RAIB

Rail Accident Investigation Branch

Annual Report 2007

Department for Transport

This report is published 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.

Any enquiries about this publication should be sent to:

RAIB
The Wharf
Stores Road
Derby UK
DE21 4BA

Email: enquiries@raib.gov.uk
Telephone: 01332 253300
Fax: 01332 253301
Website: www.raib.gov.uk

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Preface

This is the Rail Accident Investigation Branch's (RAIB) annual report for the calendar year 2007 it is produced in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005 (SI1992).

Section 1 - Introduction: deals with the background and organisation of the RAIB and sets out its aims, statutory duties and scope of accidents investigated.

Section 2 provides details of the RAIB operations during 2007.

Section 3 looks at the causes of accidents and the related recommendations arising from all investigations concluded in 2007, from commencement of the RAIB on 17 October 2005 to 31 December 2007.

Section 4 deals with other Branch activities.

Further details on the reporting schedules and accident statistics can be found in Annexes D and E. Annexes G and H include glossaries explaining:

- abbreviations and acronyms that have been used within the report; and
- technical terms, shown in *italics* when they appear in text.

RAIB Annual Report 2007

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Chief Inspector's Foreword

This report is about the work of the Rail Accident Investigation Branch (RAIB) during the period January 2007 to December 2007. Our aim is to improve the safety of the UK's rail systems through our independent, 'no blame' investigations; to establish what caused the accidents and to make recommendations for changes that will prevent future similar occurrences.

By the end of December 2007 the RAIB had been operational for twenty six months and had commenced investigations in 101 accidents or near misses and published its findings and recommendations in 73 cases. Sadly 13 of those accidents involved the loss of lives either of members of the public or railway staff; seven resulted in serious injury.

The RAIB extends its investigations to other accidents or near misses which in slightly different circumstances could have had serious consequences. These investigations present as much, and in some cases more, opportunity to learn and make recommendations to prevent future accidents.

The RAIB's Performance

The safety of the railways is the result of activities of a large number of organisations and individuals. The impact of the 73 RAIB investigations cannot be measured by the safety performance of the industry as a whole. However, each of our recommendations, if carried out, will result in a change to the way the railways operate, improving safety. Of the recommendations closed by ORR, plus those reported as completed by industry, 97% are indicated as accepted and implemented. This would indicate that the industry believes that implementation of the RAIBs recommendations is beneficial to the safety of the railway.

Whilst the RAIB is a very new organisation it has rapidly established itself in the industry. In 2007, after nearly two years of operations I commissioned an independent review so we could benefit from the views of others. Organisations including those we investigate, passenger and worker representative groups, the safety regulator and the police were asked to comment on how they perceived our work and our contribution to safety. The feedback received was extremely positive; we were seen as a highly professional organisation producing good quality investigations and bringing real improvements to safety. We asked what areas the Branch should focus on in terms of improvements and we were not surprised that some organisations wanted us to be able to complete our investigations more quickly. We are constantly striving to conclude our investigations and reports as soon as possible without compromising quality. However, the length of time each investigation takes depends on its complexity and the overall workload of the Branch. On average we have 28 concurrent investigations and publish within 10 months of the accident. In order to best use our professional resources in 2007 we made good use of 'preliminary examinations', a means of collecting sufficient information to properly inform our selection of full investigations that will bring greatest benefit. When we do not carry out a full investigation but wish to share safety information we publish safety bulletins. In every case where we discover issues that concern us during the investigation we will issue an urgent safety advice to the industry to immediately bring this to their attention.

Chief Inspector's foreword

Amongst the investigations we undertook in 2007 the biggest related to an accident that occurred at Grayrigg in Cumbria on the evening of 23 February. Sadly one person lost her life, 30 others sustained serious physical injuries and 58 received minor injuries. The incident and the subsequent investigation has been the subject of significant media and public interest. We published a factual report outlining events and the immediate cause three days after the accident and followed this with two urgent safety advice notices to the industry dated 6 June 2007 and 26 November 2007, and a progress report in October 2007. The final[1] report was published in October 2008.

The RAIB investigation was entirely focused on improving safety but the accident at Grayrigg has also been subject of separate investigations by the police and the safety regulator, the ORR, who sought to establish whether there had been breach of legislation. The Memorandum of Understanding that was established during my setting up of the RAIB with the police and the safety regulator has been fully 'tested' by this extensive investigation and has worked well in maintaining the independence of our investigation but still enabling the three organisations to discharge their separate responsibilities.

Similarly, 2007 saw the first time that the RAIB and Bureau d'enquêtes sur les accidents de transport terrestre (BEA-TT the independent rail accident investigation body for France) worked together on an investigation into a train fire in the Channel Tunnel on the 21 August 2006. This was carried out effectively and in accordance with a cross border co operation agreement between the RAIB and BEA-TT.

Throughout the year we have enjoyed visits from organisations from other parts of the world who have wanted to learn about the establishment of the Branch or see something of our work. We have also continued to support the development of the work of the European Railway Agency (ERA). Through the establishment of the RAIB in 2005, the UK was the first EC Member State to implement the EU legislation concerning independent rail accident investigation. The RAIB continues to share its early years' experience with other Member States and ERA.

Emerging safety issues

Rarely does an accident occur because of only one cause. It is often as a result of several and in the context of a safety management system that allowed those failings. In 2007 in the absence of finding a sufficiently comprehensive system by which we could categorise causes of accidents the RAIB developed such a tool. This allows us during our investigations to establish whether we have come across the same issue in other investigations and also to identify trends. Whilst only the high level categories are used by way of summary in this report it is the basis of the analysis presented in section three. The RAIB is in discussions with other rail organisations in the UK and with ERA with the hope that we can agree some degree of common categorisation so we can readily share information.

Implementation of the RAIB's recommendations

A major part of this report details each of the RAIB recommendations made or reported upon during 2007 and the reactions of both those who received the recommendations and the safety authority. The availability and transparency of this kind of information is an important outcome of the establishment of the RAIB.

[1] Investigation reports are available at www.raib.gov.uk

Chief Inspector's foreword

All the achievements made during 2007, and on an ongoing basis, are the result of the dedication the 45 people who comprise the RAIB; the 25 investigators and the 20 administrative staff who support the investigations, and also those outside of the branch who have contributed to and worked alongside us in our investigations. In order to respond to accidents RAIB staff are on call 24 hrs a day 365 days a year. This report demonstrates their hard work has made a difference to the safety of the railways in the UK. The Branch has come a long way in a short period, but we are ever vigilant to identify ways we can continue to develop our operations.

Carolyn Griffiths

Chief Inspector of Rail Accidents

31 October 2008

1 Introduction to the Rail Accident Investigation branch

'Our aim is to improve safety on the UK's railways by conducting accident investigations, that are independent and do not apportion blame or liability, and making recommendations to prevent similar accidents in the future.'

Introduction to the report

This report:-

- Explains the role and aims of the Rail Accident Investigation Branch (RAIB).
- Provides information on RAIB's investigatory work opened in 2007.
- Highlights the progress of actions taken to implement recommendations made in RAIB's reports by the parties identified as the responsible duty-holders.
- The final section of the report contains statistics showing summaries of investigations opened in 2007 by type of incident and by industry sector.

The legal framework under which the RAIB operates is found in the:

- The Railways and Transport Safety Act 2003.
- The Railways (Accident Investigation and Reporting) Regulations 2005 (SI1992); this legislation will be referred to as 'the Regulations' in the remainder of this report.
- The Railway Safety Directive (2004/49/EC).

Role

The RAIB is independent of the government; railway industry; safety authorities; and prosecution bodies. The Chief Inspector reports directly to the Secretary of State on matters concerning accident investigation. The RAIB is part of the Department for Transport, but is functionally independent.

The RAIB is not a prosecuting body. Its investigations are focused solely on safety improvement and do not apportion blame or liability. Breaches of legislation are dealt with by the police and safety authorities and none of their statutory duties have been changed by the creation of the RAIB.

Aims

The RAIB aims:

- to improve the safety of the railways and prevent railway accidents and incidents by:
  - carrying out investigations to determine the causes and circumstances of accidents and incidents along with any other factors that contributed to the event or made the outcome worse;
  - making evidence based recommendations to reduce the likelihood and mitigate the consequences of similar accidents and incidents occurring in the future; and
  - improving standards of rail accident and incident investigation through the development of best practice and improved methods of investigation;
- to satisfy the public in general, railway users in particular, and the railway industry, that rail accidents are being independently professionally investigated, and that recommendations to prevent future recurrences are being made to the persons or organisations best placed to implement them;
- to fulfil the requirements of the relevant parts of the European Railway Safety Directive by:
  - co-operating and assisting in rail accident investigations with other member states;
  - sharing findings and best practice with other member states.

Geographic territory

The RAIB provides a rail accident investigation service for the whole of Great Britain and Northern Ireland.

1 Introduction to the Rail Accident Investigation branch

Types of railway

The RAIB investigates accidents and incidents on the following types of railway[2]:

- the national rail networks in Great Britain and Northern Ireland;
- the Channel Tunnel (in co-operation with its equivalent operation in France 'Bureau d'enquêtes sur les accidents de transport terrestre – BEA-TT');
- private freight only lines – but excluding railways within industrial premises such as factories, freight terminals and quarries (however, accidents that occur in *exchange sidings* where trains are entering or leaving industrial premises will be investigated);
- metros – this includes the London Underground, Tyne and Wear Metro, Docklands Light Railway and Strathclyde Metropolitan Railway;
- tramways;
- heritage railways running on track whose gauge exceeds 350 mm; and
- cable-hauled systems of 1 km or longer, particularly the Cairngorm Mountain Railway and the Great Orme Tramway.

Scope of accidents investigated

The RAIB is mandated by the Railways and Transport Safety Act 2003 to investigate any serious railway accident. This Act, and the Railways (Accident Investigation and Reporting) Regulations 2005 implement the European Railway Safety Directive (2004/49/EC), which requires member states to establish an independent body to investigate all rail accidents, where potential safety lessons can be learned, that involve a derailment or collision which result in (or could result in):

- the death of at least one person;
- serious injury to five or more people; or
- extensive[3] damage to rolling stock, the infrastructure or the environment.

In addition to these serious accidents the RAIB has the discretion to investigate other accidents and incidents. The RAIB's decision to do so will be based upon evaluation of the potential for safety lessons to be learned for the improvement of railway safety and the prevention of future accidents.

[2] The only exception in the regulations to the Great Britain and Northern Ireland wide coverage is the investigation of accidents and incidents on tramways in Scotland. There are no tramways in Scotland at present. Powers relating to any which may be built are devolved to the Scottish Government and the RAIB will investigate any accidents or incidents on tramways by invitation of the Scottish Government.

[3] 'Extensive damage', as defined by the European Railway Safety Directive 2004/49/EC, means damage that can be immediately assessed by the investigating body to cost at least 2 million euros in total.

Accidents excluded from investigation

The RAIB will not investigate:

- worker accidents/incidents that are not associated with train movements and which are not relevant to the operation of the railway;
- accidents/incidents involving trespassers or suicides; and
- accident/incidents that occurs within an industrial curtilage.

Accident and incident notification[4]

The legal obligation to notify an accident or incident to the RAIB is upon those railway industry bodies (railway *infrastructure managers*, railway operators, or maintainers) whose staff or property is involved in an accident or incident.

Details of the types of railway accidents and incidents that must be notified to the RAIB, along with the timescales in which they must be reported are contained in Schedules to the Regulations. A summary of the schedules is included in Annex E. Schedules 1, 2 and 3 relate to accidents and incidents occurring on all rail systems, with the exception of the Channel Tunnel, which are covered in Schedules 4 and 5.

The occurrence of Schedule 1 and 4 incidents must be notified immediately to the RAIB. This enables the RAIB to react quickly if there is potential evidence at a site that may be important to the investigation and which may be perishable or otherwise disturbed with time.

The occurrence of Schedule 2 and 5 incidents where immediate site attendance is not critical to the investigation must be notified to the RAIB within three working days of the incident occurring.

Network Rail and LUL carry out their own trend analysis on schedule 3 incidents, it has been agreed that both organisations provide a monthly summary report to the RAIB. Schedule 3 incidents from other organisations are required to be notified to the RAIB on a monthly basis.

RAIB's response to notifications

The RAIB has a duty co-ordinator and team of inspectors on call 24 hours a day, 365 days per year. If it is important that evidence is secured quickly, RAIB inspectors will be dispatched to site immediately. In some cases, it is clear from the information that is notified and/or that which the duty co-ordinator secures in the immediate aftermath of the accident that the RAIB should investigate. In other cases it may not be clear and the RAIB conducts a preliminary examination in order to decide what further action to take and whether a full investigation should take place. In making this determination we take account of the extent to which an investigation would improve the safety of railways and prevent accidents and incidents.

[4] Full details of the legislation, requirements regarding notification and the RAIB response can be found in the RAIB document 'Guidance on the Railways (Accident Investigation and Reporting) Regulations 2005' at www.raib.gov.uk.

1 Introduction to the Rail Accident Investigation branch

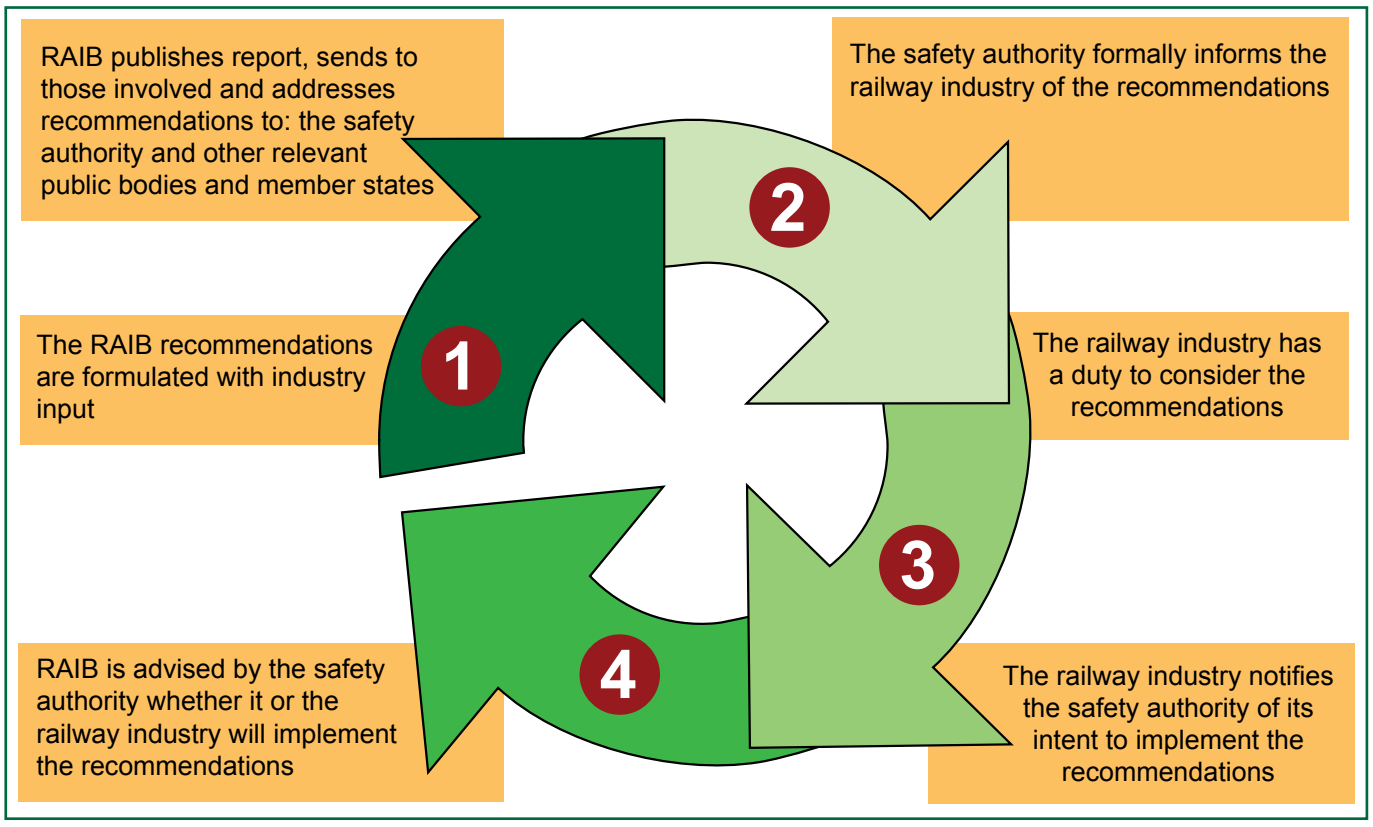
The recommendation process

Recommendations are the prime output of the RAIB's investigations in improving safety as required by the Directive and the Regulations[5]. The recommendations are addressed to the appropriate safety authority[6], and other public bodies where they are the end implementer.

The purpose of addressing the recommendation in this way is so these organisations can ensure the recommendations are duly taken into consideration and where appropriate are acted upon by the end implementers. The safety authority can, where they consider appropriate, enforce compliance with recommendations.

The safety authority is also required to inform the RAIB of the measures taken. The exception is where the recommendations are made to a public body, in which case the public body must report response to the recommendation directly to the RAIB. Feedback to the RAIB of the response and details of the action taken is very important in providing transparency of the process and enabling everyone to have a view of the safety improvements arising from the RAIB's investigations.

The Regulations give the safety authority the power to require end implementers to provide full details of the measures they intend to take, or have taken, to implement the recommendations, the proposed timescales for securing that implementation, and details on the progress made with implementation.



[5] The European Railway Safety Directive (2004/49/EC) and Railways (Accident Investigation and Reporting) Regulations 2005.
[6] The safety authority is the safety regulator; for mainland UK this is primarily ORR although there are some recommendations made by the RAIB where the HSE has been the safety authority (for accidents occurring that were not attributed to the railway and are investigated under the Health and Safety at Work Act 1974); for the Channel Tunnel it is the Inter Governmental Commission and for Northern Ireland it is the Department for Regional Affairs.

Reports are made periodically or can be additionally requested by the Chief Inspector. The possible responses that the end implementer may give to the safety authority in terms of their intentions to implement are:

a. acceptance of the recommendation and a timetable for implementation;

b. proposed alternative action – this will include the reasons for the alternative action and a timetable for implementation;

c. rejection of the recommendation – this will include the reasons for the rejection.

Upon receipt of the end implementer's response the safety authority will:

a. accept the response; or

b. discuss, with the end implementer, a modification to its response or timetable; or

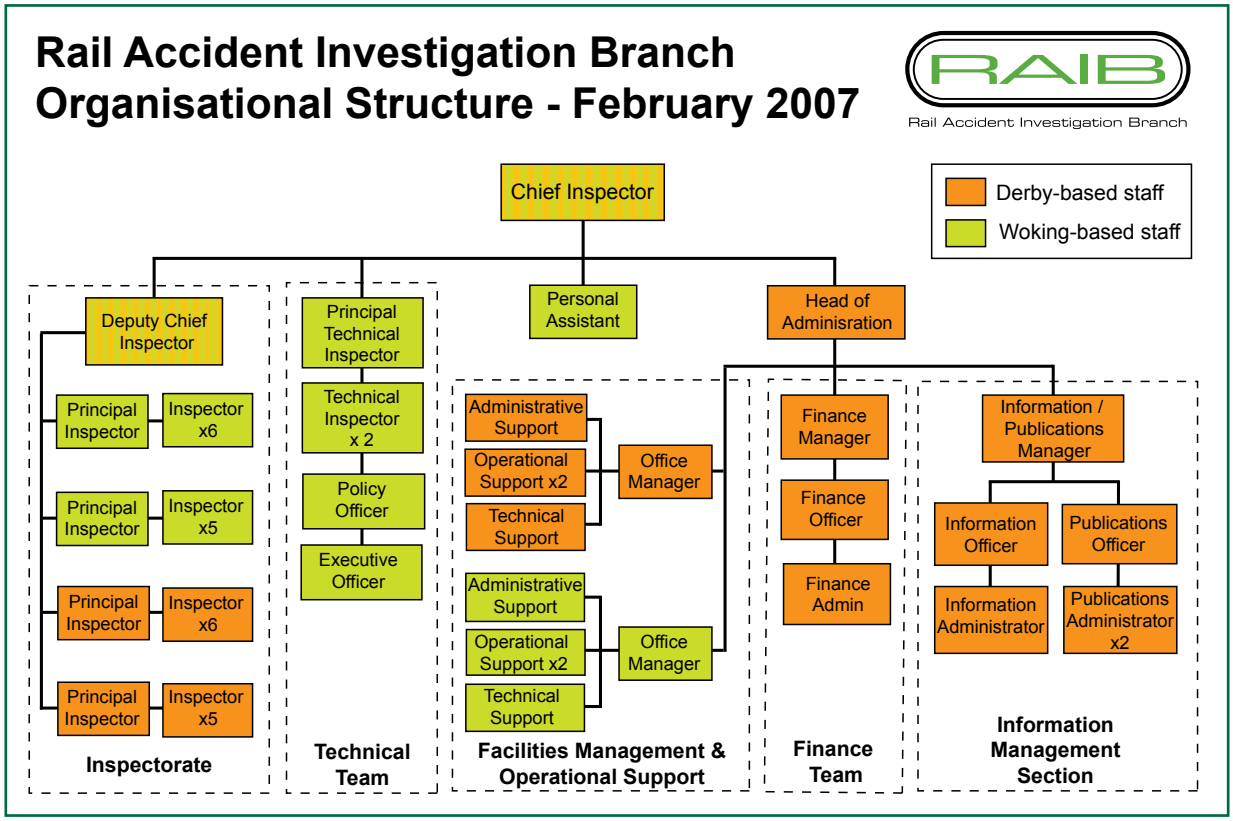
c. reject the end implementer's response and consider potential enforcement.

