

Rail Accident Report



Fatal accident at Whitehall West junction, Leeds 2 December 2009

This investigation was carried out in accordance with:

- the Railway Safety Directive 2004/49/EC;
- the Railways and Transport Safety Act 2003; and
- the Railways (Accident Investigation and Reporting) Regulations 2005.

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Fatal accident at Whitehall West junction, Leeds, 2 December 2009

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Preface

- 1 The sole purpose of a Rail Accident Investigation Branch (RAIB) investigation is to prevent future accidents and incidents and improve railway safety.
- 2 The RAIB does not establish blame, liability or carry out prosecutions.

Definitions

- 3 In this report and unless otherwise stated, left and right orientations relate to the direction of travel of the train.

The Accident

Summary of the accident

- 4 At 09:37 hrs on Wednesday 2 December 2009, a westbound train struck and killed a track worker as it passed Whitehall West junction (figure 1). At the time of the accident the train was driven by a trainee in the presence of a supervisor driver while three more trainee drivers travelled in the rear vehicle.

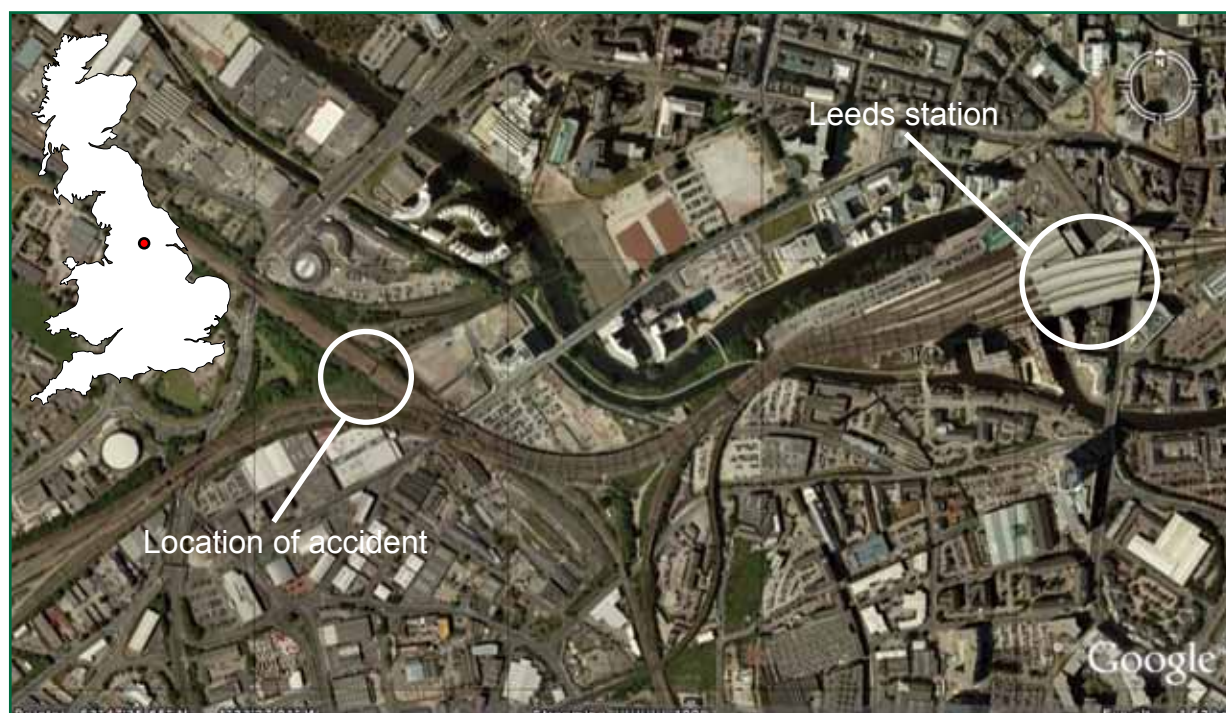


Figure 1: Leeds station and the accident location (Courtesy of Google Earth)

The organisations and individuals involved

- 5 Network Rail was the employer of the six track workers involved in the accident including the track worker who lost his life. It is also the manager of the track on which the accident occurred.
- 6 Northern Rail was the operator of the train, the employer of the supervisor driver and the four trainee drivers.
- 7 The RAIB, the British Transport Police, the Yorkshire Ambulance Service, Network Rail, Northern Rail and the Office of Rail Regulation attended the scene on the day of the accident; all organisations co-operated freely with the RAIB during its investigation.
- 8 The track worker who lost his life in the accident, 60-year-old Mr Ernest Rodgers, was a 'lookout' for colleagues who were working at Whitehall West junction. His role as lookout was to warn of trains well before they passed over the site of work, giving his colleagues time to move away from the track and trains.

The location

- 9 Whitehall West junction is approximately 800 metres west of Leeds station and comprises lines that take trains from and to Shipley or Doncaster. North and south of the junction are lines that take trains from and to Harrogate and from and to Huddersfield respectively (figure 2).

