting with AWS. I feel that the Board should examine the effectiveness of the DSD where it is a pedal type and this is in hand.

44. This is not the first accident with which I have been concerned where the guard in the rear cab of a locomotive has been put at risk in a collision by the movement of the contents of the leading wagon. I have considered whether a barrier wagon should be provided but to be fully effective it would be necessary at the locomotive end of all freight trains and its provision and marshalling would create delay and introduce other hazards. I feel that on balance it would be better to concentrate on the prevention of collisions to benefit all train crew.

45. The damage to the leading end of the locomotive was typical of a collision in which the locomotive had dived under the vehicle ahead, in this case a General Utility Van. The structure of the cab had been folded back in such a way that it swept the equipment in the cab back to the bulkhead behind. Some damage was caused within the electrical equipment compartment.

In his report on the collision that occurred on 7th November 1980 at Crewe, Major Olver notes the assurance that he has received concerning the design of new locomotive cabs to give substantially greater protection to train crews. I support his recommendations that the crew should be instructed to vacate the cab

whenever possible and that the Board should carry out a detailed examination into the damage that has occurred to locomotives in head-on and rear-end collisions with a view to quantifying the risk of marking 'safe' areas to which crews should move in such emergencies.

I have the honour to be,

Sir,

Your obedient Servant,

A. G. B. King
Major

The Permanent Under Secretary of State
Department of Transport

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