The RAIB is required by the Regulations to publish in its annual report details of the measures that have been reported to the Branch as having been taken in response to its recommendations; see Annex C of this report.

Personnel

The RAIB has been established to operate with 54 personnel consisting of 31 inspectors and 23 support staff. Currently there are 45 full time personnel working from operational centres located at Derby and Woking. During 2007 three inspectors completed their training and went on the on-call roster.

The Branch is continuing its recruitment to complete its organisation; a recruitment campaign was carried out in late 2007 and a further one is taking place at the time of publication of this report.



2 Operations

Number of notifications

In the period from 1 January 2007 to 31 December 2007 the RAIB received 303 notifications of railway accidents and incidents that were required under Schedules 1 and 2 of the Regulations (see Annex D). A further 46 notifications were received under Schedules 4 and 5 for accidents occurring in the Channel Tunnel. Together these resulted in 61 immediate deployments of RAIB inspectors to the accident site to carry out a preliminary examination; of these 37 full RAIB investigations were started.

The Regulations require the reporting of a range of accidents from those resulting in serious injury and damage through to incidents of "near miss". This enables the RAIB to investigate accidents or incidents which under slightly different circumstances could have resulted in serious consequences, and to also identify repeats of similar occurrences and trends.

Accident investigation reports published in 2007

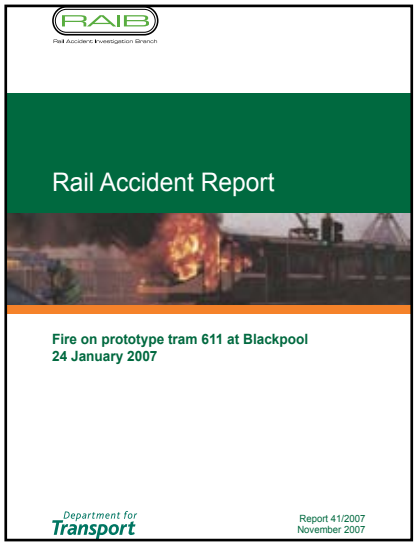
Details of all new investigations are published on the RAIB website.

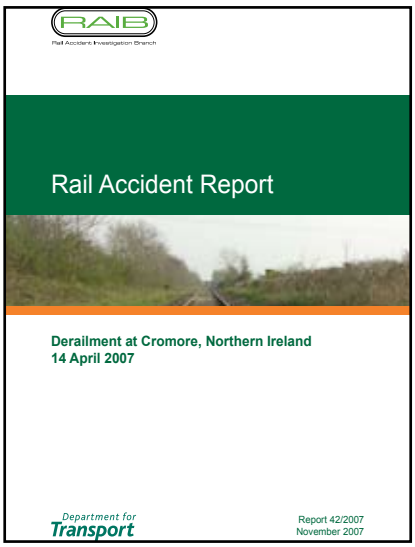
An investigation report is produced following completion of each RAIB investigation. These will, as appropriate, contain recommendations which the RAIB considers will improve railway safety[7]. The reports are public documents and are available on the RAIB website at www.raib.gov.uk (hard copies can be provided upon request).

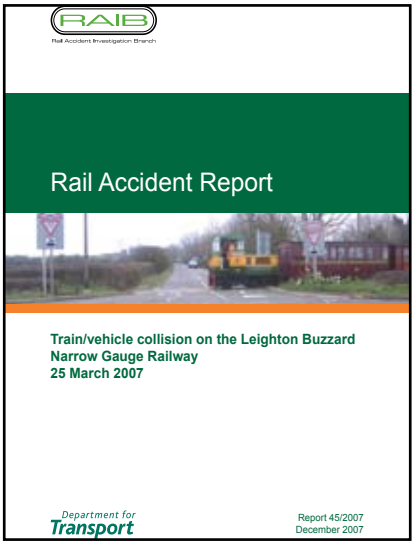
Anyone can subscribe (through the RAIB's website) to be automatically emailed with updates on investigations. There is no charge for this service.

The RAIB completed 47 investigations in 2007. This total includes one report into an investigation opened in 2005; 35 reports into investigations opened in 2006 and 11 reports into investigations opened in 2007. A list of the investigation reports published in 2007 is included in Annex A.

Details of these reports, their recommendations and the recommendation implementation status can be found in Annex A, B and C Appendix's 1 to 5. The RAIB commenced 37 new investigations in 2007 and details of these can be found at Annex's A and B.







[7] Statistics for accidents and incidents can be found on the ORR website at www.rail-reg.gov.uk

Investigation reports are produced in the shortest possible time and normally not more than 12 months after the date of the accident or incident; however, the complex investigation on Autumn Adhesion incidents was started in 2005 and published in January 2007. For investigations started in 2006 and published in 2007 the average time from the date of the incident to publication was 12 months, for investigations started and published in 2007 the average time from the incident date to publication was 6.5 months. The length of investigation is influenced by the complexity and scale of the investigation and branch workload.

Accredited Agents

The RAIB is a relatively small organisation, covering a large geographic area. However, there may be occasions when the RAIB requires assistance to ensure a rapid initial presence to the more remote locations that require attendance on site. To enable this, the RAIB can ask the railway industry to assign specific industry personnel from its own staff, known as 'Accredited Agents', to act on behalf of the RAIB until inspectors arrive on site. Their role is limited to recording important perishable evidence, identifying other evidence that needs to be protected and providing the RAIB with early information from the site. Accredited Agents must be approved by the RAIB. During 2005-7 the RAIB trained, assessed and approved 388 Agents at various locations throughout the UK. The arrangements have worked very well and have provided valuable assistance to the RAIB.

Accredited Agents were deployed to site by the RAIB Duty Co-ordinator on 14 occasions during 2007, including Blackpool, Grayrigg, Cromore and Mile End. Their assistance has ensured that the most perishable evidence at the accident site, that would otherwise have been lost, was recorded.

2 Operations

Incidents and accidents on the National Railway Network

The RAIB published twenty four investigation reports concerning accidents and incidents on the national network in 2007, and commenced another twenty such investigations. The national railway network represents the largest railway system in the UK, and operates the fastest (apart from the high speed link to Europe) and heaviest trains.

Interaction with road vehicles and pedestrians

The interaction of road vehicles and trains, and of pedestrians and trains, represent the greatest cause of loss of life on the railways of the UK. However, the RAIB does not investigate deaths caused by trespassers or by suicides, which represent the majority of this category. In the case of accidents on level crossings where there is no evidence of intent of suicide the RAIB will carry out a preliminary examination of the scene; if the condition of the crossing, or other railway controlled features have the potential possibly to either be causal or contributory[8] to the accident, the RAIB will usually carry out a full investigation.

There were four investigations started in 2005, four in 2006 and one in 2007 concerning the interaction with road vehicles, trains and pedestrians.

During 2007 the RAIB published four reports on the interaction of road vehicles with the national railway system, and none about pedestrians on that system. The reports covered four different scenarios, with no common trends from the investigations. In 2007 the RAIB commenced one investigation concerning road vehicles, which involved a contractor's machine working on the M20 colliding with a train. As a result of particular issues relating to *User Worked Crossings* the RAIB commenced a 'class' investigation in this type of crossing in 2008. It aims to publish this report early in 2009.

Derailments

During 2007 the RAIB published five reports on derailments of trains on the national system. Two of these reports, covering three derailments, were associated with the maintenance of switches and crossings on Network Rail's Wessex area. One derailment was the result of a broken rail in an opencast coal loading site, one due primarily to the design of the suspension of a wagon, and the last due to engineering works that were taking place on an embankment. No-one was injured in any of these derailments.

The RAIB commenced seven investigations into derailments in 2007. Two of these involved switches and crossings, and one sadly led to a passenger fatality, as detailed below. There were no RAIB investigations into derailments involving switch crossing in 2005, or the first ten months of 2008.

[8] For definitions of factors affecting the occurrence of accidents/incidents see page 24.

Derailment at Grayrigg Cumbria 23 February 2007

On 23 February 2007 a passenger train travelling at 95 mph (153 km/h) derailed over a set of points. One passenger was fatally injured, 28 passengers and 2 crew suffered serious injuries and 58 passengers received minor injuries.

The RAIB published an interim report detailing the RAIB initial findings three days after the accident on 26 February 2007 and a progress report on 3 October 2007 and two related urgent safety advices to the industry (see page 22). The final report was published in October 2008.

Doors

The RAIB commenced two investigations concerning door incidents in 2006; there were no investigations started in 2005 or 2007.

There were two reports published in 2007 concerning train doors on the national network In one case a member of the public got his coat caught in the door of a departing train, and was dragged down the gap between the train and the platform, fortunately with limited injuries in the circumstances. In the second case a door of an express train came open at high speed, fortunately without injury. The RAIB identified the technical cause of this incident, and also investigated how the train was handled after the door came open. The RAIB commenced two further investigations into train doors, one on London Underground, and one on the Croydon tramway, and this has allowed the RAIB to compare door closing standards across three sectors of the rail industry.

Possession management

The RAIB started one investigation concerning possession management in 2005, two in 2006 and three in 2007.

There were three reports published on possession management issues on the national system during 2007. A 'possession' is when the engineers close the line to carry out maintenance or renewal work. In each case communication was a factor. In one, an on-track-machine was run too fast in a work site and collided with another such machine, writing off both machines and injuring some of the crew. In the second case, mis-communication resulted in a train running in close proximity to track workers and their tools, causing a risk of serious injury to those involved, while the third case involved a train being despatched incorrectly out of a possession, and being at risk of a head on collision with a passenger train. The RAIB is particularly concerned about the length of work sites in possessions on the national railway network, and recommended that worksite length be minimised to avoid confusion; the RSSB has subsequently amended the rule book to reflect this.

The RAIB commenced three investigations involving possessions in 2007. All involved vehicles running away, in two cases excavators that can operate on road or rail systems. As a result of these and further accidents early in 2008 the RAIB has commenced an investigation into the use of these vehicles on the national railway network.

2 Operations

Staff accidents

The RAIB started one investigation concerning staff accidents in 2005, one in 2006 and five in 2007.

Two accidents involved fatal injuries to train crew – in one case a shunter was crushed, and in the other a driver electrocuted as he 'ducked' under a wagon, and came into contact with the live third rail.

The third case involved a member of staff working on a pair of points. No-one was injured but there was a virtually identical event a month later which resulted in a fatality (the report into the latter event was published in 2008). Three accidents occurred in 2007 when staff were hit by trains in the vicinity of points. A previous similar fatal accident happened in 2005, shortly after the RAIB was formed. In all these cases the staff involved may have been confused about the route the train was going to take through the points.

Signals Passed at Danger (SPADs)

At the turn of the millennium SPADs represented the highest risk on the UK national network. The introduction of the Train Protection and Warning System (TPWS) is estimated to have reduced this risk by approximately 90%. The RAIB only investigates the highest risk SPADs, that is those that have significant potential to cause an accident.

The RAIB commenced one investigation into a SPAD in 2005, one in 2006 and one in 2007.

There were four reports on SPADs on the national system published during 2007. One report covered two SPADs; both caused by poor adhesion, and this was extended to look at risks from low adhesion events more generally. Subsequent industry action, including implementation of the RAIB's recommendations, has led to much improved autumn performance

Two of the other reports involved freight trains at night, in one case the driver micro-slept, and in the other the signaller changed the points under the train as the driver passed the signal. Both resulted in derailments of the freight trains. The final report involved a freight train which passed a signal at danger, and was brought to a halt by TPWS. However, the driver then over-rode the TPWS and mis-interpreted the signals, driving on for over a mile before being stopped by the signaller. No injuries resulted from any of these incidents.

During 2007 the RAIB commenced one investigation into a SPAD, involving a high speed move at Didcot, where a collision was narrowly avoided.

Other

The RAIB commenced ten other investigations in 2006, and seven others in 2007 there were no other investigations started in 2005.

There were three other incidents on the national network that were reported on in 2007 – one involved the despatch of a freight train with the incorrect wagons, another related to a locomotive at the rear of an engineering train which became uncoupled and ran back in the direction it had come from, and the third involved a train which took power and could not be switched off.

Light railways

Six cities have tram systems. In 2007 the RAIB reported on eight investigations of accidents and incidents in tram systems.

Interaction with road vehicles and pedestrians

The RAIB started one investigation into the interaction with road vehicles and pedestrians in 2005 and one in 2006; there were no investigations started in 2007.

There was a report published in 2007 concerning a level crossing accident. This was the result of a tram driver expecting that a signal would clear on approach, and thus not stopping as the tram reached the crossing. Two people in the road vehicle involved were hospitalised for a short period.

Collisions between trams

The RAIB commenced one investigation into a collision between trains in 2005 and one in 2006 (there were no investigations started in 2007).

There was a report published in 2007 concerning a collision on a light railway, when a tram did not stop and as a result hit a failed tram in front of it. Issues about visibility and the working of windscreen blinds contributed to the collision. Thirteen passengers were taken to hospital after the collision.

Derailments

The RAIB commenced one investigation into derailments in 2005 and four in 2006; there was one investigation started in 2007.

There were four reports published in 2007 concerning four derailments. One was due to the state of a junction between tramway and conventional rail, two were involved with points, and the fourth one involved an experimental tram on a historic system, where the possible interaction of tram and track had not been adequately assessed. None involved injuries.

Doors

The RAIB commenced one investigation into a door incident in 2007; there were no investigations started in either 2005 or 2006.

The RAIB investigated an alleged event when a member of the public's hand may have been caught in the door of a departing tram.

Other

The RAIB commenced two investigations in 2005 none in 2006 and one in 2007.

There was a report published in 2007 concerning a fire in an experimental tram, whilst it was returning from a test run. The focus of the RAIB's investigation was the assessment and approval processes that allowed the tram to operate. There were no injuries.

2 Operations

Metros

The RAIB commenced three investigations in 2006 with another four in 2007; there were no investigations started in 2005.

There are four metro systems in the UK. London Underground is the largest of these by a considerable margin, and is the second largest railway system in the UK; it carries as many passengers as the national network. Only two reports (4%) were published on this system in 2007, both for relatively minor events, neither of which resulted in injuries. No investigations were carried out on the other three metros.

In the first London Underground investigation a train was incorrectly signalled at a junction. There was some confusion as a result, and the train was set back to clear the junction, but the instructions were mis-understood and the train started to be driven in the wrong direction. As soon as the line controller realised this the power was switched off and the train stopped whilst the problems were resolved.

The other incident involved a manually propelled trolley in an engineer's possession. The brakes of the trolley were not working correctly, having been adjusted without authority at some stage in the three weeks prior to the incident, and the trolley ran down a gradient and struck another trolley. The staff involved shouted a warning and all present were able to move clear before the (low speed) collision.

Northern Ireland Railways

The RAIB commenced one investigation in 2006 and another two in 2007; there were no investigations started in 2005.

There were two reports published in 2007 concerning two derailments in Northern Ireland. Although very different in their causes, both involved engineering plant, and both had an element of over speeding combined with an inability to communicate between different parts of the affected train.

Channel Tunnel

There was one RAIB investigation started in 2006, none in 2005 or 2007.

There was a report published in 2007 concerning a fire on a channel tunnel freight shuttle train, there were no casualties. The fire originated within a road vehicle, and was not observed as the train entered the tunnel. The RAIB's investigation covered the response to the fire by Eurotunnel as well as its origins. The investigation was carried out in co operation with Bureau d'enquêtes sur les accidents de transport terrestre (BEA-TT). At the time of publication the RAIB is co operating with BEA-TT on the investigation of another fire which occurred in the tunnel on 11 September 2008.

Heritage railways

The heritage sector is a relatively small part of the UK's railway operations. The severity of accidents in this sector led to 10 investigations (21%), which is disproportionate to this sector's size. Whilst the low speed of heritage trains generally reduces the consequences of accidents, one volunteer worker lost his life in an accident, a stark reminder that even the smallest railway produces high risks.

Interaction with road vehicles and pedestrians

The RAIB commenced three investigations in 2007 concerning the interaction with road vehicles and pedestrians; there were no investigations started in 2005 or 2006

There were two reports published concerning level crossing accidents on heritage railways in 2007. Both were on the same railway, and one was a particular reminder of the need to maintain vegetation under control around user worked crossings. No casualties resulted.

Collisions between trains

The RAIB commenced two investigations in 2006 and one in 2007 concerning collisions between trains; there were no investigations started in 2005.

There were two reports published in 2007 concerning two collisions between trains on heritage railways. Both took place in shunting manoeuvres, and both involved mis-communications. In both cases there were minor injuries as a result.

Derailments

The RAIB commenced two investigations in 2006 and another two in 2007 concerning derailments; there were no investigations started in 2005.

There were four reports published in 2007 concerning five derailments on heritage railways. Three of these derailments resulted from carriage suspension issues on a single narrow gauge railway. These highlighted the need to fully understand design issues where a railway cannot rely on the experience of the national system. One other derailment was due to the lack of detection on a pair of points, allowing vandals to leave them in an unsafe state without the railway's knowledge, and the last to an operational error by a signaller, involving equipment that had been installed as a temporary measure without full safety precautions twenty-three years previously. No injuries resulted from any of these derailments.

2 Operations

Staff injuries

There was one investigation started in 2006 regarding staff injuries, with none started in either 2005 or 2007.

A guard who was involved in the shunting of a train on a heritage railway was crushed between two vehicles and lost his life. Poor communication was again at the root of this accident, which indicates how some risks are equally high on all railways. Additionally the RAIB commenced a further investigation into an accident when a level crossing keeper on a heritage railway was seriously injured when a train struck the crossing gates.

Other

There was one investigation started in 2006, with none started in either 2005 or 2007.

There was a report published in 2007 concerning a blow back on a former British Railways steam locomotive. The defect that caused this was as a result of being manufactured with an under specification weld some fifty years before. Members of the locomotive crew suffered minor injuries.

Urgent safety advice

The RAIB can issue urgent safety advice (USA) when it believes that there is a need to provide immediate information to the relevant industry bodies about safety issues that have been identified during an investigation. The purpose is to give the industry the opportunity to assess for themselves whether there are any similar safety implications for their operations. During 2007 the RAIB issued urgent safety advice on 3 occasions, as follows:

Grayrigg, accident dated 23 February 2007 where a train derailed by running into gauge constraint after the uncommanded closure of a normally open switch rail. All stretcher bars were found to be in a failed condition, offering no restraint to the switch rail. Two USAs were issued during this investigation.

- Both USAs were issued on 6 June and 26 November 2007, and gave advice concerning the maintenance and design integrity of bolted fasteners, used in switches and crossings fixed stretcher bars on the stretcher bar to rail connection.

The near miss at **Tinsley Green** dated 17 March 2007 and the fatality at **Ruscombe Junction** dated 29 April 2007. The need for safe systems of work to take into account the particular requirements for working at junctions (particularly high speed ‘‘ladder’’ junctions linking three or more parallel tracks).

- The need to ensure that lookouts always give warnings of the approach of any train that might be routed towards the place of work and the elimination of unofficial systems of work based on the lookout observing the position of points in order to ascertain the route set for an approaching train.
- The need to instruct staff to move to a place of safety when hearing a lookout’s warning, regardless of the position of any points and the route displayed by signals (ie staff to be forbidden to make any assumption about the route set for an approaching train).
- The need for a review of risks and rules associated with maintenance activities carried out in the Red Zone at high speed junctions (including ‘‘ladder’’ junctions linking three or more parallel lines).