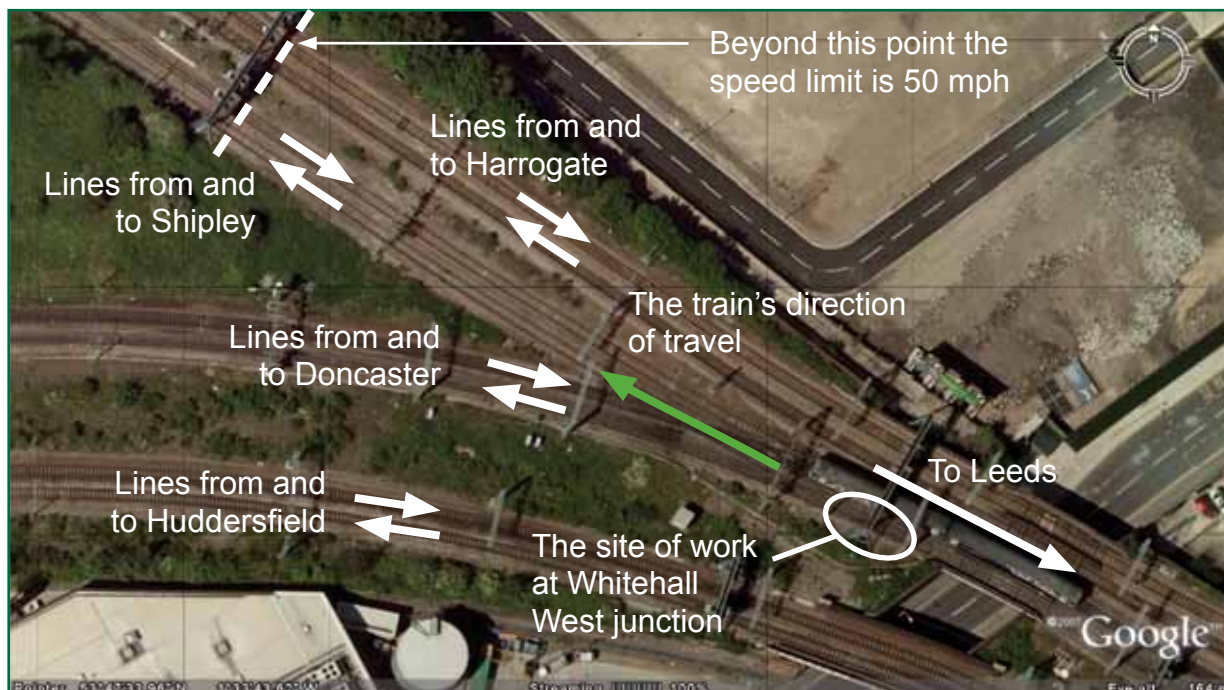


Figure 2: Whitehall West junction, the tracks to and from Leeds station and the normal direction of trains. (Courtesy of Google Earth)

- 10 The maximum speed on the Leeds, Shipley and Doncaster lines that form Whitehall West junction is 25 mph (40 km/h) and while these lines are bi-directional, trains normally run in the directions shown in figure 2. Each line is electrified by an overhead wire that supplies power for electric trains; the wire and its supporting structures are known as 'overhead line equipment'.
- 11 The site of work was to the south of Whitehall West junction where the line from Leeds diverges to Shipley and Doncaster. A train driver's view heading west towards the junction is reduced by overhead line equipment, trackside vegetation and curved track, as is a lookout's view from the site of work towards Doncaster.

The external circumstances

- 12 The accident occurred in daylight and good visibility on a cold, overcast morning. The temperature was 4 degrees Celsius and there was a light breeze from the south.

The train

- 13 Four-vehicle electric multiple unit number 333013 formed train reporting number 5Z31, the 09:34 hrs driver training service from Leeds to Skipton. The train was not carrying passengers at the time of the accident or at any other time during driver training.

Events preceding the accident

The track workers

- 14 The track workers' task was to restore the level of the track where the lines to Shipley and Doncaster diverge, using hand and power tools to lift the track and level the ballast. They carried out their task while the track remained open to trains, a practice known as 'red zone' working. Carrying out a task while trains are stopped or kept separate from a work group is known as 'green zone' working.
- 15 One of the track workers was assigned to be the 'controller of site safety' and in this role he was responsible for setting up and maintaining a safe system of work. He assigned two track workers to act as lookouts sighting for trains approaching the site of work from east and west respectively and a third track worker to act as site lookout (see figure 3).
- 16 All three lookouts were instructed to do their work from a 'position of safety' which is 1.25 metres or more away from the closest rail and thus beyond the path of passing trains. The system of work was set up as follows:
 - a. the site lookout alternately observes the east and west lookouts as they watch for trains;
 - b. when the east or west-facing lookout sights a train travelling towards the site of work he waves a large, blue and white chequered flag in warning;
 - c. when the site lookout sees a warning he alerts the track workers by cutting the supply to the power tools and sounding an audible warning;
 - d. the track workers move themselves and any obstructions to a safe position within 20 seconds of the train being sighted and 10 seconds before it passes; and
 - e. work restarts when the controller of site safety tells the track workers that it is safe to do so.