The Ladbroke Grove Public Inquiry[9] criticised the lack of clarity in the rail industry with respect to the measures taken to implement and track recommendations made in accident investigation reports, and commented on the need for the industry to put in place strong and effective systems to do this.

The arrangements and responsibilities for following up the implementation of the RAIB's recommendations are described in part 1 of this report.

Recommendations

This report provides a summary to whom the RAIB made recommendations to in 2007 (see Annex C, Appendix 3). The report also provides the implementation status of the 292 recommendations made by the RAIB in its 47 investigation reports published in 2007 as well as the status of the 95 recommendations that had a status of open or completed in the 2006 report (Annex C, Appendix 4 and 5). The status is based upon the latest information provided by the ORR or other public bodies. This information is provided in compliance with the regulations requiring the safety authorities or the other public bodies to report the details of the measures taken in response to RAIB's recommendations.

The number of accidents investigated and the number of recommendations made should not be taken as an indicator for assessing the safety of the UK's railways; statistical data on railway safety is published by the ORR. The current report is the Railway Statistical Report 2007, which can be found at www.rail-reg.gov.uk.

Between October 2005 and December 2007, RAIB has made a total of 425 recommendations, of these there have been:

- 149 closed as completed by industry and validated as such by the safety authority;
- 154 reported as completed by the industry but yet to be validated by the safety authority; and
- six reported as 'closed' with no action taken;
- 116 remain open, either feedback is awaited or actions have not been completed.

95 recommendations had a status of open or complete at the end of 2006, of these there have been:

- 29 closed as completed by industry and validated as such by the safety authority;
- 46 reported as completed by the industry but yet to be validated by the safety authority; and
- 20 remain open ie feedback is awaited or actions have not been completed.

Between January 2007 and December 2007, RAIB made a total of 292 recommendations, of these there have been

- 82 closed as completed by industry and validated as such by the safety authority;
- 108 reported as completed by the industry but yet to be validated by the safety authority; and
- six reported as 'closed' with no action taken,

96 remain open either feedback is awaited or actions have not been completed.

[9] The Ladbroke Grove Rail Inquiry in 2000 was conducted by the Rt Hon Lord Cullen PC and among others made recommendations relating to the establishment of an independent accident investigation branch.

3 Analysis of recommendations and causes

From the publication date of the RAIB report, the average time taken by industry to report that the recommendation had been fully implemented and completed is just under 4 months, with an added time of just under another 4 months for the ORR to agree closure making a total average of approximately 8 months to fully implement and close a recommendation.

The distribution of recommendations addressed to duty holders identified by the RAIB is shown in Annex C, Appendix 3, the main body of recommendations was addressed to the following organisations.

- Network Rail (71);
- mainline passenger and freight train operators (62); and
- heritage railways (43).

These recommendations arose from 47 investigations of accidents or incidents on the mainline railway, of those 5 occurred in freight yards or sidings.

- 12 recommendations were aimed at Light Rail Operators (tramways); and
- 8 recommendations were aimed at contractors: of these, 7 related to contractors working on the mainline railway.

Factors affecting the occurrence of accidents / incidents

The following define the meanings of the terms RAIB uses when describing these categories.

Immediate Cause: the condition, event or behaviour that directly resulted in the occurrence.

Causal Factors: any condition, event or behaviour that was necessary for the occurrence. Avoiding or eliminating any one of these factors would have prevented it happening.

Contributory Factors: any condition, event or behaviour that affected or sustained the occurrence, or exacerbated the outcome. Eliminating one or more of these factors would not have prevented the occurrence but their presence made it more likely, or changed the outcome.

Underlying Factors: any factors associated with the overall management systems, organisational arrangements or the regulatory structure.

To support its investigations, the RAIB has developed a system for the categorisation of factors to identify repeats of similar unsafe events or situations and trends. The categorisation of the immediate causes is by the main sectors of the rail industry and the key areas within each sector. The categorisation goes further to identify the causal, contributory and underlying factors and the relevant safety defences and the reasons for their failure.

This categorisation has been applied to all the factors identified in each of the RAIB investigation reports published in 2006 and 2007. The following sections provide a summary.

Immediate Causes

The immediate causes of the 26 incidents and accidents in 2006 and the 47 incidents and accidents in 2007as reported by RAIB were attributed as follows:

1. Operations Total = 23 of 74 these broke down into the following areas:

Including:

		2006	2007	Total
a	Train Driving	2	10	12
b	The protection of staff when working	1	3	4
c	Train operation and control		3	3
d	Shunting operations	1	1	2
e	Train dispatch	0	2	2

2. Infrastructure (16 of 74)

Including:

		2006	2007	Total
a	Condition of track plain line	3	3	6
b	Condition of switches and crossings	2	4	6
c	Condition of earthworks	2	2	4

3. Design/condition of Signalling and Telecommunications (1 of 74)

Including:

		2006	2007	Total
a	Level crossing equipment	0	1	1

4. Design/condition of Rolling Stock (23 of 74)

Including:

		2006	2007	Total
a	Wagons	4	3	7
b	*On track plant*	1	3	4
c	Trams	2	2	4
d	*Multiple unit trains*	1	2	3
e	Steam engines	1	1	2
f	Carriages	0	2	2
g	Locomotives	0	1	1

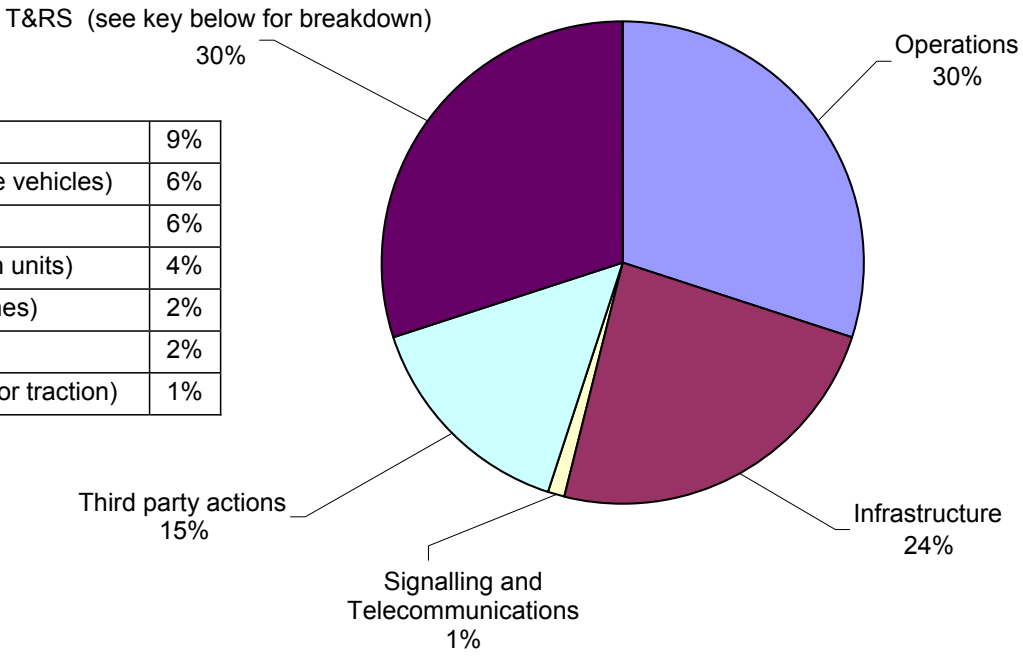
3 Analysis of recommendations and causes

5. Third Party Action (11 of 74)

Including:

		2006	2007	Total
a	Actions of passenger	0	1	1
b	Actions of contractors	1	2	2
c	Actions of pedestrians/drivers at crossings	3	2	7
d	Unable to state cause	0	1	1

Figure 1: Immediate Causes of Accidents/Incidents



T&RS (Wagons)	9%
T&RS (Maintenance vehicles)	6%
T&RS (Trams)	6%
T&RS (Multiple train units)	4%
T&RS (Steam engines)	2%
T&RS (Carriages)	2%
T&RS (Locomotive or traction)	1%

Causal Factors

There were 72 causal factors in 2006 and 128 causal factors in 2007 totalling 200, these were attributed to:

		2006	2007	Total
a	Infrastructure	43	33	76
b	Operations	12	53	65
c	Signalling and Telecommunications	2	7	9
d	Third Party Action	4	4	8
e	Rolling Stock	11	31	42

1. Infrastructure

Of the 76 causal factors associated with infrastructure, and the most common categorisation of these related to:

		2006	2007	Total
a	Planning	13	8	21
b	Procedures/instructions	13	2	15
c	Supervision	10	5	15
d	Inspection and maintenance	2	12	14

2. Operations

Of the 65 causal factors associated with operations, the most common categorisation of these related to:

		2006	2007	Total
a	Competence & compliance	4	19	23
b	Procedures/instructions	3	11	14
c	Human capabilities & performance	0	11	11

3. Signalling and Telecommunications

There were 9 causal factors associated with S&T, and the most common categorisation of these related to:

		2006	2007	Total
a	Human capabilities and performance	2	4	6
b	Competence and compliance	1	2	3

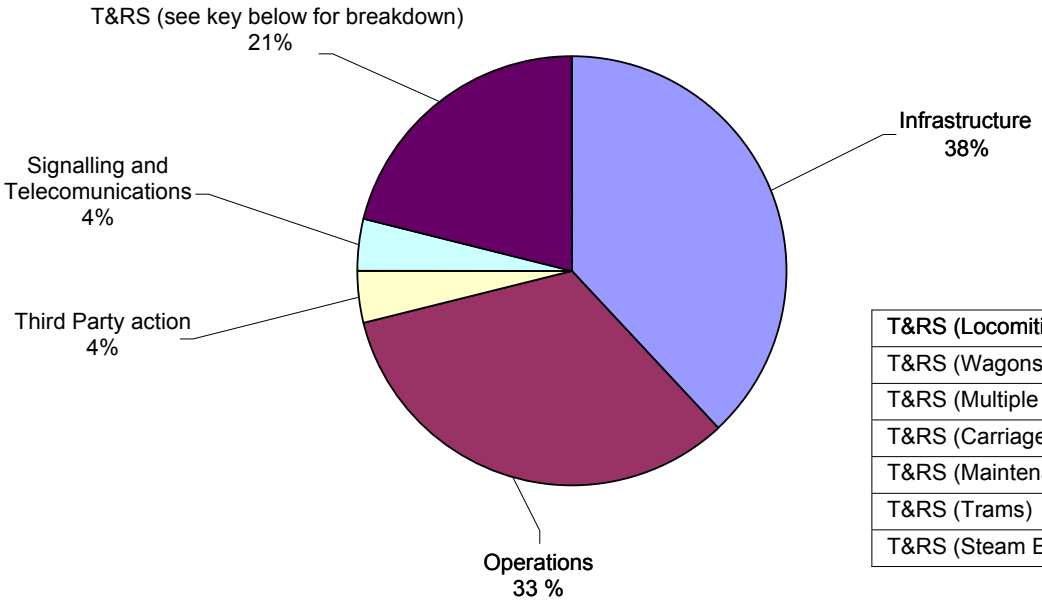
3 Analysis of recommendations and causes

4. Rolling Stock

There were 42 causal factors associated with rolling stock and the most common categorisation of these related to:

		2006	2007	Total
a	Equipment systems	2	14	16
b	Competence and compliance	4	6	11
c	Procedures/instructions	2	5	7

Figure 2: Causal factors of Accidents/Incidents



T&RS (Locomitive and traction)	2%
T&RS (Wagons)	6%
T&RS (Multiple Units)	5%
T&RS (Carriages)	2%
T&RS (Maintenance Vehicles)	2%
T&RS (Trams)	3%
T&RS (Steam Engines)	1%

Contributory factors

There were 88 contributory factors in 2006 and 191 in 2007 totalling 279; these were attributed to:

1. Operations

There were 98 (35%) contributory factors associated with operations, and the most common categorisation of these related to:

		2006	2007	Total
a	Procedure/instructions	7	24	31
b	Competence and compliance	3	21	24
c	Planning	2	11	13

2. Infrastructure

There were 82 (29%) contributory factors associated with infrastructure, and the most common categorisation of these related to:

		2006	2007	Total
a	Inspection and maintenance	12	11	23
b	Equipment systems	6	8	14
c	Procedure/instructions	8	5	13

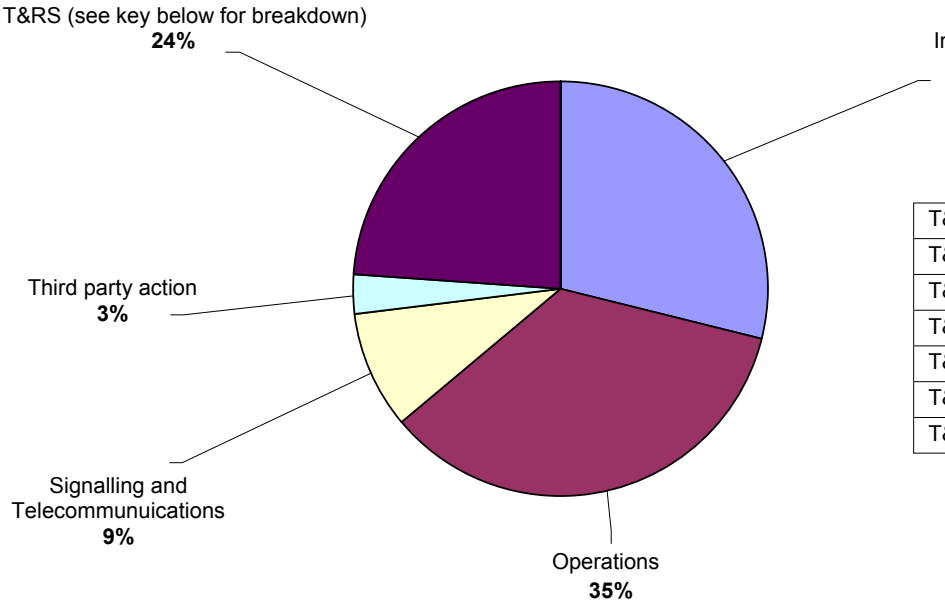
3. Signalling and Telecommunications

There were (25 (9%) contributory factors associated with signalling & telecommunications the most common categorisation of these related to:

		2006	2007	Total
a	Equipment systems	2	11	13
b	Planning	1	4	5
c	Competence & compliance	0	3	3

3 Analysis of recommendations and causes

Figure 3: Contributory factors of Accidents/Incidents



T&RS (Wagons)	5%
T&RS (Maintenance vehicles)	4%
T&RS (Trams)	4%
T&RS (Multiple train units)	6%
T&RS (Steam engines)	3%
T&RS (Carriages)	1%
T&RS (Locomotive or traction)	1%

Underlying factors

There were 12 underlying factors in 2006 and 60 in 2007 totalling 72; these were attributed to:

1. Operations

There were 27 (38%) underlying factors associated with operations and the most common categorisation of these related to:

		2006	2007	Total
a	Procedure/instructions	0	9	9
b	Competence & compliance	0	5	5
c	Supervision	0	4	4

2. Infrastructure

There were 26 (35%) underlying factors associated with infrastructure, and the most common categorisation of these related to:

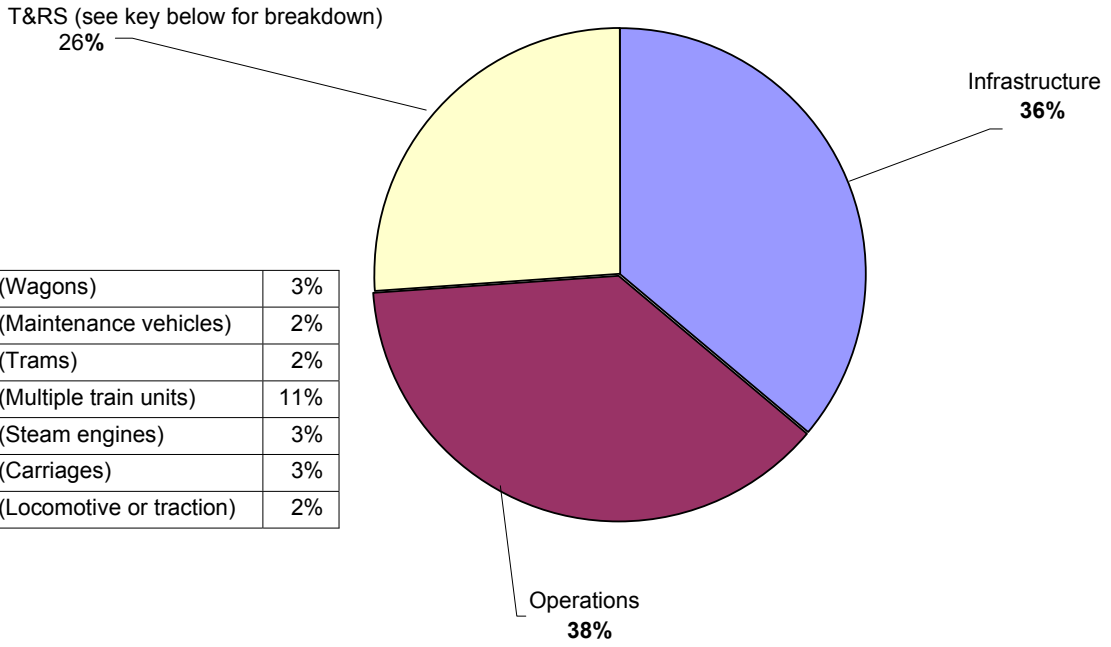
		2006	2007	Total
a	Procedure/instructions	5	2	7
b	Competence & compliance	2	5	7
c	Sufficient resources	0	5	5

3. Rolling Stock

There were 19 (26%) underlying factors associated with track and rolling stock and the most common categorisation of these related to:

		2006	2007	Total
a	Equipment systems	1	7	8
b	Procedure/instructions	1	3	3
c	Competence and compliance	0	1	1

Figure 4: Underlying factors of Accidents/Incidents



T&RS (Wagons)	3%
T&RS (Maintenance vehicles)	2%
T&RS (Trams)	2%
T&RS (Multiple train units)	11%
T&RS (Steam engines)	3%
T&RS (Carriages)	3%
T&RS (Locomotive or traction)	2%

Overall the most common issue amongst the causal, contributory and underlying factors was weaknesses in procedures or instructions. These featured most predominately in relation to the stewardship of infrastructure and operations.

The second most common issue was competence of staff and compliance with instructions and these mainly featured in the operations and rolling stock categories. There was also a high number of weaknesses associated with the equipment / system area, particularly relating to the infrastructure.

The third most common issue related to weaknesses in the inspection and maintenance of the infrastructure, and planning, again the majority related to the infrastructure sector with most of the remainder in the operations sector.

4 Other branch activities

Conferences and Seminars

The RAIB puts a high level of importance on informing others in the industry about what the Branch does and how it operates. Besides ongoing liaison within the industry, the RAIB presented at various industry and technical conferences and participated in and ran industry emergency exercises.

RAIB website

The RAIB website is an independent and up-to-date resource accessible to both industry and members of the public. It contains: details about the Branch; relevant legislation; a register of the current RAIB investigations; brief reports on the initial findings from each accident or incident; and copies of the final investigation reports and safety bulletins. A total of 3,343 members of the public have registered for a monthly news letter from the RAIB. The address is www.raib.gov.uk. And anyone can subscribe, free of charge, to automatically receive updates on investigations by email.

International activity

The European dimension

The RAIB continues to work closely with the European Railway Agency and other member states to further the requirements of the Directive for European co-operation and standardisation. As the UK was the first Member State to implement the Directive it has been able to share its early experiences of implementation of the Directive and actively participate in a number of ERA Task Forces.

International Rail Accident Investigation Conference

The RAIB and the Institution of Mechanical Engineers jointly organised a conference on 28 February and 1 March 2007. The conference aimed to promote standards and skills relating to rail accident investigation. It was attended by 50 delegates from 16 countries.

4 Other branch activities

Memorandum of Understanding with the Bureau d'enquetes sur les accidents de transport terrrestre (BEA-TT)

The RAIB and BEA-TT the French national independent investigation body have agreed a cross-border Memorandum of Understanding which covers the practical arrangements for joint investigations in the tunnel. This provided the framework of co-operation for the investigation into the shuttle train fire that concluded with the report being published in October 2007 (see page 132 of this report).

Other international activities

The RAIB also took part in international conferences relating to accident investigation.

The RAIB received a number of visits from international organisations who were interested in the establishment and work of the RAIB.

Stakeholder survey

As a relatively new organisation, the RAIB wished to test and evaluate our stakeholders' experiences and perceptions of the RAIB, both in terms of overall delivery and their aspirations for the future.

The aim was to provide an independent evaluation of the experiences and aspirations of RAIB's key stakeholders at both senior management and operational levels across the rail industry. In total, 30 senior managers and 81 middle managers were interviewed. The review and analysis was conducted during 2007 for RAIB by Ipsos MORI and a summary of their findings is at Annex D.

5 Annexes

Annex A

List of investigations opened in 2005 and completed in 2007

Date	Location	Date Report Published
25 November 2005 & 30 November 2005	Esher and Lewes	08 January 2007

List of investigations opened in 2006 and completed in 2007

Date	Location	Date Report Published
14 January 2006	Haymarket, Edinburgh	30 January 2007
21 January 2006	Waterside, East Ayrshire	30 January 2007
31 January 2006	Cricklewood Curve	23 January 2007
09 February 2006	Brentingby Junction, near Melton Mowbray	23 January 2007
15 February 2006	Huntingdon	30 April 2007
21 February 2006	Basford Hall Yard, Crewe	21 February 2007
19 March 2006	Manor Park	25 July 2007
22 March 2006	Long Millgate, Manchester	17 April 2007
07 April 2006	Camden Road	30 April 2007
16 April 2006	Grosmont on the North Yorkshire Moors Railway	30 January 2007
23 April 2006	Trooperslane near Carrickfergus, Northern Ireland	18 July 2007
29 April 2006	High Street Kensington	21 June 2007
1 & 18 May 2006	Crofton Old Station No.1 Level Crossing, near Wakefield, West Yorkshire	29 May 2007
22 May 2006	Bratts Blackhouse No 1 User Worked Crossing, near Sizewell, Suffolk	26 April 2007
24 May 2006	Notting Hill Gate	02 May 2007
25 May 2006	Phipps Bridge on Croydon Tramlink	08 August 2007
29 May & 05 July 2006	Ravenglass & Eskdale Railway	27 March 2007
30 May 2006	Starr Gate, Blackpool	29 May 2007
08 June 2006	New Swan Lane Level Crossing on Midland Metro	07 June 2007
10 June 2006	Desborough	30 August 2007
28 June 2006	Maltby North	18 July 2007
17 July 2006	Dagenham Dock	12 July 2007
19 July 2006	Bronwydd Arms station	03 July 2007
25 July 2006	Ropley (Mid Hants Railway)	21 June 2007
29 July 2006	Deal	29 May 2007

List of investigations opened in 2006 and completed in 2007 (continued)

Date	Location	Date Report Published
18 August 2006	Purley station, Surrey	08 August 2007
21 August 2006	Channel Tunnel	23 October 2007
27 August 2006	East Didsbury	24 May 2007
08 September 2006	Washwood Heath	21 November 2007
11 September & 24 October 2006	London Waterloo	18 December 2007
12 September 2006	Epsom	13 September 2007
25 September 2006	Copmanthorpe	05 September 2007
31 October 2006	Badminton	22 August 2007
16 November 2006	Swanage station	13 September 2007
19 December 2006	Soho Benson Road, Midland Metro	07 June 2007

List of investigations opened and completed in 2007

Date	Location	Date Report Published
24 January 2007	Blackpool	27 November 2007
29 January 2007	Birmingham Snow Hill, Midland Metro	24 October 2007
05 February 2007	M20 overline bridge, Aylesford	26 September 2007
17 March 2007	Tinsley Green Junction	18 December 2007
18 March 2007	Seaton Tramway	03 July 2007
25 March 2007	Leighton Buzzard Narrow Gauge Railway	19 December 2007
14 April 2007	Cromore, Northern Ireland	28 November 2007
05 May 2007	Pickering station on North Yorkshire Moors Railway	08 August 2007
12 May 2007	Fisherground on the Ravenglass & Eskdale Railway	30 August 2007
15 June 2007	Wellesley Road on Croydon Tramlink	21 November 2007
25 August 2007	Leighton Buzzard Narrow Gauge Railway	19 December 2007

List of Investigations discontinued in 2007

Date	Location	Date Report Published
20 November 2006	Greenford East Curve	17 April 2007

5 Annexes

Annex B

Summary of investigations opened in 2007 but not completed by 31.12.2007

13 January 2007	Hooley Cutting, Near Merstham, Surrey	On 13 January 2007 at approximately 12:20 hrs the 10:59 hrs train from Bognor to London Victoria, consisting of eight carriages travelling at 83 mph (132km/h), struck debris from a land slip north of Merstham Tunnel, near Redhill. The leading wheelset was derailed; the train remained upright and came to a stand after travelling a short distance. There were no injuries to passengers or crew.
15 January 2007	Kemble	At approximately 22:15 hrs on 15 January 2007 the 21:52 hrs train from Swindon to Cheltenham Spa consisting of two carriages travelling at 51 mph (82 km/h), struck debris from a collapsed wall following a landslip in the cutting south of Kemble tunnel. The leading bogie of the train was derailed and it was brought to a halt at the tunnel mouth. There were no injuries to passengers or crew.
17 January 2007	Pomona	On 17 January 2007 at approximately 17:15 hrs a tram from Eccles to Manchester Piccadilly derailed on the viaduct approaching Pomona station. The tram was travelling at approximately 10 mph (16 km/h). The leading axle of the train was derailed, and the tram stopped in the station. There were no injuries to passengers or crew, and the passengers were able to leave the derailed tram in the station.
28 January 2007	Armathwaite	At approximately 14:30 hrs on 28 January 2007 a bogie flat wagon that had been stabled within an engineers' possession at Armathwaite on the Settle and Carlisle line started to move down the gradient. A member of staff observed the runaway and tried to apply the brakes without success, and then warned other staff in the vicinity, who stood clear of the track. After running approximately 500 m, the wagon collided with a road rail excavator at low speed. The wagon derailed, although there was minimal damage to both vehicles; the excavator operator was physically unhurt, although shocked. There were no other casualties. The wagon was rerailed within the possession and there was no effect on services.
23 February 2007	Grayrigg	At 20:15 hrs on 23 February 2007, the 17:15 hrs train from London Euston to Glasgow, derailed in the vicinity of Grayrigg at a speed of approximately 95 mph. (153 kph) All vehicles in the train derailed; the train came to rest with six of the nine vehicles down an embankment and at varying angles from their normal orientation. One passenger was fatally injured, 28 passengers, the train driver and one other crew member suffered serious injuries and 58 passengers received minor injuries. The remaining 18 passengers and two crew members were not physically injured in the derailment. There was severe damage to the train set and the infrastructure as a result of the derailment. The railway was not re-opened until 12 March 2007.
29 April 2007	Ruscombe Junction	At 11:26 hrs on Sunday 29 April 2007, train 5Z71, the 10:45 hrs empty coaching stock train from Old Oak Common depot to Reading depot, struck and fatally injured a track welder at Ruscombe Junction, 5 miles (8 km) west of Maidenhead station. The accident occurred as train 5Z71 was being routed from the down main line towards the down relief line via two high speed crossovers.
10 May 2007	King Edward Bridge, Newcastle	At 06:40 hrs on 10 May 2007 the empty 01:45 coal train from Drax power station to Thornton, became derailed whilst passing through King Edward Bridge South Junction on the approach to Newcastle station. The train consisted of a class 66 locomotive and 39 empty four-wheel hopper wagons and was traveling at 16 mph (26 km/h) at the time of the derailment. The train ran across the King Edward Bridge in a partially derailed condition, before coming to a stand on the approach to Newcastle station as the result of an automatic brake application. There was considerable track signalling and infrastructure damage.
10 June 2007	Camden Town, Northern Line	On Sunday 10 June 2007 at approximately 17:35 hrs, consequent upon repairs being carried out on the train regulation equipment on the Northern Line of London Underground, northbound train was directed to the incorrect branch of the line at Camden Town. To correct this, crews and passengers were exchanged between this train and another train, which had been immediately following it, while both trains were standing in different platforms at Camden Town. During the exchange, the train operator entered the cab at the wrong end of the train and drove it southwards for some 108 metres. There was no collision, derailment or injuries to passengers or staff.

22 June 2007	Ely	At 02:05 hrs on 22 June 2007 the 21:19 hrs Mountsorrel to Chelmsford freight train, formed of a locomotive and 37 wagons, derailed in the vicinity of a bridge over the River Ouse between Ely Dock Junction and Soham. Eleven wagons in the centre of the train were derailed. Considerable damage to the track and bridge was reported.
05 July 2007	Mile End station	At 09:01 hrs on 5 July 2007 a westbound train struck a roll of fire resistant material lying on the track between Mile End and Bethnal Green tube stations on the Central Line of the London Underground Network. In consequence three bogies were derailed. The train operator applied the emergency brake and the train stopped after approximately 148 m (468 ft).
19 July 2007	Camden Road	At 22:40 hrs the 20:10 Angerstein Wharf to St Pancras freight train, came to a halt near Dock Junction, to the north of St Pancras, after the brakes applied. The train, which consisted of a Class 66 locomotive and 28 stone wagons had become divided after the failure of a coupling. The rear two wagons came to a halt in Camden Road Tunnel. The train was hauled into sidings at St Pancras without the two uncoupled wagons. The signaller realised that the track circuit was occupied, and the driver, that the two wagons were missing, but both wagons' brakes leaked off and the wagons moved under gravity until coming to a rest in the Channel Tunnel Rail Link Maintenance siding at St Pancras. The wagons were recovered and removed from site. No-one was injured during the incident, and no damage was caused.
01 August 2007	Burton on Trent	At 16:16 hrs on Wednesday 1 August 2007, a stanchion on the 14:17 hrs freight train (Wolverhampton Steel terminal to Scunthorpe Anchor Sidings) struck and damaged the 15:34 hrs passenger train (Nottingham to Birmingham New Street) as they passed in opposite directions at a location north of Burton on Trent station. There were no injuries but there was some damage to the passenger train as a consequence of this incident.
02 August 2007	Londonderry	At 15:28 hrs the 15:05 hrs train from Londonderry to Belfast, a diesel multiple unit, struck a tractor at Nutts user worked crossing, between Londonderry and Castlerock. The tractor was destroyed and the driver of the tractor lost his life in the collision. The train suffered some damage and was removed from service for repairs, there were no injuries on the train.
10 August 2007	Lawley Street Birmingham	At 02:20 hrs two wagons in the 02:43 hrs Lawley Street to Grain Freightliner train, running early, derailed shortly after leaving Lawley Street Freightliner Terminal. One wagon was completely derailed, and the second by only one bogie. A container from the fully derailed wagon fell onto an adjacent track, and another container on the same wagon shifted along the wagon. No-one was injured during the derailment.
15 August 2007	Lydney	At 14:48 hrs a private train from Norchard to Lydney Junction on the Dean Forest Railway, consisting of an ex-Great Western Railway 14xx class steam locomotive propelling an auto-coach (a carriage designed to be propelled with a driving position at the leading end) struck the gates of the level crossing at Lydney Town, where the Dean Forest Railway crosses the main street through Lydney. The crossing keeper was attempting to open the gates for the passage of the train, and was knocked over into the road and seriously injured.
22 August 2007	Didcot North Junction	At 16:38 hrs on 22 August 2007 the 15:51 hrs passenger service from London Paddington to Worcester Shrub Hill, formed by a High Speed Train set, passed SB2209 signal at danger on the Down Avoiding line to the north of Didcot station. This signal is located on the approach to Didcot North Junction and is fitted with Train Protection Warning System equipment that is designed to mitigate the consequences of signals being passed at danger.
27 August 2007	Aylesbury North	At 10:42 hrs on 27 August 2007 the driver of the 10:10 hrs train from Aylesbury to Quainton Road, reported that the train was standing on the single line at Aylesbury North, with another train ahead. This was the locomotive of a freight train, which was involved in a run-round movement at Aylesbury North loop. At the time of the incident the locomotive of the freight train was stationary; the driver of the Quainton Road train had good visibility and was able to stop his train 500 – 600 metres from the locomotive. There were no casualties, and there was no physical damage.

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29 August 2007	Leatherhead	At 09:57 hrs the London Waterloo to Guildford 09:09 hrs train, consisting of two four car electric multiple units struck and seriously injured a member of railway staff immediately to the south of Leatherhead station. All lines were blocked to traffic and an emergency traction current isolation was taken for both lines.
29 August 2007	Ty Mawr	On 29 August 2007 there was an incident of overspeeding at Ty Mawr, between Newtown and Caersws. At 10:50 hrs on 29 August Network Rail imposed a 20 mph (32 km/h) emergency speed restriction on the single line at Ty Mawr due to a rail defect that they had identified by ultrasonic examination. At 12:57 hrs staff on site reported that the 11:32 hrs train from Aberystwth to Birmingham had passed over the site at 80 mph (128 km/h). No one was injured as a result of the train overspeeding.
03 September 2007	Glasgow	At 08:36 hrs the rear coach of the 08:34 hrs train from Exhibition Centre siding to Anderston, became derailed on 201A points as it crossed from the down to the up Argyle line. The train consisted of a three car electric multiple unit of class 318. All lines were blocked to traffic and an emergency traction current isolation was taken for both lines. Two members of staff travelling in the derailed vehicle were slightly injured. The railway remained closed until the morning of the fifth of September whilst recovery of the train took place.
25 October 2007	St John's Wood	At 02:40 hrs Engineering staff placed a unit consisting of a battery powered cart and two trailers on the track between St John's Wood and Baker Street during Engineering Hours work. When the unit was subsequently moved down the gradient towards Baker Street the driver had difficulty in stopping normally, and the unit collided at slow speed with two manually powered trolleys. The driver of the unit had shouted a warning, and all staff at the trolleys had stood clear, so no injuries resulted.
01 November 2007	Tooting Broadway	At 14:35 hrs a passenger was alighting from a tube train on the Northern Line at Tooting Broadway when her coat was trapped by the closing door. The passenger was dragged some distance along the platform by the departing train before she managed to free herself.
31 October & 04 November 2007	Snow Hill, Birmingham and Brentwood, Essex	On 31 October 2007, at approximately 03:15 hrs, as a mobile elevating work platform was being removed from the track at Livery Street near Snow Hill station in Birmingham, it ran away toward another mobile elevating work platform which was parked 10m from it. There were persons on both machines when the runaway started; one person was unable to dismount before the collision occurred. There were no injuries, but one of the machines was damaged. When engineering staff placed a road rail machine, a mobile elevating working platform, onto the track at Brentwood on 4 November 2007, between 09.30 hrs and 10.00 hrs the machine immediately ran away towards London, travelling a total of some seven miles before being stopped west of Romford. The operator of the machine jumped from it at Gidea Park, and received minor injuries, but otherwise no-one was injured, and there was no physical damage. The machine came to rest on the down Electric Line near Romford.
13 November 2007	London Victoria	At approximately 14:00 hrs on 13 November 2007, the 13.00 hrs Maidstone East to London Victoria train was approaching London Victoria station on the up Chatham fast line at Grosvenor Road Bridge. A team of three permanent way staff were inspecting the track on the adjacent down Chatham fast line. When the train reached them one of the team (the Controller of Site Safety), was struck and seriously injured.
29 November 2007	Reading East	At 04:52 hrs the Person in Charge of Possession handed back an engineering possession of the down and up relief lines between Reading East and Slough West. At 04:55 hrs a diesel multiple unit running empty from Reading to Slough on the up relief line struck the person responsible for removing the protection at the Reading end of the possession as he was returning to the access point. He died from his injuries. There were no other casualties.
05 December 2007	Glen Garry	On 5 December 2007 a collision between two road rail vehicles at Glen Garry, near Blair Atholl, occurred during a T3 possession of the Highland main line between Blair Atholl and Dalwhinnie. The road/rail vehicle (RRV) was towing the trailer down a 1:70 gradient in heavy rain and was unable to stop when it approached a worksite where another RRV was operating on the adjacent track. A minor collision between the two RRVs ensued. No staff were injured.

Annex C

The Recommendation Progress Report

The following section contains all the recommendations made by the RAIB in 2007, and the response of the parties who were identified as the implementer for considering the recommendation and when appropriate acting upon them, also included is the response of the safety authority. 292 recommendations were made in 2007 and progressed by the Office of Rail Regulation (ORR),

The accidents/incidents are listed by the report number in chronological order and the date shown in the heading is the date that the accident/incident occurred. The publication date can be taken as the date that recommendations are submitted to the safety authority and made public.

The status of responses to safety recommendations, as reported by the Safety Authority (SA) and used in this report, has been divided into four categories:

Key to Recommendation Status in Annex C Appendix 3

Green 1 = Closed:	**Implementer has taken measures to effect the recommendation and ORR has considered this and has closed the recommendation.**
Green 2 = Complete:	**Implementer has taken measures to effect the recommendation and ORR is considering whether to close the recommendation.**
Green 3 = Closed with no actions taken:	**Implementer has decided to take no measures to effect the recommendation and ORR has considered this and has closed the recommendation.**
Amber = Open:	**Feedback from implementer is awaited or actions have not yet been completed.**

Annex C Appendix 4 shows the recommendations grouped according to the specific rail sectors as follows:

1. National Network(s)
2. Light Rail (LR)
3. Metro
4. Heritage
5. Channel Tunnel

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ANNEX C - Appendix 1

Statistics, recommendations made in the RAIB 2006 Annual Report, with a status of open or complete:

No.	Investigation Title	Status Category 1 Green1-Closed	Status Category 2 Green2-Complete	Status Category 3 Amber-Open	Total Recommendations open/completed from 2006 report
1	Staniforth Road	2			**2**
2	Watford Junction		1		**1**
4	Phipps Bridge 1		2		**2**
7	Loughborough Central Station		4		**4**
8	Hatherley	1	1		**2**
9	Manchester Metrolink, Radcliffe	2			**2**
10	Haywards Heath Station		1		**1**
11	New Addington		3		**3**
12	Black Horse Drove Crossing	1	1	1	**3**
14	Liverpool Central	1	4	3	**8**
15	Thirsk	1	6		**7**
16	Trafford Park	2	2	1	**5**
17	Carlisle Station	2	4		**6**
19	Oubeck	3	1	1	**5**
20	Larkhall	5	5	2	**12**
21	York Station		2	2	**4**
22	Moy	2	4	4	**10**
23	Elsenham Station (wicket gates)	1	5	4	**10**
24	Archway Station	3			**3**
26	Sudbury Station	1		1	**2**
27	Urchfont & Kennington	2		1	**3**
Total		**29**	**46**	**20**	**95**
Percentage of total		**31%**	**48%**	**21%**	**100%**

ANNEX C - Appendix 2

Statistics, recommendations made in 2007 and status:

No	Investigation	Status Category 1 Green 1 = Closed	2 Green 2 = Complete	3 Green 3 = Closed with no action taken	4 Amber = Open	Total Recommendations per report
25	Autumn Adhesion Investigation 1,2 & 3	6	7		12	**25**
1	Brentingby Junction		8	2		**10**
2	Cricklewood Curve		2	1	3	**6**
3	Haymarket Edinburgh	2	1			**3**
4	Grosmont North Yorkshire	5	2		2	**9**
5	Waterside East Ayeshire	4			3	**7**
6	Basford Hall Yard	5				**5**
7	Ravenglass & Eskdale	3			5	**8**
8	Long Millgate, Manchester		3		1	**4**
9	Bratts Blackhouse	1	4		3	**8**
10	Camden Road	9				**9**
11	Huntingdon	1	4		1	**6**
12	Notting Hill Gate	1	8			**9**
13	East Didsbury		8			**8**
14	Deal, Kent		2	1	6	**9**
15	Starr Gate, Blackpool	1	1			**2**
16	Crofton Old Station		6			**6**
17	Soho Benson Road	1	2			**3**
18	New Swan Lane LC	2				**2**
19	High Street Kensington	8	6			**14**
20	Ropley Mid Hants	1	5			**6**
21	Seaton Tramway		2			**2**
22	Bronwydd Arms Station	9				**9**
23	Dagenham Dock		4		3	**7**
24	Maltby North	2	1		1	**4**
25	Trooperslane	6		1	1	**8**
26	Manor Park		1		2	**3**
27	Purley Station		5			**5**
28	Phipps Bridge	2				**2**
29	Pickering	1	1			**2**
30	Badmington	1			3	**4**
31	Desborough				9	**9**
32	Fisherground R&E Railway		1		1	**2**
33	Copmanthorpe		1		1	**2**
34	Epsom	1			2	**3**
35	Swanage Station		3		2	**5**
36	Aylesford		5		1	**6**
37	Channel Tunnel	9		1	6	**16**
38	Snow Hill	1	2		1	**4**
39	Washwood Heath				4	**4**
40	Wellesley Road (Croydon)					**0**
41	Blackpool (Fire on prototype)		1		1	**2**
42	Cromore (Northern Ireland)		2		5	**7**
43	Tinsley Green Junction		2		6	**8**
44	London Waterloo		8		6	**14**
45	Leighton Buzzard 25/03				3	**3**
46	Leighton Buzzard 25/08				2	**2**
Total		**82**	**108**	**6**	**96**	**292**
% of total		**28%**	**37%**	**2%**	**33%**	**100%**

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ANNEX C - Appendix 3

Recommendations made in 2007 to end implementer:

End Implementer	Number
The Office of Rail Regulation (ORR)	4
Rail Safety and Standards Board	23
Network Rail	71
Light Rail Tram (LRT) Infrastructure	8
Light Rail Tram (LRT) Operating Company (TOC)	12
Freight, Operating Company (FOC)	36
Passenger, Train Operating Company (TOC)	26
Heritage Railway	39
Heritage Railway Association	4
Railway Contractors	8
Rolling Stock Maintainers	5
Mainline Infrastructure Owners	3
ROSCO Rolling Stock Leasing Company	12
Manufacturers	9
Equipment Suppliers	1
London Underground Limited	22
Other public bodies	2
Non Railway Contractors	6
Northern Ireland Railway	12
Eurotunnel	16
Total (Note: a number of Safety Recommendations are made to more than one end implementer)	**319**

ANNEX C - Appendix 4

Recommendations that had an open status from 2006 Annual Report

Equipment Type	Place	Time	Date	Incident
Tram: 112 (LR)	Staniforth Road, Meadowhall, Sheffield	14:10	27 October 2005	Pedestrian struck by Tram
RAIB Report No:	01/2006		Published:	6 March 2006

Summary

Tram 112, carrying around 20 passengers and travelling north-east towards Meadowhall, Sheffield, struck and seriously injured a pedestrian on the foot/cycle crossing adjacent to the Staniforth/Woodbourn road junction. The pedestrian, who had been walking away from the City Centre along Woodbourn Road beside the tramway, stepped onto the crossing directly in front of the oncoming tram. On being struck, the pedestrian was thrown onto the road junction some distance from the tramlines. The tram continued across the foot/cycle crossing and the road junction before coming to a stop. No one on the tram was injured.