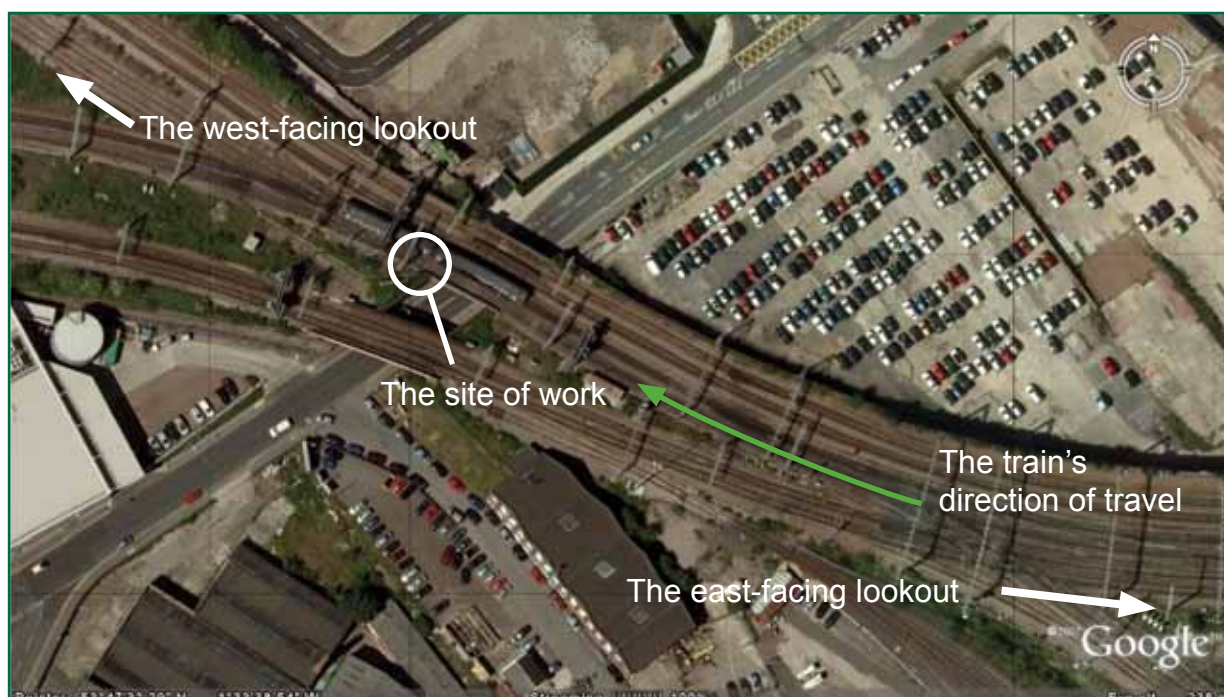


Figure 3: The positions of the east and west-facing lookouts and the worksite (Courtesy of Google Earth)

- 17 The track workers met at Leeds Holbeck depot at 07:30 hrs, loaded their van and drove to the site of work. They arrived at the access point, 420 metres north-west of Whitehall West junction, at 08:00 hrs; here, the controller of site safety briefed his colleagues about the site, its hazards and the system of work. The track workers collected their equipment, walked to their positions and commenced work at 08:15 hrs.
- 18 In the hour and 22 minutes leading up to the accident, 27 trains passed the site of work; the east-facing lookout warned the site lookout of the approach of several trains and work stopped while these trains passed over the junction. In this time the west-facing lookout did not give warning for any train travelling over the site of work, as this is not the normal direction of travel for trains from Doncaster or Shipley (see figure 2).
- 19 While the west-facing lookout had no cause to give warning to the site lookout, he would have seen many of the 27 trains that passed the site of work and would have acknowledged any horn warnings he heard by raising one arm.
- 20 Figure 4 is a still image taken from the forward facing video camera of the 06:35 hrs London King's Cross to Leeds service as it approached the site of work at 08:52 hrs; it shows the west-facing lookout a short time after he had acknowledged the train's horn warning. Unit number 333013, the train involved in the accident, was not fitted with a forward facing camera.



Figure 4: The west-facing lookout viewed from the Leeds-bound train

- 21 At 09:18 hrs, the driver of a westbound freight train sounded the horn as his train travelled towards the west-facing lookout on the line to Shipley. The west-facing lookout raised his arm and acknowledged the warning while he kept his back to the train, continued to face west and did not turn around. The train passed the west-facing lookout without incident because at this time he was in a safe position. Until the accident, this was the only train that used the line to Shipley and passed the west-facing lookout on the line nearest to him.

The train crew

- 22 The supervisor driver met the four trainee drivers at 09:10 hrs and told them that they were to take turns driving the train to and from Shipley under his supervision. The supervisor and trainees then went to their train on Leeds station platform six where they carried out their train preparation and pre-departure checks.
- 23 The supervisor assigned one of the trainees to take the train on its first run and told the three others to sit in the rear vehicle and wait their turn. The trainee sat in the driver's seat and the supervisor sat to his right so that he could observe the train's route and the trainee's actions as he gave instructions and asked questions.



Figure 5: The train's route from Leeds station (image from Google Earth)

- 24 The trainee and supervisor saw that their train had a green signal for them to proceed onto the line to Shipley; information from the train's data recorder shows that at 09:35:57 hrs the train drove out of Leeds station, accelerated to the 25 mph (40 km/h) speed limit and then coasted. See figure 5 for the train's route and figure 6 for a reconstruction of the trainee driver's view from the cab when leaving Leeds station.