Recommendations

RECOMMENDATION	1	
Stagecoach Supertram should either replace the fence with a design that provides the tram driver with better visibility of pedestrians as they approach the crossing, introduce compulsory audible warnings and/or take other appropriate measures so as to reduce the likelihood of such an event reoccurring. Until this has been done, the interim use of compulsory audible warnings should be maintained.		
Comment		
Stagecoach Supertram has accepted and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Stagecoach Supertram should examine the risks generated by other crossings where the tram driver's view of the pedestrian's final approach is restricted and improve the driver's sightlines, introduce compulsory audible warnings and/or take other appropriate measures to reduce the likelihood of such an event reoccurring.		
Comment		
Stagecoach Supertram has accepted and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Empty 4-car electric multiple unit. (HR)	Watford Junction Yard	05:30	28 October 2005	Derailment
RAIB Report No:	02/2006		Published:	28 March 2006

Summary

A train was derailed in the yard at Watford Junction station. There were no injuries to staff and the derailment was limited to the second bogie of the second vehicle. Some damage occurred to the track which was repaired, enabling the branch to be reopened by 16.00hrs that day.

Recommendations

RECOMMENDATION	3	
As soon as practical Network Rail should issue written instructions for the operation of Watford Yard ground frame in conjunction with the appropriate TOCs, who should specify and implement competency assessment applicable to all staff involved with operation of the ground frame.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

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Equipment Type	Place	Time	Date	Incident
Tram No 2530 (LR)	Phipps Bridge, between Croydon & Wimbledon	10:38	21 October 2005	Derailment
RAIB Report No:	04/2006		Published:	29 March 2006

Summary

A three-section articulated tram unit, travelling eastbound on the single line between Wimbledon and Croydon with approximately 45 passengers on board, became derailed as it passed over *facing points* PBR02G at the single to double line junction on the approach to Phipps Bridge tram stop near Merton, Surrey. As the tram approached the points, they were set, incorrectly, for the right-hand route. As the front of the tram passed over, the points sprang back to the left-hand route and the leading bogie of the tram split the points and became derailed. The rear portion of the tram took the left hand route. The tram came to rest about 37m beyond the points. There were no injuries, and the passengers were evacuated to the adjacent tram stop by the driver and other staff. Recovery of the tram began at 14.00 hrs and re-railing was completed by 18.25 hrs. Following repairs to minor track damage, normal services were reinstated at 21.10 hrs on the same day.

Recommendations

RECOMMENDATION	2	
As soon as practicable, the infrastructure manager and the maintenance contractor should review the inspection and maintenance regime for the points at Phipps Bridge to ensure that the risks associated with the use of facing spring points at speeds up to 40 km/h are being adequately controlled. Any applicable lessons from this review should be extended to the rest of the Tramlink system.		
Comment		
Tramtrack Croydon Ltd has carried out a review of its standards and proposes no change to them. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
The infrastructure manager and operating company should jointly complete their review of the number and nature of the alarms received in the control room with a view to sorting them by risk and eliminating unnecessary information being presented to the controllers (this action is already in hand).		
Comment		
Tramtrack Croydon Ltd considered the recommendation. ORR Served an improvement notice on TCL on 2/10/06, which was complied with by April 2007. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Steam Locomotive 45305 (H)	Loughborough Central Station	09:50	04 February 2006	Collision with carriages
RAIB Report No:	07/2006		Published:	10 July 2006

Summary

Steam locomotive 45305 was travelling at slow speed towards Loughborough Central station when it collided with the rearmost of six coupled carriages that were berthed in platform one. Two members of Great Central Railway's staff sustained minor injuries. The locomotive and one carriage were damaged.

Recommendations

RECOMMENDATION	1	

The Great Central Railway should revise its Rule Book and training to require:

- drivers to keep a good look out and not, unless absolutely necessary, operate controls other than those used for driving when proceeding at caution as far as the line is clear, and when staff, members of the public and other rail vehicles may be nearby;
- firemen to keep a good look out when proceeding at caution as far as the line is clear, and when staff, members of the public and other rail vehicles may be nearby.

Comment

The Great Central Railway has considered and carried out the recommendation.
ORR is considering whether to close the recommendation.

Status	Green 2 = Completed

RECOMMENDATION	2	

The Great Central Railway should put in place a supervisory system to ensure that members of its staff comply with the requirements of their medical certificates.

Comment

The Great Central Railway has considered and carried out the recommendation.
ORR is considering whether to close the recommendation.

Status	Green 2 = Completed

RECOMMENDATION	3	

The Great Central Railway should put in place a supervisory system to ensure that its policy on medical certification and recertification is properly applied to all staff.

Comment

The Great Central Railway has considered and carried out the recommendation.
ORR is considering whether to close the recommendation.

RAIB Status	Green 2 = Completed

RECOMMENDATION	4	

The Great Central Railway should ensure that a first-aid kit is provided and its provision clearly indicated in all locomotive driving cabs.

Comment

The Great Central Railway has considered and carried out the recommendation.
ORR is considering whether to close the recommendation.

Status	Green 2 = Completed

5 Annexes

Equipment Type	Place	Time	Date	Incident
Freight Train 6V19 (HR)	Hatherley just south of Cheltenham Spa Station	05:20	18 October 2005	Derailment
RAIB Report No:	08/2006		Published:	14 July 2006

Summary

Freight train 6V19 was travelling between Bescot and Margam on the Birmingham to Bristol line when all the wheels of one of its wagons became derailed near Hatherley, just south of Cheltenham Spa station. The derailed wagon was the 14th vehicle in the formation.

Recommendations

RECOMMENDATION	4	

Freight Operators should:

- determine appropriate limits for handbrake application force, consistent with the requirement for ease of operation;
- put systems in place to ensure that handbrakes on SSA and other fleets are maintained to these limits; and
- put systems in place to ensure that handbrake indicators are maintained to provide reliable indication to staff.

Comment

All operators of freight trains except Freightliner have implemented the recommendation.
ORR is considering whether to close the recommendation.

Status Green 2 = Completed

RECOMMENDATION	5	

Freight Operators and Network Rail should jointly investigate the optimum strategy to reduce the risk from vehicles with handbrakes left on entering traffic, considering a combination of measures including:

- mandating roll-by tests at freight yards;
- fitting handbrake interlocks to freight wagons;
- locating HWDs (*hot wheel detectors*) to pick up skidding wheels or dragging brakes on vehicles emerging from freight yards in order to reduce the residual risk from any vehicles not fitted with handbrake interlocks;

and instigate changes to appropriate standards so as to ensure consistent practice across the UK.

Comment

All operators of freight trains have accepted the recommendation and carried out the recommendation.
ORR regard the recommendation as closed.

Status Green 1 = Closed

Equipment Type	Place	Time	Date	Incident
Tram number 1016 Journey No 12AD (LR)	Manchester Metrolink, Radcliffe	09:08	8 November 2005	Near Miss of two track workers
RAIB Report No:	09/2006		Published:	17 July 2006

Summary

Two track workers were replacing a pair of fishplates on a section of the Manchester Metrolink system between Bury and Manchester Victoria. The workers were given inadequate warning of the approach of a tram and reached a position of safety with only seconds to spare. The tram then struck a large tool laid in the four foot that the workers had insufficient time to retrieve. After the incident, communications between the control room, tram drivers and the workers became confused. No party reached a clear understanding and neither trams nor the worksite were protected while work was completed. Normal running resumed when the fishplates had been satisfactorily replaced.

Recommendations

RECOMMENDATION	7	
Serco Metrolink should put in place a board level supervisory system to ensure that the rule book and its supporting procedures are continually improved to (i) remove inaccuracies and anomalies and (ii) incorporate the developments of best practice elsewhere in the industry.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed..		
Status	**Green 1 = Closed**	

RECOMMENDATION	8	
Serco Metrolink should ensure that safety critical communications are effectively executed and understood by all when staff on or about the railway system contact the control room.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
2 class 319 Electric Multiple Units (HR)	Haywards Heath Station	02:40	12 January 2006	Station over-run.
RAIB Report No:	10/2006		Published:	20 July 2006

Summary

Thameslink service from Bedford to Brighton experienced difficulties when braking for the scheduled stop at Haywards Heath and over-ran the station by approximately 4 vehicle lengths. The train was set back into Haywards Heath and similar braking difficulties were experienced during this move. The train was terminated at Haywards Heath.

Recommendations

RECOMMENDATION	2	
Alstom to review procedures, processes and equipment in order to identify an effective means of preventing loose material from interfering with the operation of the drum switch.		
Comment		
Alstom has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

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Equipment Type	Place	Time	Date	Incident
Tram no 2538 and Tram no 2533 (LR)	New Addington, Croydon Tramlink	08:16	23 November 2005	Collision between two Trams
RAIB Report No:	11/2006		Published:	20 July 2006

Summary

Tram 2538 was travelling southbound with about 10 passengers from Croydon towards the New Addington terminus in thick fog. The tram passed KHD02 signal which was displaying 'STOP'. This signal, beyond King Henry's Drive tram stop, protects the entry into the short single line section leading to New Addington. The tram came to a stand partially blocking the adjacent line to Croydon. About the same time, tram 2533, left the New Addington terminus for Croydon with more than 25 passengers on board. It immediately entered the single track section and accelerated to a maximum of 27 km/h. The brakes were only applied when the tram was about 1.5 m from tram 2538, resulting in a collision. Tram 2533 then travelled another 18 m before stopping. Neither tram was derailed, however the collision significantly damaged the leading ends of both trams and one side of tram 2533. There were no injuries to passengers or staff that were reported at the time. Subsequently two whiplash injuries were reported.

Recommendations

RECOMMENDATION	1	
Tram Operations Ltd should carry out a programme to re-train all their drivers on the necessity to use the hazard brake in an emergency. Training and routine assessments should include understanding and demonstration by the driver in the operation of the hazard brake. The process of 'feathering' to avoid the final jerk should be retained.		
Comment		
Tram Operations Ltd has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
The Office of Rail Regulation (ORR) should consider reviewing Railway Safety (Principles and Guidance), Part 2G "Guidance on Tramways" to include the provision of suitable over-run distances, and/or detection and warning systems at the design stage of tramway systems where they are a simple and cost effective means to mitigate against *fouling point* collisions at the entry to single line sections.		
Comment		
ORR has considered the recommendation, and has implemented it in the revision of RSPG Part 2G. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
Tram Operations Ltd should carry out a programme to remind all drivers on the importance of using the hazard warning lights whenever a potentially hazardous situation occurs. Training and routine assessments should include practice in the immediate use of hazard warning lights.		
Comment		
Tram Operations Ltd has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Class 365 Electric Multiple Unit. (HR)	Black Horse Drove Crossing near Littleport, Cambridgeshire	12:04	19 October 2005	Collision between train and Farm Vehicle
RAIB Report No:	12/2006		Published:	21 July 2006

Summary
A passenger train from King's Cross to King's Lynn collided with a tractor, which was hauling a trailer over a user worked level crossing between Littleport and Downham Market.
Recommendations

RECOMMENDATION	2	
ORR and the Department for Transport should evaluate whether highway signs at user worked crossing with *miniature stop lights* are appropriately designed and located to provide adequate information to unfamiliar or occasional users on how to operate the crossing safely. This evaluation should include consideration of the relative position of the signs that the road user must obey and remedial action should be taken as necessary. The introduction of new LED units should be progressed with this work.		
Comment		
ORR and the Department for Transport have considered the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	3	
Network Rail should instigate a robust means of recording the features required at each user worked crossing and ensure that these features are maintained in the same way as that Level Crossing Order provisions are.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
Infrastructure Owners where they do not already do so should implement a system to regularly write to all authorised users of user worked crossings, regardless of type, to draw their attention to the safe method of use of these crossings.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Class 508 electric multiple unit, no 508124	Liverpool Central underground station	17:41	26 October 2005	Derailment
RAIB Report No:	14/2006		Published:	11 August 2006

Summary

Train 2W43, the 17:06 hrs Merseyrail passenger train from West Kirby to West Kirby, via Liverpool Lime Street, derailed about 200 m on the approach to Liverpool Central underground station in Network Rail's London North Western Territory. The last bogie of the train derailed.

Recommendations

RECOMMENDATION	1	
For the Liverpool Loop, Network Rail supported by Merseyrail should carry out a risk assessment of the compatibility between the rolling stock and the infrastructure and create an appropriate maintenance regime that may require going beyond current maintenance standards applicable to the track and to the trains. The risk assessment should consider parameters relating to track and trains, the operation of trains and the environment such as speed including TSRs (temporary speed restriction), curvature and stiffness. It should also consider how these elements interact at the wheel-rail interface. Network Rail should also extend this study to see if the effect of lowered speed restrictions increasing gauge spreading forces could exist elsewhere on their system.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
Network Rail should review and change the competence assurance system covering the staff that maintain the track in the Liverpool Loop tunnel to ensure that it is appropriate to the special features of its construction.		
Comment		
Network Rail has considered the recommendation, and has implemented a special site specific brief for patrollers in the Merseyside tunnels. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
Network Rail should review and enhance, where appropriate, its current instructions on the use of *tie-bar*s in order to clarify under what circumstances their use is appropriate and to prevent situations (as occurred on the Loop) where an over-reliance on their use may occur at the expense of carrying out more permanent repairs.		
Comment		
Network Rail have carried out a review and are satisfied their procedures meeting this requirement. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
Network Rail should require that any dispensations on the six months timescale applying to the use of tie-bars should be justified by risk assessment and formally authorised at Territory level.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
Network Rail should carry out studies to predict the fatigue life of tie-bars in different applications and ensure consistency with standards and practice to deliver tie-bars that are fit-for-purpose for all situations.		
Comment		
Network Rail has stated that a fatigue assessment of tie bars is not necessary as they are removed from the track after six months. ORR are requiring Network Rail to provide further justification for this rejection. Dependant on the validity of this justification, ORR will pursue implementation if appropriate.		
Status	**Amber = Open**	

RECOMMENDATION	6	
Taking the outcome of the work in Recommendation 1 above, Network Rail should review the level of resources - both staff and supervision - available to the Merseyrail Track Maintenance Engineer and ensure enough are provided to implement and then sustain the appropriate maintenance regime required for the Liverpool Loop.		
Comment		
Network Rail has strengthened their manpower resources in the Merseyside tunnels, but cannot close the recommendation until the review in recommendation 1 is fully implemented.		
Status	**Amber = Open**	

RECOMMENDATION	7	
Network Rail should implement a system to regularly clean the track bed of the Liverpool Loop Tunnel so that the build up of corrosive contaminants is minimised.		
Comment		
Network Rail has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	8	
Merseyrail should implement improvements to the emergency lighting system fitted to the class 507 and 508 trains to increase the duration for which it is effective in an emergency.		
Comment		
Merseyrail has considered the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Procedure Fault	East Coast Main Line near Thirsk Station	23:35	11 January 2006	Removal of rail from open line
RAIB Report No:	15/2006		Published:	18 August 2006

Summary

A gang of track workers started to remove a rail from the down slow line on the approach to Y427 signal, just to the North of Thirsk station. As a consequence of this action a *track circuit* was interrupted causing it to show as occupied. Subsequently, train 1P64, the 21:22 hrs Manchester Airport to Newcastle, was held at signal Y423 which could no longer be cleared due to the track circuit showing occupied. It was then discovered that the rail had been severed on a line that was still open to traffic and was in the process of being removed (ie the worksite had been established outside of an engineering possession).

Recommendations

RECOMMENDATION	1	
The Rail Safety and Standards Board, in consultation with Network Rail and other Railway Group members, to modify forms RT 3198 and 3199 to include a record of the mileage of the possession limits (linked to Recommendation 5). This should be done in such a way that the PICOP (Person In Charge Of Possession) and ES (Engineering Supervisor) are able to easily identify any inconsistency between the location of the worksite and the extent of the possession.		
Comment		
RSSB has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
Network Rail, in consultation with contractors, to re-brief track maintenance staff in the London North Eastern Area on their roles and responsibilities in the works planning process and the need for careful examination of the WON (*Weekly Operating Notice*) during the planning and execution of safety critical activities. This briefing should include the process and documentation to support late notice changes to planned work activities.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
Network Rail, in consultation with contractors, to develop and adopt a universal standard process, with associated documents, for use by PICOPs, when planning possession activities. In all cases it should be clear who is responsible for the preparation of documents, submission of forms and approvals of work activities. Documents developed for this purpose should be designed for the avoidance of errors when transposing data from the WON.		
Comment		
Network Rail has developed alternative proposals involving track occupancy permits to simplify the process of possession management. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
Network Rail to take steps to ensure that all track maintenance staff make reference to the definitive line diagrams and signalling plans when planning engineering activities (currently available via the Network Rail intranet) and to ensure that such diagrams feature in possession planning documentation prepared by PICOPs. In consequence Network Rail should ensure that these diagrams are subject to regular validation and updates as appropriate.		
Comment		
Network Rail has developed alternative proposals involving track occupancy permits that will simplify the process of possession management. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
Network Rail to implement a system to ensure that all relevant staff (including PICOPs and Engineering Supervisors) have easy access to accurate mileage information for all published possession limits and to ensure that the written descriptions of possession limits are sufficiently precise to enable staff to identify the actual geographical locations that are referred to.		
Comment		
Network Rail has developed and implemented alternative proposals by amending the design of forms for possession management to show mileage. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
Network Rail and PICOP service providers to implement formal management arrangements for PICOP Briefings. These should include the provision of a suitable venue, definition of required attendees, the specification of key documents to be available and a process for management checks to verify that PICOP Briefing meetings are being conducted in a correct and effective manner.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	7	
Network Rail procedure NR/PRC/MTC/PL0056 should be enhanced by a review of safety critical information at each meeting. These should include an explicit requirement to check that the mileage of each worksite is consistent with the published limits of the possession.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 2 = Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Three Car class 170 Diesel Multiple Unit (HR)	Trafford Park, Manchester	09:28	26 October 2005	Track worker Fatality
RAIB Report No:	16/2006		Published:	25 August 2006

Summary

A train travelling between Liverpool and Manchester struck and fatally injured a railway track worker at Trafford Park West Junction, 2 miles to the west of Manchester. The railway infrastructure is controlled by Network Rail. The line at this location is double track with a double junction into the freight terminal at Trafford Park. The train involved was 1L13, the 08:52 hrs Liverpool Lime Street to Ely. The train was operated by Central Trains and was being driven by a Driver employed by that company. The Driver had driven the train from Liverpool and was to take it forward as far as Nottingham. The deceased was employed as the UK Operations Manager by Schweizer UK, who were operating as a subcontractor to Carillion. He was engaged in the installation of an Automatic Track Warning System (ATWS) at this location. At the time of the incident he was carrying out a visual inspection of the track layout with a Supervisor from Carillion, the main contractor, and a second Schweizer employee. The Schweizer Operations Manager was fatally injured; the Carillion Supervisor received minor injury. The train was not damaged and no one on the train was injured.