Figure 6: The driver's view leaving Leeds station

- 25 The supervisor told the trainee that the route to Shipley required close attention as the train curves left then right, signals at Leeds West, Whitehall West and Armley junctions must be seen, understood and obeyed and there are other trains and track workers in the area. Figure 7 shows the track and signals at Leeds West junction.
- 26 The trainee saw the east-facing lookout and sounded the warning horn at 09:36:53 hrs, 56 seconds into the journey and as the train curved to the right; the east-facing lookout acknowledged the warning by raising one arm and waving his blue and white flag. The trainee and supervisor drivers could not see the work group or the west-facing lookout at this location as they were obscured by track curvature, vegetation, overhead line equipment and the cab's structure (figure 8).
- 27 As the train curved to the right the trainee and supervisor drivers could see the east and west-facing lookouts and the work group between them. The supervisor stated that while he was not sure how many track workers there were, he saw them acknowledge the warning of the train's approach by raising one arm and moving to a safe position away from the line.



Figure 7: The driver's view of the track and signals at Leeds West junction



Figure 8: The driver's view when he saw the east-facing lookout and sounded the train's warning horn

- 28 The train passed the east-facing lookout at 09:37:07 hrs, travelling at 24 mph (39 km/h). The supervisor advised the trainee that the speed limit would increase to 50 mph (80 km/h) as they approached Armley junction but before that there would be a 'neutral section' where the overhead line equipment was not live and the train must travel fast enough to coast through this section or it would stop and not be able to continue.
- 29 The supervisor looked out to check that the junction was set for Shipley and then down to the speedometer to check that the speed limit was being observed and at 09:37:24 hrs the train coasted past the site of work at 25 mph (40 km/h) (figure 9). At this time the trainee observed that the west-facing lookout appeared no closer to the track than the track workers he had just passed.

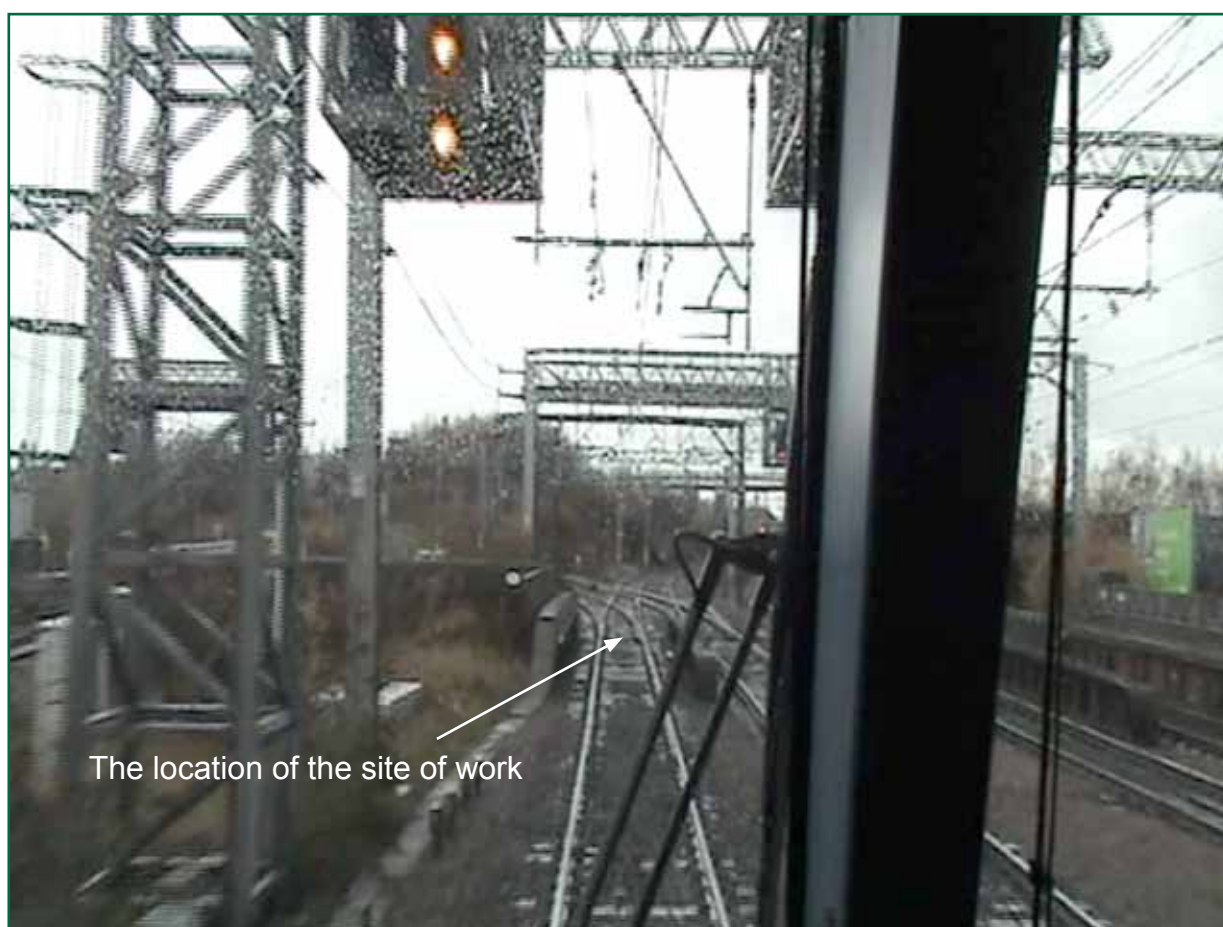


Figure 9: The driver's view on the approach to the site of work

The events during the accident

- 30 At 09:37:32 hrs the train was travelling at 24 mph (39 km/h) and was approximately 10 metres from the west-facing lookout when the trainee remarked that he looked close to the line; neither he nor the supervisor had time to react as the west-facing lookout was struck approximately a second later; the lookout faced west, away from the train and had not moved throughout its approach (figure 10).



Figure 10: The driver's view of the west-facing lookout

- 31 The trainee made an emergency brake application at the same time as the train struck the west-facing lookout, which brought the train to a stop at 09:37:46 hrs.

The events following the accident

- 32 The track workers heard and saw the train brake and then saw the west-facing lookout lying on the ground: he was unconscious when they reached him. The controller of site safety telephoned the emergency services while another track worker telephoned the signaller who blocked the lines to stop all trains in the area. The remaining track workers attended to the west-facing lookout.
- 33 The supervisor driver climbed down from the cab, went back to the accident site and spoke with the track workers who advised him that the emergency services had been requested and the signaller had blocked the lines. The trainee, distressed by the accident, remained seated in the cab.
- 34 British Transport Police arrived on site at 09:53 hrs and attended to the west-facing lookout until the Yorkshire Ambulance Service arrived at 09:59 hrs and took over; representatives from Network Rail and Northern Rail arrived and assisted their colleagues. The site was cleared and all lines handed back for Network Rail to resume operations at 12:27 hrs.

The Investigation

The sources of evidence

35 The following sources of evidence were used:

- witness statements;
- the record of site safety arrangements and briefing form;
- information from the train's data recorder;
- video footage from the 06:35 hrs London King's Cross to Leeds service;
- site photographs and surveys;
- post-incident testing of the train;
- a video reconstruction of the train's journey;
- weather reports and observations at the site; and
- British Transport Police, Network Rail, Northern Rail and Office of Rail Regulation files.

Analysis

Identification of the immediate cause¹

- 36 The immediate cause of the accident was that the west-facing lookout did not move from the path of the train as it approached.

Previous similar occurrences

- 37 The National Competency Control Agency operates the rail industry's system for managing the competence of its safety critical workers. On 2 December 2009, the day of the accident, there were 22764 lookouts registered on their system. Nationwide and on most days of the year, many lookout protected sites of work are in operation and from time to time these lookouts become involved in accidents and incidents in the course of their duties.
- 38 Figure 11 summarises the accidents in which trains struck track workers resulting in fatalities and major injuries in years 1999 to 2009. These accidents are described in RAIB report 30/2009 into the accident at Dalston junction and so they are not described again in this report. Figure 11 shows that in this period:
- Trains struck and killed 23 track workers, four of whom were acting as lookout at the time of the accident. These accidents happened on 10 October 2000 at Bradford Mill Lane, on 18 July 2001 at Purley Oaks, on 5 April 2005 at Newbridge and on 2 December 2009 at Whitehall West junction.
 - Trains struck 24 track workers who sustained major injuries, one of whom was acting as a lookout. This accident happened at Dalston junction on 30 March 2009 and is the subject of RAIB report 30/2009.