Recommendations

RECOMMENDATION	4	
Carillion should review, and amend as necessary, their procedures and arrangements for site access to ensure that only those persons who are relevant to planned activities are able to access site. Appropriate monitoring arrangements should be made.		
Comment		
Carillion has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
Carillion should review, and amend as necessary, their procedures and arrangements for site management to ensure that only those staff nominated as COSS within Method Statements are able to act as such. Appropriate monitoring arrangements should be made.		
Comment		
Carillion has implemented an alternative approach to this recommendation, ensuring that site managers are named in the method statement, but that the site manager can allocate COSSs at the time work starts. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
Carillion should review, and amend as necessary, procedures for client/internal client/supplier communication and specifically that between S&C, CAP and Schweizer. This should specifically consider how specialist activity method statements are to be integrated and visible to S&C site managers and how specialist suppliers are to be informed of main work programmes.		
Comment		
Carillion has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	8	
Network Rail must ensure the selection, training and performance assessment regime achieves and maintains the prescribed standard of performance required of the COSS. A review is required which should consider: • at the selection stage, an assessment of the individual's personal attitudes to safety, adherence to rules and inter-relational personal skills; • an assessment prior to qualification, and if appropriate, post-qualification, to more accurately reflect the performance required in the workplace; • the development of a new robust monitoring process to ensure that an individual's on-the-job performance routinely achieves the prescribed level. This work should also consider the circumstances where the normal working environment permits COSS to use some protection methods infrequently, and whether there is therefore a need to sub-categorise the skill, within COSS competency training and certification. The principles established may have application in the competency management process for other track safety skills; this should be looked into.		
Comment		
Network Rail has considered the recommendation but believe that carrying out an appraisal as recommended is the responsibility of the employer, and propose no further steps beyond existing competence standards. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	9	
Network Rail should consider further work and the expansion of the current programme of research into understanding the causes of rule violation, in direct contravention to the training people have received to include track safety skills.		
Comment		
Network Rail has considered the recommendation, and considers that the SAF 7 work stream and associated initiatives address it. ORR is evaluating this response.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Engineering Train 6L57	North end of Carlisle Station	13:20	6 February 2006	Derailment of Plough Brake Van
RAIB Report No:	17/2006		Published:	19 September 2006
Summary				
An engineering train, reporting number 6L57, became derailed on 756A points at the north end of Carlisle station. The train was in transit following its use within an engineering possession near Barrow-in-Furness. There were no injuries and the derailment was limited to all wheels of a plough brake van at the rear of the train. Minor damage occurred to the track and the vehicle.				
Recommendations				

RECOMMENDATION	1	
EWS (English, Welsh & Scottish Railways Ltd) should ensure that the advice and instructions given to site train preparers' in Operating Digest Advice Number 121 are incorporated into normal working procedures.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
EWS should consider providing further assistance to train preparers in regard to plough stowage by painting locking keys a bright colour and/or placing reminder/warning notices on the exterior of the vehicles.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

5 Annexes

RECOMMENDATION	3	
EWS should rebrief their site train preparers' that they must receive a CoR in the correct format, as shown in The White Pages, before accepting engineering trains following their use in possessions.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
EWS should ensure that the unofficial 'authorisation slip / substitute driver's slip' is withdrawn from use.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
As a result of observations and the proposal to withdraw GO/RT 3406 Network Rail should review their systems, procedures and documentation to ensure that trains leaving engineering worksites are in a secure and operationally safe state. The review should consider the requirements for competent staff and the competency / training needs.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	6	
WAD (WA Developments) and FETRD (First Engineering Track Renewals Division) should review their procedures to ensure that an appropriate competent person is clearly identified to perform the duties required during loading and unloading.		
Comment		
WAD and FETRD have considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Three Car Class 175 Diesel Multiple Unit 1C62 (HR)	Oubeck North near Lancaster	13:56	4 November 2005	Derailment due to Landslide
RAIB Report No:	19/2006		Published:	2 November 2006

Summary

Passenger train, 1C62, operated by Trans Pennine Express, travelling on the Preston to Lancaster section of the West Coast Main Line, derailed after running into a landslip in a cutting at Oubeck North. The trailing wheel set on the leading bogie derailed to the right. No other wheels were derailed. The train travelled a further 1430 m before coming to rest in an upright position. There was no collision with structures or other trains and there were no injuries as a result of this derailment. Two coupler lateral bump stops were dislodged from the leading vehicle and came to rest 200 m after the landslip. They caused damage to the under frame, including holing the fuel tank on the leading vehicle. There was extensive damage to the rail fastenings over the length of track that the train ran on in a derailed state. Additionally, eighteen rail fractures were identified.

Recommendations

RECOMMENDATION	2	

Network Rail should identify priority cutting slopes prone to earth flow failure due to drainage flows from neighbouring property. These should be prioritised according to their likelihood of failure (eg on the basis of catchment area, slope angle and history of previous failures) and the consequence on the safe operation of trains. For priority cuttings, Network Rail should ensure that it understands all associated drainage arrangements, that they are adequate and that their functionality is maintained. Alternatively they should isolate their land from the effects of such drainage flows (eg by implementing engineered collector drains).

Comment

Network Rail rejected the recommendation on the grounds that all cutting slopes are now being prioritised taking into account the parameters identified. Network Rail states it is not practicable for them to understand all associated drainage arrangements on priority sites, although where adverse impact is clearly identifiable, this is included in the prioritisation It is not possible for Network Rail to isolate its land from hidden drainage flows, or those created by outside parties, unless they are readily observable. Under case law (Rylands v Fletcher 1868) landowners are responsible for the satisfactory discharge of water run-off from their property.
ORR is considering the response.

Status	Amber = Open

RECOMMENDATION	3	

Network Rail should review their overall earthwork and drainage examination regime to introduce the five actions listed below:

- Identify whether reliance is placed on examinations additional to those described in NR/SP/CIV/065 in managing the risk associated with cuttings. Network Rail should ensure that any additional examinations are clearly identified, undertaken at the correct periodicities and that formal arrangements exist for reporting findings back to the responsible earthworks and drainage engineer.
- Ensure that, as far as practicable, the actions required to identify precursors to cutting failures can be completely and correctly executed.
- Ensure that proper allowance is made in any risk assignment to compensate for any lack of accessibility, inadequate information or, the inability to fully complete an examination due to any practical or other constraints.
- Ensure a consistent and suitable approach to evaluation of the findings from examinations.
- Introduction of a requirement that a percentage of all marginal and serviceable cuttings are subjected to independent spot checking.

Comment

Network Rail has considered and carried out the recommendation.
ORR regards the recommendation as closed.

5 Annexes

RECOMMENDATION	4	
RSSB should review the load cases representing credible accident scenarios in Railway Group Standard GM/RT 2100 to ensure that appropriate combinations of lateral, vertical and longitudinal loads experienced at the coupler head are included in the design of trains. This should include a review of the 'jack-knife' load case arising from a derailed unit coupled to a railed unit.		
Comment		
RSSB has rejected this recommendation on the grounds they do not accept the RAIB report on reasons for the bump stop failure and do not regard its detachment and travel under the train as a significant hazard. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	5	
Alstom should ensure that the design of the coupler lateral bump stop mounting arrangements for the Class 175 and 180 trains is reviewed against load cases from 'credible accident scenarios', including longitudinal loads experienced at the coupler head.		
Comment		
Alstom contends the method of bump stop detachment contained in the RAIB report is improbable. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	6	
Angel Trains Limited should ensure that any modifications to the design made by Alstom in respect of Recommendation 5 above shall, where reasonably practicable, be implemented in the Class 175 and 180 trains that are in their ownership.		
Comment		
Angel Trains supports industry wide research on whether load cases for bump stop detachment need alteration, but do not consider that any changes should be retrospective to class 175 and 180 units. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Manually Propelled Trolley)	**Between Larkhall and Barncluith Tunnel**	**06:49 06:51**	**2 November 2005**	**Runaway**
RAIB Report No:	**20/2006**		**Published:**	**2 November 2006**

Summary

A manually propelled trolley being used within a T3 engineering possession on the partially built Larkhall branch in the Hamilton area in Scotland ran away from the trolley operator. The trolley travelled over three miles down hill, passing over steep gradients of up to 1 in 48 and reaching speeds above 20 mph (32.1 km/h), eventually leaving the limits of the possession and running onto a railway line open to traffic. The trolley eventually came to a stand within Barncluith tunnel. A possible collision with a passenger unit was prevented by the activation of a track circuit within the tunnel by the trolley.

Recommendations

RECOMMENDATION	2	
RSSB should propose a change to the Railway Group Standard GM/RT/1310 to include appropriate stopping distances for a fully loaded manually propelled rail plant on a 1 in 30 gradient. This stopping distance should be achieved in conditions representative of operational conditions (ie including wet and dry conditions). The proposed changes should also recognise the requirements of EN 13977.		
Comment		
RSSB states that Railway Group Standard GM/RT/1310 is to be withdrawn, the industry support a voluntary Railway Industry Standard in its place, and that they have accommodated the recommendation within that Industry Standard.		
Status	**Amber = Open**	

RECOMMENDATION	5	
Torrent Trackside should ensure that: • their maintenance procedures take account of the guidance issued by Harsco as in Recommendation 4; • instruction is available to identify the operational checks required and risks associated with trolley operation taking account of the information in Recommendation 4. This should be issued to those using the trolley (for inclusion in method statements and risk assessments).		
Comment		
Torrent Trackside has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	6	
Carillion should review its safety management system and related processes and introduce changes to: • ensure that information that affects safety can be easily sourced by those staff preparing method statements, and site supervisors, through the IMS database; • ensure that staff engaged in hazard identification, risk assessment and the production of method statements or safety critical documentation are competent for these tasks and that they have access to appropriate source information; • ensure that if short notice changes to working arrangements are to be made they are supported by appropriate risk assessments and method statements that are documented and can be subject to safety validation and audit; • ensure project staff are aware of safety critical information; • implement a means of assessing the effectiveness of site briefings so that necessary improvements are made; • ensure the national processes for checking competencies are adequately briefed and implemented.		
Comment		
Carillion has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	7	
Carillion should conduct a review of the supervision and audit arrangements of their safety management system including but not limited, to the Worksafe Procedures, to ensure that its policy intent is being delivered in practice and to enable suitable remedial action to be taken.		
Comment		
Carillion has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	8	
Carillion and Skyblue should ensure that there are auditable procedures in place to ensure all staff engaged upon safety management roles have the capability to manage the safety of relevant staff.		
Comment		
Carillion and Skyblue has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	9	
RSSB should propose revision of the rulebook to recognise the risks associated with the braking performance of trolleys in wet or icy conditions, on gradients and with contaminated brakes, along with instruction to perform any necessary brake test to demonstrate the trolley brake is performing to its specification in all circumstances.		
Comment		
RSSB has considered the recommendation, and believes that it is based on a miss-understanding of Rules T2 and T3, and that the recommendation's intent is already covered by the rule book. ORR is considering the response.		
Status	**Amber = Open**	

5 Annexes

RECOMMENDATION	10	
Network Rail should revise its training requirements to match the output of recommendation 9, and introduce a competency within the *Sentinel* system for a person in charge of trolleys.		
Comment		
Network Rail has considered the recommendation, and believes that a specific training module in the sentinel suite is disproportionate to the risk of runaway trolleys. ORR is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	12	
Network Rail should review their guidance on product acceptance processes and 'grandfather rights', with particular reference to plant, to ensure that there is clarity to relevant parties on the design change approvals criteria and particularly in respect where it affects 'grandfather rights'.		
Comment		
Network Rail have reviewed their guidance, as required by the recommendation, and consider that the existing process addresses the issue of approvals in clear terms, and that new approval should be sought for stock when used on new routes, or when subject to substantial modifications. ORR is considering the response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	13	
All Infrastructure Controllers should brief relevant contractors and staff of the risks associated with braking performance on gradients, in wet/icy conditions, and with contaminated brakes.		
Comment		
Most Infrastructure Controllers have considered and carried out the recommendation. However, network rail have recently issued A Code of Practice, COP 18, which they consider meets the need of this recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	14	
Network Rail should carry out a risk assessment on the use of red lights on trolleys used in T2 sites and either; • enforce the existing requirement for such lights, which will include the fitting of brackets to all existing and future trolleys on the network; • or propose a modification to Rule Book Module T2, paragraph 15.5, to remove the requirement for a red light on a trolley.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	15	
Network Rail and Carillion should review their instructions to staff and contractors to ensure that accidents and incidents are notified to RAIB as required by the RAIR Regulations 2005.		
Comment		
Network Rail and Carillion have considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	16	
Network Rail should review its procedures for accident investigation to ensure that lessons learned from such investigations are adequately reviewed as potential precursor events, and when so identified are briefed on an industry wide basis.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Freight train 6V49	York Station	23:22	18 January 2006	Wagon derailment
RAIB Report No:	21/2006		Published:	2 November 2006

Summary

Freight train 6V49, from Tees Yard to Newport, was travelling through York station when one wheel set on a wagon became derailed. The wheel set re-railed at the first set of points south of the station.

Recommendations

RECOMMENDATION	1	
GE Rail Services should revise their maintenance arrangements for link and pin type suspensions to ensure that degraded link pins are detected and replaced at a periodicity that minimises the risk of in-service failure.		
Comment		
GE Rail Services has considered and carried out the recommendation. ORR is evaluating their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
GE Rail Services should determine in-service link pin strain and ensure that either link pins of an appropriate specification are used or that in-service loads are reduced to within the link pin load carrying capability.		
Comment		
GE Rail Services has considered the recommendation, and is carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	3	
English Welsh and Scottish Railway should revise their system of assurance to ensure that wagons are assessed and documented as fit to run before commencing in-service operation.		
Comment		
English Welsh and Scottish Railway have considered the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	4	
Freight Operating Companies that operate wagons with link and pin type suspensions should review their maintenance arrangements to ensure that degraded link pins are detected and replaced at a periodicity that minimises the risk of in-service failure.		
Comment		
The affected FOCs have considered and carried out the recommendation.. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Passenger Train 1B08, 3Car Class 170 Diesel Multiple Unit	Moy, Inverness-shire	07:02	26 November 2005	Derailment due to landslip
RAIB Report No:	22/2006		Published:	29 November 2006

Summary

Passenger train 1B08, a 3-car Class 170 diesel multiple unit (DMU) operated by First Scotrail, travelling from Inverness to Edinburgh on the Inverness to Perth section of the Highland Line, derailed after encountering a landslip in a cutting north of Moy in Inverness-shire.

All wheels of the leading car derailed to the left. No wheels of the other two cars were derailed. The derailed train travelled approximately 122 m before coming to rest upright close to the 105 ½ milepost.

The impact with the landslip debris, and the subsequent derailment, resulted in damage to the leading vehicle. This was mainly restricted to the front cab, the bogies and the vehicle under frame equipment. The impact also caused the release of a ceiling panel in the passenger saloon which hinged downwards and prevented the driver from being able to open the cab-to-passenger-saloon door.

Recommendations

RECOMMENDATION	1	
Network Rail should take actions either to prevent infiltration of water through the Parking Area or to install an engineered drainage system capable of managing the water which is expected to run on to it. The capacity of any drainage shall take into account the changes in surface condition due to the development activity on the surrounding land.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
Network Rail should repair the blocked and leaking crest drain and ensure that it is fully functional.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
Network Rail should review their procedures to address the issues identified below and implement the resulting changes to their operations: a) Water infiltration risks on land adjacent and above cutting slopes. Ensure that these risks, which will include issues such as areas of permeable and semi-permeable land on which surface run-off could collect, are identified and managed; b) Introduction of new works by Network Rail alongside the railway or change of use of existing works, both of which may import risk with respect to earthwork stability (either during construction, transition, or subsequently). The TEDE (Territory Earthworks and Drainage Engineer) should be consulted and should determine any mitigating action and ensure its implementation. For example, relevant risks could be those associated with a detrimental change in ground loading or drainage conditions; c) Unknown active or dormant surface extraction activities on land above the level of any track and within the boundary Network Rail have assessed may import risk. Ensure there are no such unknown activities that may import risk; d) Lack of definition and process break-down in the earthworks Evaluation process that may lead to problems in determining which of the candidate earthworks identified by the Examination process are physically at risk of failure and in need of action. Ensure the review defines the key process stages and gives sufficient guidance to a suitably competent engineer (for example with regard to the information to be considered and decision criteria to be used) to ensure the objective, consistent and repeatable identification of such earthworks; e) Lack of a formal process and guidance that leads to problems in identifying the earthworks to be inspected when adverse or extreme weather is forecast. The review needs to consider the weather forecasting arrangements (for example, the geographical area to which any forecast applies), the reporting and communication process, and the actions to be taken to ensure the safe operation of trains. It should ensure an integrated response by operations and infrastructure controls, and should be adopted nationwide; f) The lack of guidance in classifying earthworks for inclusion in the 'at-risk' list for adverse or extreme weather warnings. The guidance should, on a regular basis, import the latest knowledge from the earthworks management process into the 'at-risk' classification process. The guidance should also enforce regular review and update of the 'at-risk' list. Appropriate consideration should be given to earthworks, which are prone to failure due to water infiltration during intense rainstorms.		
Comment		
Network Rail has considered and has implemented all the sections of this recommendation, except part c. Network Rail rejected this part on grounds of reasonable practicability. ORR is considering this view. During its consultation with Network Rail the RAIB was advised that Network Rail's mining engineers would deal with this work, which could be accomplished within a two year timescale without problem; in addition, Network Rail makes regular use of helicopters to examine its infrastructure, and much of this work could easily be carried out during using this resource during routine flights.		
Status	**Amber = Open**	

RECOMMENDATION	4	
The Scottish Executive and the Department for Communities and Local Government in England and Wales should ensure that Network Rail becomes a statutory consultee for planning applications for developments in the vicinity of the railway.		
Comment		
The Department for Communities and Local Government in England and Wales have accepted the recommendation and are already in contact with Network Rail about making them a statutory consultee. They will also be undertaking a review of statutory consultees during 2007, which will include a review of the types of development and their location with respect to the railway. The Scottish Executive (Scottish Government) has accepted the recommendation and negotiations have been opened with Network Rail in Scotland with the regard making them a statutory consultee on planning applications. The discussions with Network Rail have identified wider issues regarding changes in the hydrology of catchments upstream of railway infrastructure. As a result, discussions have also been held with the Scottish Environment Protection Agency (SEPA) to examine if the issues raised can be addressed by through use of the Controlled Activities Regulations. Actions are on-going with respect to the implementation of the recommendation.		
Status	**Amber = Open**	

5 Annexes

RECOMMENDATION	5	
Network Rail should review their existing internal processes and ensure that the TEDE (Territory Earthworks and Drainage Engineer) is included in statutory consultations for planning applications for surface extraction developments in the vicinity of the railway. The output of this recommendation is dependent on any actions arising from recommendation 4 above.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regards the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	6	
Network Rail should review the risks and benefits of undertaking earthworks Cyclical Examinations by aerial survey compared to foot surveys. The review should identify the mitigating actions needed to control any risks identified. If Network Rail intend to extend their use of aerial surveys to general use, conditions for this should be included in NR/SP/CIV/065. Their review should recognise the impact of aerial surveys, irrespective of specific or general use, on downstream process steps in NR/SP/CIV/065 and assess any mitigation measures necessary to ensure fitness for purpose. For example, SSHI weightings might need to be different if data collection is by aerial survey.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regards the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	7	
Network Rail Scotland should ensure that processes are in place to assure that NR/SP/CIV/065 is fully adopted for undertaking earthworks Cyclical Examinations. This should include: • full compliance with the SSHI (Slope Stability Hazard Index) analysis process; • justification for using aerial surveys and definition of attendant risk mitigation.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	8	
Bombardier should identify all vehicles manufactured with a similar method of secondary retention to that of unit 170431 and inform relevant train owners and operators of the risk of failure identified in this report. Bombardier should modify all new rolling stock under manufacture, and the design for future rolling stock, to mitigate this risk.		
Comment		
Bombardier has considered and carried out the recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	9	
All rolling stock owners should identify rolling stock in their ownership with a similar method of secondary retention to that of unit 170431 and carry out modifications to mitigate the risk identified in this report.		
Comment		
Rolling stock owners have considered the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	10	
As part of their research into 'Whole train dynamic behaviour in collisions and improving crashworthiness' (project T188), RSSB should consider the practicability of design elements on the bogie that limit the degree of deviation from the track following derailments.		
Comment		
RSSB has accepted the recommendation and implementation is in progress. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Pedestrian Crossings	Elsenham Station (wicket gates)		3 December 2005	Fatal Accident
RAIB Report No:	23/2006		Published:	11 December 2006

Summary

This investigation was initiated following a fatal accident at Elsenham station on 3 December 2005. The remit can be summarised as follows:

- to identify the number and distribution of station pedestrian crossings in the UK (including pedestrian gates associated with highway crossings);
- to investigate the safety issues associated with crossings of this type;
- to make general recommendations for the improvement of safety at station pedestrian crossings;
- to investigate the circumstances of the accident at Elsenham; and
- to make specific recommendations for the improvement of safety at Elsenham.