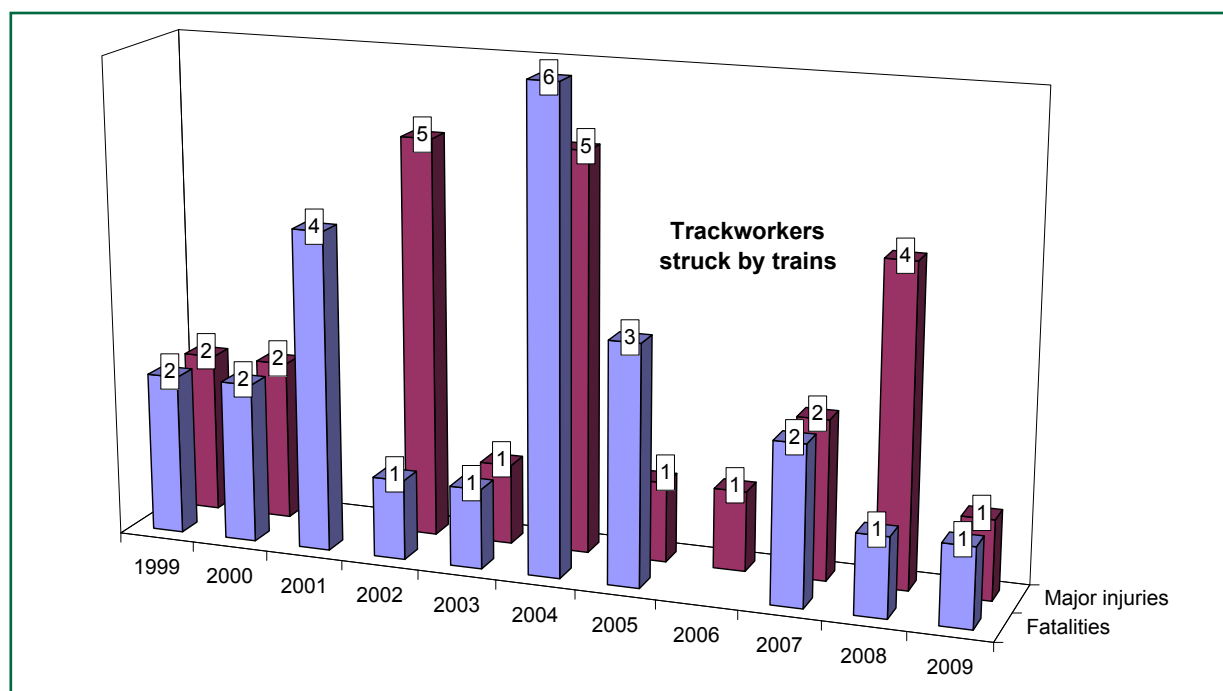


Figure 11: Track worker fatalities and major injuries. Information courtesy of the Rail Safety and Standards Board

¹ The condition, event or behaviour that directly resulted in the occurrence.

- 39 In the same period, lookouts sustained minor injuries or were involved in near-misses with passing trains on 14 reported occasions, although the RAIB acknowledges that this is unlikely to be the total number, as some near-misses will have gone unreported.

Discounted factors

The west-facing lookout's competence and fitness for duty

- 40 Network Rail trains, assesses and certifies its lookouts every two years and last certified that the west-facing lookout was medically fit and able to carry out lookout duties on 25 November 2008. He had worked on the railway in and around Leeds for 35 years and his colleagues said they considered him to be conscientious, experienced and safety conscious; a person who was not afraid to raise concerns about safety and working arrangements.
- 41 At the time of the accident the west-facing lookout was wearing appropriate personal protective equipment including high visibility clothes and a hard hat; he was not wearing anything on or around his head that would impair his sight or hearing; he was not using a mobile phone or anything else that could have affected his attention and there was no-one else nearby to distract him. As would be normal for a west-facing lookout, he faced away from the train that struck him and did not move throughout its approach (paragraph 30).
- 42 Network Rail used the shifts the west-facing lookout had worked before the accident in the Health and Safety Executive's 'fatigue and risk index calculator'² which established that on the day of the accident he was at low risk from fatigue and there was no evidence that his personal behaviour would have affected this assessment.
- 43 The autopsy report concluded that the cause of death was due to the injuries suffered and not due to natural causes; there was no health related event associated with the accident. The post-mortem toxicology report was negative for the presence of drugs and alcohol.

The west-facing lookout moved from a safe position to improve his sighting distance and increase warning time

- 44 'Sighting distance' is the distance along the railway from a lookout to a point at which an approaching train becomes visible; 'warning time' is the shortest time a train could take to travel the sighting distance. Rule Book module T7, 'Safe systems of work when walking or working on or near the line'³, has look-up tables for sighting distances, warning times and train speeds.
- 45 The site lookout's view west was reduced by overhead line equipment, trackside vegetation and the left-hand curve of the line to Doncaster so a west-facing lookout was used to increase sighting distance in this direction.

² The Health and Safety Executive calculator assesses the cumulative effects of hours worked on an individual's propensity to fatigue and the relative risk of the occurrence of an incident on a shift.

³ Rail Safety and Standards Board GE/RT8000/T7 Issue 3 October 2006.

- 46 The RAIB measured sighting distances to the west, and they were as follows:
- a. site lookout towards west-facing lookout: 96 metres;
 - b. west-facing lookout towards Doncaster: 370 metres;
 - c. site lookout and west-facing lookout towards Shipley: unobstructed;
 - d. minimum sighting distance (towards Doncaster - a+b): 466 metres.
- 47 The minimum sighting distance of 466 metres was measured in the direction of Doncaster and the maximum speed for trains travelling on these lines was 25 mph. Using the look-up table in Rule Book Module T7, a sighting distance of 340 metres was required to give a minimum warning time of 30 seconds for trains travelling at 25 mph.
- 48 As the actual sighting distance of 466 metres was greater than the required sighting distance of 340 metres, the west-facing lookout had no need to move to improve his sighting distance and increase warning time.

The supervisor and trainee drivers' competence and fitness for duty

- 49 Northern Rail certified that the supervisor driver was medically fit and competent for his duties. He had been a train driver with the company since August 1991, a supervisor driver since 2001, passed his professional instructor course in October 2006 and was found to be competent in his last examination in June 2008. Between June 2008 and the date of the accident the supervisor's driving was assessed and found to be competent on four separate occasions.
- 50 A driver team manager assesses a trainee each time they complete their duties with a supervisor driver; if problems are found with a trainee's competence then the supervisor's competence and ability is examined. To date Northern Rail had found no problems with this supervisor driver or his trainees.
- 51 The trainee joined Northern Rail in July 2009 and spent his first weeks in a classroom, on a train driving simulator and in a depot learning about trains and railway rules, before being allowed to take a train's controls and drive under supervision.
- 52 By the day of the accident the trainee had accumulated 8 hrs 9 minutes driving time and had driven from Leeds to Shipley twice before, on 25 and 27 November 2009. Northern Rail had assessed the trainee to be at a stage where he was able to drive a train safely but driving was not yet second-nature to him and, in accordance with Northern Rail's driver training procedure⁴, he required close supervision.
- 53 Neither the supervisor nor the trainee wore anything on or around their heads that would impair their sight or hearing, neither was using a mobile phone or anything else that could have affected their attention and there was no-one else in the cab to distract them.
- 54 Northern Rail assessed their drivers' duties before the accident and established that neither was at risk from fatigue and there was no evidence that their personal behaviour would have affected this assessment. After the accident they were tested for the presence of drugs and alcohol; their test results were negative.