Recommendations

RECOMMENDATION	1	
Network Rail to establish standard definitions and terminology to cover the various types of foot crossings at stations and to prepare a validated list of all station pedestrian crossings on its network.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
Network Rail in consultation with Station Operators to ensure that a suitable quantified risk assessment is conducted for each station pedestrian crossing. In conjunction with these risk assessments Network Rail should develop and implement a programme to address each of the following: • the upgrading of all station pedestrian crossings at which the individual risk to the most exposed user is assessed as being above the upper limit of tolerability; and • the implementation of improved safety measures, where shown to be necessary, commensurate with the level of risk at each station pedestrian crossing. Any risk assessments undertaken in furtherance of this recommendation should take into account local factors such as the number of school aged children and elderly persons using the crossings.		
Comment		
Network Rail has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	3	
Network Rail to review its management system to ensure the competence of the persons carrying out risk assessments at station pedestrian crossings.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

5 Annexes

RECOMMENDATION	4	
ORR, in consultation with Network Rail and DfT, to undertake a comprehensive review of existing guidance relating to the design of station pedestrian crossings. This should include a review of current technologies and the modern understanding of human factors. This review should include each of the following: a. Use of fencing to direct passengers to approach the crossing by the route that best enables them to observe the approach of trains whilst drawing their attention to any associated signs or stop lights. b. An assessment of the safety benefits and disbenefits of providing pedestrian gates on the final approach to station pedestrian crossings. c. Research into the technical feasibility and safety benefit of providing an additional set of stop lights on the far side of the crossing from an approaching user to repeat the indication of the lights on the near side ('back-to-back' lights). d. Research into the most effective means of providing users with an active warning to alert them of the approach of a second train. This should encompass research into the effectiveness of visual displays and/or voice messages as a means of alerting users.		
Comment		
ORR has agreed with RSSB that they will commission this research. The findings will feed into a comprehensive review of the guidance that ORR is in the process of commissioning.		
Status	**Amber = Open**	

RECOMMENDATION	5	
Network Rail, to carry out the necessary research, tests and trials to inform a review its own designs and operating policies for station pedestrian crossings and as an input to the review of guidance to be undertaken by ORR in line with Recommendation 4.		
Comment		
Network Rail has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	6	
Network Rail to seek approval from ORR for the installation of fixed signage at station pedestrian crossings that cross more than one running line to remind users of the risk from a second train.		
Comment		
Network Rail has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	7	
Network Rail to expedite its programme for the installation of LED stop lights at all station pedestrian crossings that are currently equipped with miniature stop lights and to revise its Company Standards accordingly.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	8	
Station operators to identify those locations where intending passengers are required to use a station pedestrian crossing in order to use the station facilities (e.g. booking offices, ticket machines, waiting rooms or toilets). In all such locations train operators should, where it is reasonably practicable to do so, install suitable facilities (e.g. another ticket issuing machine) to reduce the need for passengers to cross the line.		
Comment		
Arriva, Chiltern Rail, First Group, Network Rail, Merseyrail and Southern have considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	9	
Network Rail, in consultation with the station operator and representatives of the local community, to adjust the operation of the station pedestrian crossing (at Elsenham) by requiring that the pedestrian gates be locked in the closed position before signals can be cleared for the approach of trains.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	10	
If necessary for the avoidance of delays, and subsequent misuse by intending passengers, a stepped footbridge should be constructed (at Elsenham) to provide an alternative route (mobility impaired users will be able to use the existing crossing in safety at all times when the gates are open to the highway).		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Six Car Unit of 1995 stock, no T6	**Archway Station**	**10:51**	**2 June 2006**	**Derailment**
RAIB Report No:	**24/2006**		**Published:**	**11 December 2006**

Summary
A London Underground Ltd (LUL) Northern line tube train became derailed while entering the reversing siding at Archway station, north London. The only person on board, the train operator, was unhurt. The rear bogie of the last car was derailed, and the car became wedged across the entrance to the siding tunnel. Services on the High Barnet branch of the Northern line were suspended for the rest of the day.

Recommendations

RECOMMENDATION	1	
LUL should modify their design specification for bullhead switch rail to include a chamfer or other means of reducing the likelihood of stress raisers occurring on the machined lower edge of the rail.		
Comment		
LUL has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
LUL should assess the risk arising from the continued use of unmodified bullhead switch rails in junction work (particularly facing points) and replace such rails where appropriate.		
Comment		
LUL has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
Tube Lines should carry out a review of their track inspection system to ensure that faults are being consistently detected and correctly identified, and the appropriate level of remedial action is being programmed.		
Comment		
Tubelines has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Class 156 Two Coach Unit	Sudbury Station	18:27	27 January 2006	Collision between train and buffer stops.
RAIB Report No:	26/2006		Published:	20 December 2006

Summary

A passenger diesel train, reporting number 2T28, ran into the buffer stops at Sudbury Station. It was formed of two coach unit 156422, comprising vehicles 57422 (leading) and 52422 (trailing). Both the train and the station were operated by 'one'. The collision occurred at about 6.4 mph (10.2 km/h) as the train was braking to a stand. Approximately 100 passengers were on board at the time; a number of them received minor injuries as a result of falls caused by the rapid deceleration of the collision. First aid attention was given by other passengers and shortly afterwards by paramedics who were called to the scene. One passenger sustained suspected fractured ribs. No passengers were conveyed to hospital.

Recommendations

RECOMMENDATION	1	

'One' should provide some clear guidance for the train crew on the ideal order of attending to various duties following an accident (it may be useful for this to be provided in a form that can easily be carried around or that could be provided in each driving cab and conductor's compartment).

Comment

'One' has accepted the recommendation and have carried it out.
ORR regard the recommendation as closed.

Status Green 1 = Closed

RECOMMENDATION	2	

Network Rail should:

- carry out a review, including cost benefit analysis, into the practicability of providing energy absorbing buffer stops at terminal platforms;
- provide a copy of the review to the safety authority;
- develop a programme to fit energy absorbing buffer stops to terminal platforms where it is reasonably practicable to do so.

Comment

Network Rail has considered and carried out the recommendation.
ORR regard the recommendation as closed.

Status Green 1 = Closed

Equipment Type	Place	Time	Date	Incident
Class 66 Locomotive & 14 JNA NLU 'Falcon' wagons.	Urchfont & Kennington	11:40	5 January 2006	Broken Rails
RAIB Report No:	27/2006		Published:	20 December 2006

Summary

Train 6F95 comprising a Class 66 locomotive hauling 14 JNA NLU 'Falcon' wagons, left Meldon Quarry near Okehampton in Devon bound for Hinksey yard near Oxford. One wagon in the train was empty, the remainder were fully loaded.
At 16:00 hrs and 17:20 hrs, track circuit failures occurred at Urchfont and Kennington respectively, in each case just after train 6F95 had passed by. Examination of the line to determine the cause of the track circuit failures, revealed broken rails at both locations, one at Urchfont and two at Kennington.
Subsequently, one of the wheel sets on loaded wagon NLU 29553 was found to have severe wheel tread damage, with flats which measured approximately 120 mm in length within a damaged portion on each wheel which extended 255-285 mm. The depth of the flats at 7-8 mm indicated that the flat length had been even longer (160-170 mm) at some point in the journey. Another wagon, NLU 29334, was also found to have much smaller wheel flats, within permissible tolerances, and it was returned into service.

Recommendations

RECOMMENDATION	1	
DRC (Dartmoor Railway Company) should develop and implement measures to improve the rail head condition on the Meldon Quarry line with the aim of minimising occurrences of wheel flats.		
Comment		
DRC has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
Network Rail should ensure that the requirement for a roll-by test at Coleford Junction is recorded in formal operational documentation, such as the Sectional Appendix, so that the practice will always remain, irrespective of the operator of the quarry trains.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	5	
Network Rail should assess the risks associated with: • not having any wheel impact load detectors on the Berks and Hants line and; • the current levels of operational unavailability of existing wheel impact load detector sites across the network; and determine whether they are as low as reasonably practicable. Where necessary, measures to address any identified shortcomings should then be implemented.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

5 Annexes

ANNEX C - Appendix 5

Recommendations Summary and Status from reports published in 2007

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Mainline Passenger Trains	Autumn Adhesion Investigation Pt 1, 2 and 3	06:30	25 November 2005	Review of adhesion-related incidents
RAIB Report No:	2006/25		Published:	8 November 2007

Summary

The immediate cause of the SPAD incidents that occurred at Esher on 25 November 2005 and Lewes on 30 November 2005 (which are the subject of Parts 1 and 2 of this investigation report) was poor adhesion between wheel and rail. Both trains involved had failed to stop within normally expected distances, despite the systems on the train performing in accordance with their specifications and the drivers correctly implementing the professional driving policy prevailing within the relevant Train Operating Company (TOC) at the time. Both trains had travelled a distance of approximately 3km from the time that the driver had first applied the brake. Stopping distances under normal circumstances would have been less than 2km. These two incidents occurred against a backdrop of an increase in the number of adhesion related SPAD incidents and a significant increase in the number of adhesion-related station overrun incidents on the national rail network during autumn 2005, as compared with autumn 2004.

Recommendations	Twenty-five recommendations are made.

RECOMMENDATION	1	
Network Rail to review the adequacy of their system for periodic briefing of signallers on Section 15.2.2 of the signalling general instructions and the procedures for dealing with a driver following the occurrence of a SPAD to ensure that they take account of the infrequency with which signallers have to deal with such incidents. Depending on the outcome from the review, the procedures should be modified and changes implemented as necessary.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Network Rail and South West Trains to review jointly the adequacy of their Control Room procedures for dealing with trains that have been involved in severe overrun incidents to ensure that it is explicitly established whether any allegation has been made about the involvement of the train braking system in the incident before a decision is made on whether to allow the train to remain in service. Depending on the outcome from the review, the procedures should be modified and changes implemented as necessary.		
Comment		
Network Rail and South West Trains have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
South West Trains to ensure that a brake test is undertaken on Class 444 and Class 450 units as a precondition for allowing a train to proceed after any SPAD and after any incident where the stopping performance of the train has fallen significantly below a driver's expectations.		
Comment		
South West Trains have accepted the recommendation, and are carrying it out. ORR is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	4	
Network Rail to: • conduct a review of the approach used to assess the competence of new and existing signallers in their use of emergency equipment and amend it as necessary to ensure that the questions used probe a signaller's understanding of how they would use the emergency equipment provided; • use the training simulator at Redhill to test signallers employed in the Sussex Route periodically on their response to rarely-experienced scenarios such as the need to stop all trains and specific trains in an emergency; • review and modify as appropriate their current practice on other routes to exploit the availability of simulators for testing signallers periodically on their response to rarely-experienced scenarios such as the need to stop all trains and specific trains in an emergency.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	
Network Rail to enhance Clause 5.2 of the Occupational Health & Safety Manual (NR/SP/OHS/00119) to include the requirement for staff to be tested for drugs and alcohol when their actions or omissions, under slightly different circumstances, could have resulted in or contributed to the occurrence or consequences of an accident or serious incident.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	6	
Network Rail, Sussex and Southern Railway to jointly review, and modify as appropriate, their Control Room procedures governing the communication of incident details to ensure that they correctly identify the key information, including details of all staff involved and ensure that appropriate action is taken to promote the welfare of staff and the safety of the railway. The review should consider the need to amend procedure C32 of the Network Rail Control Manual, and if appropriate arrange for the necessary amendments to be made and implemented.		
Comment		
Network Rail, Sussex and Southern Railway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	7	
Train operators to: • make modifications to multiple units already fitted with sanding equipment to permit application of sand in brake step 2 and above (or the equivalent of brake step 2 and above on multiple units fitted with step-less brake controllers) for the duration of the period when the WSP system is active on the leading vehicle; • adjust, as appropriate, rolling stock maintenance activities during the autumn low adhesion period to include enhanced monitoring of sand hoppers to ensure that sand is always available; • review their maintenance polices and practices for sanding systems to check that they are targeted at ensuring that the system continues to deliver sand to the point where wheel meets rail.		
Comment		
Train operators have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

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RECOMMENDATION	8	
Train operators to: • modify as appropriate their instructions to drivers regarding the braking of trains equipped with a WSP system in low adhesion conditions to ensure that if the expected level of retardation is not achieved during the initial stage of braking, the optimum position of the brake controller is immediately selected to maximise braking efficiency. This may involve selecting a full service brake application or, where appropriate, an emergency brake application. • brief any revised instructions to drivers.		
Comment		
Train operators have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	9	
Train operators of multiple units operating in single unit formations to consider increasing the length of train consists during the autumn low adhesion season where reasonably practicable, eg • where rolling stock is available; • where platforms can accommodate longer trains; • where, based on the train operator's review of low adhesion events and knowledge of problem areas for adhesion, there is a demonstrable benefit in so doing on specific routes and/or at specific times of day.		
Comment		
Train operators have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	10	
Network Rail to develop and implement a risk-based strategy for rail head treatment and vegetation control in consultation with train operators. The strategy should be based on a review of recent data and take particular account of locations such as the approaches to junctions and level crossings where the consequences of an overrun could be severe. At high risk locations such as junctions, level crossings and steep gradients, consideration should be given to one or more of the following solutions: • the targeted application of Sandite; • application of Sandite using strategically placed fixed applicators; • temporary restrictions in operational use (eg avoiding the use of a junction); • temporary modification of signalling controls to extend effective overlaps beyond signals; • instructions to selected trains to perform running brake tests in order to assess the state of adhesion; • other effective measures defined by parties involved in managing the risk from low adhesion.		
Comment		
Network Rail and South West Trains have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	11	
Network Rail to • plan and execute trials in conjunction with train operators to validate changes made to rail head treatment for autumn 2006 and assess potential adjustments for autumn 2007; • develop a strategy for rail head treatment in consultation with TOCs, based on the outcome of the trials.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	12	
Network Rail to conduct a review with ADAS UK Ltd to determine the scope for improving the accuracy of low adhesion prediction.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	13	
Network Rail and train operators to develop a joint strategy for investigating adhesion related overrun and SPAD incidents that addresses: • Which low adhesion incidents are investigated; ○ criteria for undertaking an investigation (eg length of overrun, potential severity of outcome); ○ whether different levels of investigation are appropriate and if so, the criteria that apply to each one. • What data is gathered, when, how and by whom; ○ justification for gathering each item of data; ○ when wheel swabbing is appropriate and clear guidance on the extent and number of rail swabs to be undertaken; ○ train data recorders; ○ brake Control Unit; ○ traction Control Unit; ○ Network Rail and TOC staff responsibilities. • Whether enhancements can be made to existing swabbing techniques to improve the value gained from swabbing; • Management of investigations; • Use of alternative approaches or technology to estimate levels of contamination and/or adhesion available.		
Comment		
Network Rail and trains operators have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		

RECOMMENDATION	14	
RSSB to extend research and testing into how severe low adhesion conditions occur with particular reference to the phenomenon of micro layers of contamination on rail surfaces, invisible to the eye. The research will seek to establish the nature of the contaminant, how it reaches the rail and bonds with it, the circumstances under which the contaminant poses a particular threat to train braking (eg the factors that exacerbate its impact), the factors that determine how long it endures, possible methods for identifying its presence and methods for preventing its formation and dispersing it.		
Comment		
RSSB have accepted the recommendation, and have carried it out.		
Status	**Amber = Open**	

RECOMMENDATION	15	
Train operators to fit automatic sanding equipment to those multiple units of five cars or less that are not currently so equipped, unless they are specifically excluded from doing so by GM/RT2461.		
Comment		
Some train operators have accepted the recommendation, and have carried it out, but ORR is still awaiting responses from other TOC's. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	15	
Train operators to fit automatic sanding equipment to those multiple units of five cars or less that are not currently so equipped, unless they are specifically excluded from doing so by GM/RT2461.		
Comment		
Some train operators have accepted the recommendation, and have carried it out, but ORR is still awaiting responses from other TOC's. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

5 Annexes

RECOMMENDATION	16	
RSSB to lead research into ways of deriving quantitative criteria for braking performance under low adhesion conditions and the implications of each identified approach (including the potential impact on railway infrastructure). The research should include a consideration of the levels of adhesion against which performance (eg stopping distances or deceleration rates) should be demonstrated. The implications of adopting the approach proposed in the draft second issue of the high speed rolling stock TSI should be considered. The results from the research should be incorporated into the relevant RGS as appropriate and disseminated to those who are revising the high-speed rolling stock TSI.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	17	
RSSB to review the relevance of existing sanding parameters within GM/RT 2461 and amend, enhance or supplement them with additional guidance where appropriate. The review is to encompass: • implications (cost, benefits and disbenefits) of increasing the guide value of 2kg/minute for maximum sanding rate (taking account of the trials undertaken during August 2006 by Southern Railway); • the current sanding initiation threshold (full service and emergency braking) and the effect of reducing it to Step 1 or equivalent value for trains equipped with stepless brake controllers; • the need for criteria covering minimum sanding duration; • the need for criteria on sanding at low speeds including the implications of permitting sanding until the train has come to a stand; • identification of ways in which currently excluded vehicles (eg Classes 142-144, 153) can be equipped with sanders.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	18	
RSSB to carry out research in conjunction with Network Rail and train operators into the implications, (cost, benefits and disbenefits) of: • adopting enhanced sanding rates under emergency conditions above a defined speed threshold (either activated manually by the driver or automatically activated by the placing of the brake controller into the emergency position when WSP is active); • allowing leading wheel sanding for high speed emergency braking; • permitting units other than the leading unit to dispense sand under emergency conditions; • methods of avoiding the problem of excessive sand causing failures to operate track circuits (e.g. use of different materials or additives).		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	19	
Train operators to ensure that until RGS GM/RT2461 has been reissued, clauses on sanding are contained within specifications for new rolling stock. TOCS should specify, as a minimum, the requirement for continuous sanding while WSP is active in Brake Step 2 (or equivalent for trains equipped with stepless brake controllers) and above and a sanding rate of 2kg/minute.		
Comment		
Some train operators have accepted the recommendation, and are carrying it out nut ORR is still awaiting responses from other TOC's.		
Status	**Amber = Open**	