⁴ Northern Rail procedure 6.12 'Driver Training' issue 2 November 2007.

The train and its operation

- 55 The train performed satisfactorily before the accident. Northern Rail tested the train after the accident and found no faults with its warning horn, its control and braking systems or the visibility from the cab through the windscreen.
- 56 Evidence from the supervisor driver and the train's data recorder confirmed that the trainee operated the train in accordance with Rule Book module TW1, 'Preparation and movement of trains'⁵ which states that a train driver must:
 - a. observe all signals and speed restrictions;
 - b. not use the horn more than is necessary to give an effective warning or to make sure safe working takes place;
 - c. sound the horn to warn anyone who is on or near the line on which they are travelling; and
 - d. give a series of short, urgent danger warnings to anyone who is on or dangerously near the line who does not appear to move clear out of the way of the train.
- 57 The train's data recorder confirmed that the trainee drove the train at or below the speed limit, acknowledged the in-cab warning for the signal at Leeds West junction, sounded the horn to warn the east-facing lookout and acknowledged the in-cab warning for the signal at Whitehall West junction.
- 58 At this time the supervisor stated that he observed:
 - a. the track workers to confirm they moved from the line to a safe position;
 - b. the signals and junction to confirm they were set for the route to Shipley; and
 - c. the speedometer to check that the train's speed was within the speed limit.
- 59 The trainee did not sound the horn again because he believed that the west-facing lookout was clear of the line and no closer to it than the track workers he had passed (paragraph 29). This view was shared by the site lookout, alternately watching the east and west-facing lookouts, who said that the west-facing lookout, 96 metres to his west, appeared to be in a safe position.
- 60 The train was approximately 10 metres from the west-facing lookout when the trainee remarked that he appeared to be close to the line. Figure 12 is a reconstruction of the trainee driver's view from the cab at this location. It shows, to scale, a figure representing a lookout in a safe position and another in the path of trains; both may appear to be safe positions because of the figures' nearness to curved track and overhead line equipment which is clear of passing trains.

⁵ Rail Safety and Standards Board GE/RT8000/TW1 Issue 8 October 2008.



Figure 12: The view from the cab showing a lookout in a safe position (A) and in the path of trains (B)

Identification of the causal factors⁶

61 The causal factors were that the west-facing lookout:

- a. moved from a safe position and was possibly unaware that he was in the path of trains; and
- b. was possibly unaware that a train was approaching him.

The west-facing lookout moved from a safe position and was possibly unaware that he was in the path of trains

- 62 The west-facing lookout was in a safe position when the westbound freight train passed him from behind without incident at 09:18 hrs (paragraph 21) so he had moved from this position, possibly to keep warm, physically comfortable and alert, while he carried out his duties on a cold morning (paragraph 12).
- 63 He was perhaps unaware that he had moved from a safe position as there had been little to attract his attention to the adjacent line; in the hour and 22 minutes from starting work until the accident, only the westbound freight train had travelled on this line and there was no trackside feature to warn that he was dangerously close to the line. At Purley Oaks in 2001, the investigation report⁷ concluded that a factor in the accident was that the limit of the safe position was not marked.
- 64 The west-facing lookout had moved from a position of safety and was possibly unaware that he was in the path of trains, a human error called a lapse, which is a condition that is known to arise as a person becomes absent-minded while carrying out routine tasks in familiar surroundings in a largely automatic fashion.

The west-facing lookout was possibly unaware that a train was approaching him

- 65 The train was approximately 500 metres away when its horn sounded so it is unlikely that the west-facing lookout heard it over the sounds of the nearby site of work, the power tools and adjacent roads. He may also not have heard the train approach, as electric trains are relatively quiet and it coasted as it neared.
- 66 Alternatively, the west-facing lookout may have been aware of the train's presence but believed that it was on a line other than the one adjacent to him, as it gave no further warning (see paragraph 59).

Observations⁸

Yorkshire Ambulance Service's navigation to the accident location

- 67 Yorkshire Ambulance Service use satellite navigation and postcodes to find destinations. At the time of the accident the ambulance driver could not find the access point for Whitehall West junction as it does not have a postcode and he was unable to use the grid reference given by the controller of site safety.

⁶ Any conditions, events or behaviours that were necessary for the occurrence. Avoiding or eliminating any one of these factors would have prevented it happening.

⁷ Network Rail report 01/RSR/050.

⁸ Elements discovered as part of the investigation that did not have a direct or indirect effect on the outcome of the accident but does deserve scrutiny.

- 68 It was fortunate that the controller of site safety knew the area well and was able to direct the ambulance to the access point; on this occasion the ambulance lost little time navigating to site in this way and it did not affect the consequences of the accident.
- 69 Locations that do not have a postcode have caused problems for the emergency services before; the RAIB's report into the 2006 Channel Tunnel fire (RAIB report 37/2007) stated that the Police and Ambulance Service were unable to recognise the Channel Tunnel as a location and sought clarification by means of a postcode; this resulted in a delay until the necessary information could be obtained.

Planning of the work

- 70 Approximately 70% of work in the Leeds station area is planned and carried out in green zones. Because Whitehall West junction is used frequently by trains to and from Leeds and by freight trains avoiding Leeds Station, green zone access is only available after midnight on Saturday nights when it is used for patrols that inspect the condition of the lines.
- 71 Network Rail identified the work to restore the level of the track on 18 September 2009, planned for it to be carried out in a red zone while the track remained open to trains, generated the record of site safety arrangements and briefing form on 25 November 2009 and scheduled for the work to be done no later than 13 January 2010.

Errors in the planning of the work

- 72 The planning of the work identified a train speed of 40 mph (64 km/h) which required a minimum sighting distance of 600 yards (549 metres) to give a warning time of 30 seconds. While there was only 466 metres sighting distance to Doncaster, the train speed on these lines was 25 mph (40 km/h) which required a minimum sighting distance of 340 metres.
- 73 This error had no effect on the accident as the minimum sighting distance of 466 metres (paragraph 47) gave a warning time of 42 seconds. The controller of site safety tested the arrangements and confirmed that the available warning time was greater than the 30 seconds required before work commenced that morning.

The Huddersfield lines were re-opened in view of the accident site

- 74 Network Rail re-opened the lines from and to Huddersfield at 09.49 hrs. Trains then passed the accident site, which was not screened from view, while track workers and the emergency services attended to the west-facing lookout. This is not normal practice and upset the other track workers who understandably considered that allowing trains to pass was disrespectful to a well-liked colleague.

Summary of Conclusions

Immediate cause

- 75 The immediate cause of the accident was that the west-facing lookout did not move from the path of the train as it approached (paragraph 36, no recommendation).

Causal factors

- 76 The causal factors were that the west-facing lookout:
- a. moved from a safe position and was possibly unaware that he was in the path of trains (**paragraphs 61a and 64, Recommendation 1**); and
 - b. was possibly unaware that a train was approaching him (**paragraphs 61b, 65 and 66, no Recommendation**).

Additional observations

- 77 The Yorkshire Ambulance Service driver could not find the accident location without assistance as the access point had a grid reference but not a postcode and on another occasion this has the potential to cause delay (**paragraphs 67 to 69, Recommendation 2**).
- 78 The work was planned to take place while the track remained open to trains (**paragraph 71, no Recommendation** – this has been covered by previous recommendations, see paragraph 83).
- 79 There were errors in the safe system of work (**paragraphs 72 and 73, no Recommendation**).
- 80 The Huddersfield lines were re-opened in view of the accident site (**paragraph 74, no Recommendation**).

Action reported as already taken or in progress relevant to this report

- 81 Network Rail carried out a formal investigation into the accident and published its report in June 2010.
- 82 The RAIB shall brief train operating companies on the difficulty their drivers face in determining whether a track worker is dangerously close to the line, particularly on curves.

Previous recommendations relevant to this investigation

- 83 The RAIB reports into the accidents at Ruscombe (RAIB report 04/2008) and Leatherhead (19/2008) made recommendations to increase the use of green zones for track inspection and maintenance.

Recommendations

84 The following recommendations are made⁹:

- 1 *The intention of this recommendation is to reduce the likelihood of lookouts moving from a safe position.*

Network Rail should consider ways to reduce the risk of lookouts moving dangerously close to trains and if appropriate make arrangements to physically identify a safe position by:

- a. marking its limits on the ground;
- b. placing barriers at its limits;
- c. placing a rest in a safe position to allow a lookout to remain in comfort; or
- d. other appropriate arrangements.

- 2 *The intention of this recommendation is to reduce the likelihood of delay in the arrival of an ambulance at a rail accident site.*

The ambulance services of the United Kingdom should consider ways to reduce the risk of ambulance drivers being unable to find places on the railway that do not have postcodes and if appropriate make arrangements for them to navigate to those places using:

- a. grid references; or
- b. other appropriate arrangements.

⁹ Those identified in the recommendations, have a general and ongoing obligation to comply with health and safety legislation and need to take these recommendations into account in ensuring the safety of their employees and others.

Additionally, for the purposes of regulation 12(1) of the Railways (Accident Investigation and Reporting) Regulations 2005, these recommendations are addressed to the Office of Rail Regulation and to the ambulance services of the United Kingdom to enable them to carry out their duties under regulation 12(2) to:

- (a) ensure that recommendations are duly considered and where appropriate acted upon; and
- (b) report back to RAIB details of any implementation measures, or the reasons why no implementation measures are being taken.

Copies of both the regulations and the accompanying guidance notes (paragraphs 167 to 171) can be found on RAIB's website www.raib.gov.uk

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