RECOMMENDATION	20	
Train operators to check the sand dispensing rate of each train within their fleets and ensure that it is set to the RGS GM/RT2461 guidance value of 2kg/minute except where a higher value has been permitted.		
Comment		
Train operators have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	21	
RSSB to establish a project to: • Measure the accuracy of existing WSP (Wheel Slide Protection) simulation rigs that could be used to support rolling stock approvals. This validation should include reference to records obtained from train data recorders following actual incidents and full-scale testing as appropriate. The latter should include a direct comparison between UIC (International Union of Railways) detergent test data and a simulation of the same. • Examine the feasibility of extending the capability of an existing WSP simulation tool in order to predict more accurately the behaviour of an entire train in low adhesion conditions (eg allowing for rail head conditioning, the effect of sanding and more than one vehicle). The results from the project should be used to inform the developing Euronorm on WSP equipment testing.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	22	
Subject to the successful development of the simulation tool described in Recommendation 15, RSSB to undertake a programme of modelling to evaluate the impact of different control strategies for minimising stopping distances under various low adhesion conditions. The simulation should specifically address potential alternative strategies for extreme circumstances including: • changing WSP (Wheel Slide Protection) control algorithms for the level of slip permitted from the current value of 17-20%; • permitting different levels of slip on wheels on the same train to optimise overall braking during low adhesion conditions. All the simulations should be designed to evaluate the effect of different strategies on braking performance and rail head conditioning and should include simulations with sanding operative. The results from the programme should be shared with those responsible for drafting relevant highspeed and conventional TSIs (Technical Specification for Interoperability) for possible inclusion in new or revised versions of those documents.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	23	
RSSB to initiate a project to evaluate the costs and benefits of equipping multiple units operating over the British mainline network with magnetic track brakes for use in emergencies under low adhesion conditions. The project will: • Address and resolve the outstanding issues identified in Interfleet report ITLRT17544-001. • Subject to successful resolution of outstanding issues, specify and procure magnetic track brake (MTB) equipment and fit it to a small number of units. The units chosen should represent different traction types with different operating regimes and operate in different geographical areas. • Develop and implement trials of these units, incorporating in-service experience and specific comparative tests with a similar unit not equipped with MTB. The project will aim to determine whether MTBs are a cost effective solution for new-build rolling stock and/or retrofitting to existing rolling stock.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

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RECOMMENDATION	24	
RSSB to establish a study into the potential uses of systems on modern rolling stock to: • automatically sample adhesion conditions, eg by the controlled braking/release of a single wheel-set on service trains (other than during train braking); • establish the profile, nature and distribution of low adhesion conditions on the national rail network currently and provide input to WSP simulation packages; • improve intelligence about adhesion conditions in real time, eg use of wireless data transmission to feed details of low adhesion conditions encountered during braking to a monitoring system. The study should take into account operating experience with the Low Adhesion Warning System (LAWS) and consider the lessons learnt in relation to the development of a network wide solution for monitoring low adhesion conditions. The study should be developed in the context of the work currently being undertaken by RSSB in research project T540, 'Scoping and Development of the Adhesion Management System'. The output from this study must include consideration of how the information can be used by the railway industry including the need for signallers and drivers to be made aware of low adhesion conditions in real time.		
Comment		
RSSB have accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	25	
Network Rail to review ETRMS (European Rail Traffic Management System) low adhesion assumptions in the light of the findings of this report and consider whether any changes are needed to ERTMS design or operating parameters in the light of the review.		
Comment		
Network Rail has accepted the recommendation, and are carrying it out.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Freight train & Class 66 Locomotive	Brentingby Junction, near Melton Mowbray	05:31	9 February 2006	Derailment
RAIB Report No:	2007/01		Published:	23 January 2007

Summary

At 05:31 hrs on 9 February 2006, train 6Z41, the 05:17 hrs freight train, operated by EWS, from Mountsorrel, Leicestershire, to Barham, Suffolk, derailed at trap points at the end of the Up Goods Loop at Brentingby Junction, near Melton Mowbray. The derailment of the class 66 locomotive and the first three wagons occurred after the train passed signal 53 at the end of the Up Goods Loop at danger. No-one was injured as a result of the accident.

Recommendations	Ten recommendations are made.

RECOMMENDATION	1	
EWS should include napping within its fatigue management system and implement it as a fatigue counter-measure if the assessed risk of fatigue indicates that it is necessary.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
If the assessed risk of fatigue requires napping as a fatigue counter-measure, EWS should provide facilities so that naps may be taken at locations where drivers take breaks and build sufficient time into rosters for taking naps and recovery afterwards.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
The RSSB should initiate research to investigate whether a technique to deliberately shorten a night's sleep when changing from day shift to night shift and following this by sleep in the afternoon could be a viable means of reducing the risk of fatigue during the subsequent nightshift.		
Comment		
RSSB have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
The RSSB should investigate and if reasonably practicable instigate a change to Railway Group Standard GO/RT3251 so that screening for sleep disorders is required as part of the system of regular medical surveillance applied to train drivers and following incidents/accidents where fatigue has been identified as a possible causal or contributory factor.		
Comment		
RSSB has proposed and implemented an alternative action to that recommended by the RAIB, which meets the objectives of the RAIB.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
EWS should produce simple, targeted guidance for train drivers that provides clear advice on how they should conduct their lifestyles outside work so that levels of alertness are adequate when at work. The guidance should include the specific issue of how drivers should prepare for a first night shift.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

RECOMMENDATION	6	
EWS should implement a system to rebrief at intervals the guidance issued as a result of Recommendation 5 above and include the families of drivers in the briefing if possible.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	7	
The RSSB should initiate research to investigate the practicalities of implementing personal responsibility statements and/or sleep contracts, and to investigate the benefits these could provide in reducing the risk of fatigue of persons working in the railway industry.		
Comment		
RSSB have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	8	
EWS should implement a system where standard, simple questions are asked of drivers when being checked face to face for fitness for duty in order to identify cases of very long spells without sleep and alert managers to cases of particularly high levels of fatigue.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	9	
Network Rail should extend the right hand switch rail of trap points 52A to direct a derailed train clear of the adjacent line.		
Comment		
Network Rail has evaluated the benefits and the costs and has rejected the recommendation. ORR has accepted this response and regard the recommendation as closed.		
Status	**Green 3 – Closed with no action taken**	

RECOMMENDATION	10	
Recommendation arising from observations: Network Rail should reposition the SPT (Signal Post Telephone) fitted to signal 53 so that it is located before the signal close to where drivers are required to stop if the signal is at danger at the position required by their companies' PDP (Professional Driving Policy).		
Comment		
Network Rail has evaluated the benefits and the costs and has rejected the recommendation. ORR has accepted this response and regard the recommendation as closed.		
Status	**Green 3 – Closed with no action taken**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Class 59 locomotive & 18 Hopper Wagons	Cricklewood Curve	02:25	31 January 2006	Derailment
RAIB Report No:	2007/02		Published:	23 January 2007

Summary

On 31 January 2006 at 02:25 hrs a freight train was traversing the Cricklewood Curve in North London on its way from St. Pancras to Acton Yard. The linespeed on this part of the curve is 10 mph (16 km/h) and the train was travelling at 7.5 mph (12 km/h) when two of the wagons derailed. The derailed wagons overturned and started to slide down the embankment but were held by the couplings between them and the remainder of the train. One of the wagons was loaded with aggregate which discharged from the wagon down the bank. The other derailed wagon was empty. There were residential flats at the foot of the embankment, the residents of which were evacuated by the police as a precaution in case the derailed wagons moved further down the bank.

Recommendations	Six recommendations are made.

RECOMMENDATION	1
Network Rail LNET (London North East Teritory) MP&I (Major Projects & Investment) should revise their systems for implementing the CDM (Construction Design and Management) regulations to minor works so as to ensure that information on the condition of the asset that might affect the safety of those who might be affected by the construction work is passed to the contractor in a manner which is clear, precise and in a form suitable for the users.	
Comment	
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR propose to close the recommendation, but will monitor ongoing progress through their normal inspection procedure.	
Status	**Amber-Open**

RECOMMENDATION	2
Network Rail LNET MP&I and the Network Rail LNE territory civil engineer should revise their internal procedures to ensure the following: • for division of responsibility: MP&I, in conjunction with the earthworks engineer, should establish for each project the responsibility for determining the need for, and the implementation of, monitoring of the track; • for internal Communication: all MP&I project engineers and project managers on all territories should be made aware of the procedures used to monitor the track during site works and when these procedures should be employed; • for external Communication: MP&I should ensure that they communicate clearly the responsibilities for track monitoring, and any other matters that might affect safety of the line, to the track engineers and that this information is received and understood by them.	
Comment	
Network Rail LNET and MP&I have accepted the recommendation, and are carrying it out.	
Status	**Amber-Open**

RECOMMENDATION	3
Network Rail should revise company standard NR/SP/TRK/001 to give guidance on appropriate measures to be taken on discovery of excessive cant with timescales for action.	
Comment	
Network Rail have indicated that the standard requires action as soon as practicable. ORR have accepted this and have closed the recommendation.	
Status	**Green 3 – Closed with no action taken**

RECOMMENDATION	4
Network Rail should revise the track inspection handbook associated with work instruction NR/WI/TRK/001 to refer to the cant deviation limits in NR/SP/TRK/001.	
Comment	
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is still considering the position with this recommendation.	
Status	**Amber-Open**

5 Annexes

RECOMMENDATION	5	
Network Rail MP&I should improve the technical control of works undertaken by the minor works team to ensure that risk information provided by the designer of a scheme and any knowledge within Network Rail of risks inherent in the condition of the asset are properly taken into account.		
Comment		
Network Rail MP&I have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
Network Rail should ensure that at all stages of a project there is an appropriate competent person to oversee it, and that if the competent person changes at any stage in the life of the project, an appropriate handover takes place.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Class 66 locomotive and 35 loaded ballast wagons	Haymarket, Edinburgh	15:00	14 January 2006	Unauthorised train movement and subsequent derailment
RAIB Report No:	2007/03		Published:	30 January 2007

Summary

During engineering work on the railway between Haymarket East Junction and Curriehill on 14 January 2006, a train loaded with spent ballast left the section of line that was under engineers' possession without authority and ran onto a line open to other traffic. On reaching Haymarket East Junction it was diverted onto a line on which a passenger train was approaching in the opposite direction. The ballast train stopped in Haymarket station when the driver realised that he was travelling on the wrong line. The passenger train was stopped by the action of the signaller. Subsequently, during tests on the brakes of the ballast train, one wagon became derailed by one set of wheels. There were no injuries, and minor damage to a set of points.

Recommendations	Three recommendations are made.

RECOMMENDATION	1	

The Rail Safety and Standards Board (RSSB), in conjunction with Railway Group members, should undertake an urgent revision of Rule Book modules T3 and T11 to provide clarity in the requirements for the protection of possessions. This should include:

- clearer definition of the responsibilities of persons authorised to lift protection at possession limits;
- emphasising the preference for placing protection on the approach to the last signal rather than clear of the points at the junction; and
- stressing the importance of a minimum separation distance between protection and an open line when protection is placed clear of points.

Comment

RSSB has accepted the recommendation and have carried it out.
ORR has declared the actions as complete and the RAIB is satisfied with the outcome.

Status	Green 2-Completed

RECOMMENDATION	2	

Network Rail should review appropriate components of their competence management system, with the aim of ensuring that PICOPs (Person in charge of possession) and signallers fully understand modules T3 and T11 of the Rule Book.

Comment

Network Rail has considered and carried out the recommendation.
ORR regards the recommendation as closed.

Status	Green 1-Closed

RECOMMENDATION	3	

Network Rail should review the possession planning arrangements to ensure that there is a process in place for checking that the location and type of protection is compliant with the requirements of the Rule Book, and that wherever possible the extent of the possession will permit the placing of detonator protection on the approach to the signal protecting any points, or through crossings, beyond the possession.

Comment

Network Rail has considered and carried out the recommendation.
ORR regards the recommendation as closed.

Status	Green 1-Closed

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Locomotive 75029	Grosmont on the North Yorkshire Moors Railway	10:10	16 April 2006	The blowback of a locomotive fire.
RAIB Report No:	2007/04		Published:	31 Janaury 2007

Summary

At around 10:10 hrs on 16 April 2006, locomotive 75029, hauling the 09:45 hrs passenger service from Grosmont to Pickering on the North Yorkshire Moors Railway, suffered a blowback of its fire approximately 1160 metres south of Grosmont station. The blowback filled part of the footplate with flame for between 4 and 10 seconds. The locomotive driver suffered minor burns.

Recommendations	Nine recommendations are made.

RECOMMENDATION	1
NYMR (North Yorkshire Moors Railway) and other operators of locomotives with blastpipes or blastpipe bases welded to the saddle plate, should carry out an immediate, where reasonably practicable, and appropriate NDT (Non- Destructive testing) examination of the blastpipe base/saddle plate weld and, where necessary, make suitable repairs.	
Comment	
MYMR has completed the recommendation, but the RAIB is not aware of progress by the operators to whom the recommendation is targeted.	
Status	**Green 1-Closed**

RECOMMENDATION	2
ORR and HRA (Heritage Railway Association) should ensure that the forthcoming Code of Practice on the Maintenance and Repair of Locomotive Boilers provides guidance to those repairing existing welded blastpipe bases or constructing such designs from drawings. This should recommend that welds between blastpipe bases and saddle plates should, as a minimum, be sized as shown in the original drawings and that in sizing the weld, consideration should be given to the subsequent inspection periodicity, the arrangement of the adjacent plating and any intention to line the smoke box base with concrete or fire-brick.	
Comment	
ORR & Heritage Railway Association (HRA) have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.	
Status	**Green 1-Closed**

RECOMMENDATION	3
Steam Powered Services Limited should have in place procedures to ensure that when defining and agreeing outsourced works to be carried out, the scope of any provision for mechanical inspections is explicitly defined.	
Comment	
Steam Powered Services Limited have accepted the recommendation, and are carrying it out.	
Status	**Amber-Open**

RECOMMENDATION	4
NYMR and other operators of locomotives fitted with blastpipes or blastpipe bases welded to the saddle plate, should ensure that the maintenance procedures for those locomotives include NDT inspection of the welds at a periodicity determined by assessing the risk of failure prior to the next inspection.	
Comment	
NYMR has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.	
Status	**Green 2-Completed**

RECOMMENDATION	5
When developing maintenance and overhaul schedules, NYMR should assess the hazards to operating staff and the public that the specific design of locomotive concerned presents, and develop the schedules to account for those hazards.	
Comment	
NYMR has considered and accepted the recommendation. ORR regard the recommendation as closed.	
Status	**Green 1-Closed**

RECOMMENDATION	6	
ORR and HRA should assess the applicability of Recommendation 5 to other steam locomotive operators and, if it is more widely applicable, incorporate the recommendation within the forthcoming Code of Practice for the Maintenance and Repair of Steam Locomotive Boilers and any other standards or guidance they issue on steam locomotive maintenance.		
Comment		
ORR and HRA have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	7	
NYMR should ensure that a first-aid kit is provided and its provision clearly indicated in all locomotive driving cabs.		
Comment		
NYMR will equip all operational locomotives, and they are evaluating suitable First Aid Kits that will withstand the rigours of use on the footplate. Locomotives will be fitted as soon as a suitable source has been identified. This has been accepted and agreed by the RAIB. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
NYMR should use steel smoke box blower feed pipes as recommended by ORR RSPG (Railway Safety Principles and Guidance) or, if copper is to be used, should put in place procedures to ensure that it is maintained in a fully annealed state.		
Comment		
NYMR has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	9	
RSSB should allow the HRA direct access to the NIR (National Incident Register) system, both to raise NIRs and receive them.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Locomotive 66056 & 21 HTA bogie hopper wagons.	Waterside, East Ayrshire	03:19	21 January 2006	Derailment
RAIB Report No:	2007/05		Published:	31 January 2007

Summary

Train 6C64 travelling from Chalmerston colliery to Ayr became derailed at low speed at 03:19 hrs on 21 January 2006. The train departed Chalmerston bound for Drax power station in Yorkshire and was partially derailed less than a mile into its journey on the section of single line owned by Scottish Coal. The train, comprising 21 loaded HTA bogie hopper wagons hauled by locomotive 66056, continued for 2¼ miles (3 800 m) until being brought to a standstill at 03:29 hrs. The train was halted by the increasing drag experienced when the track disintegrated beneath the rear six wagons as it passed through the village of Patna.

Recommendations | **Seven recommendations are made.**

RECOMMENDATION	1	
Scottish Coal should establish and specify the standards to which they require their infrastructure to be inspected and maintained. This should be in accordance with the Railway Group Standard 'Track Systems Requirements' GC/RT5021 and a risk assessment undertaken to justify the frequency and level of inspections if they are reduced below the minimum specified in this standard.		
Comment		
Scottish Coal have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
Scottish Coal should ensure that arrangements are in place to allow the inspection and maintenance of their railway assets to be effected to the standards specified in Recommendation 1.		
Comment		
Scottish Coal have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
Scottish Coal should put in place arrangements such that they, independent of their track maintenance contractors, can oversee management of their railway assets.		
Comment		
Scottish Coal have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
EWS should review its internal quality assurance processes to ensure that the sign-off of safety critical reports is accompanied by a review of the content. The submission of photocopied data should be prohibited unless the summary sheet confirms that conditions have been checked and previous readings are fully replicated.		
Comment		
EWS have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	5	
EWS should enhance the level of information arising from inspection reports to provide quantative information and guidance for maintenance planning, for example: prioritisation of defects and timescales for non-urgent action.		
Comment		
EWS have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	6	
EWS should review its private-party activities nationally and take immediate steps to correct any situations where local inspection or maintenance arrangements have allowed infrastructure condition to fall below the applicable standards.		
Comment		
EWS have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Network Rail should review the agreement which exists between it and Scottish Coal. This agreement should require Scottish Coal, as the adjacent facility owner, to ensure that any part of the adjacent facility which is directly connected to the NR Network is compatible with the Network Rail Network and complies with applicable Railway Group Standards. Alternatively, the existing agreement should be replaced with a contract based on the Model Connection Contract published by the Office of Rail Regulation Document #209695.03 which contains this requirement.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Two class 67 locomotives, 14 Salmon wagons	Basford Hall Yard, Crewe	21:45	21 February 2006	Dispatch of train with an insecure load
RAIB Report No:	**2007/06**		**Published:**	**21 February 2007**

Summary

On its journey from Crewe to Toton on 21 February 2006, train 6D51, hauled by two class 67 locomotives, contained 14 Salmon wagons with unsecured loads of redundant track panels. These wagons should not have been included in this train, and had not been prepared for dispatch from Basford Hall Yard.

Recommendations **Five recommendations are made.**

RECOMMENDATION	1	
Freightliner to ensure that instructions to marshal trains are treated as being safety critical and appropriate working methods concerning effective communication of such safety critical instructions are adopted.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
Freightliner to review and amend its methods of shunting and train preparation to minimise the likelihood of any train not being shunted or prepared in accordance with the requirements of the Rule Book and the Working Manual for Rail Staff Freight Operation. This should include reviewing its procedures, training methods and supervision, and should ensure that the specific responsibilities for shunting and train preparation are clearly defined for each level of the line management structure.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
Freightliner to put in place a company process for the initiating, checking, authorising, issuing, briefing periodically review of Local Work Instructions to ensure that risks are effectively controlled, and are properly understood by the relevant persons.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
Freightliner to put in place a company process to assess and take account of fatigue arising from the shifts that members of staff work together with any disclosed off-duty factors so as to reduce the likelihood of staff making errors due to fatigue. Action should include consideration of amending staffing levels and roster patterns where appropriate.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	5	
Freightliner should review the issue of radios and hand lamps at Basford Hall Yard to ensure that all shunters are properly equipped for their duties.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Heritage: Diesel locomotive ICL11, 7 coaches	Ravenglass & Eskdale Railway	13:40	29 May 2006	Passenger Train Derailments
RAIB Report No:	2007/07		Published:	27 March 2007

Summary

On 29 May 2006, a diesel locomotive hauled passenger train was travelling from Dalegarth to Ravenglass when the leading bogie of the sixth coach derailed at 13:40 hrs, on the exit from a left hand curve (known as Spout House Curve) located approximately 5.75 miles (9.2 km) from Ravenglass. The derailment took place at 10-12 mph (16-19 km/h); there were no casualties and no significant damage to either the track or train. On 5 July 2006 at 10:45 hrs, another diesel locomotive hauled passenger train, travelling from Dalegarth to Ravenglass was passing through Millwood Bank, located approximately 1.5 miles (2.4 km) from Ravenglass, when the leading bogie of the fifth coach derailed while travelling at 15-18 mph (24-29 km/h). The derailed coach, which was different in design from the coach in the first accident, was empty (tare) at the time. There were no casualties and no significant damage to the track or the train.

Recommendations — **Eight recommendations are made.**

RECOMMENDATION	1	
Undertake a full fleet check to ensure that axlebox clearances are adequate to ensure free movement, carry out remedial work where necessary and mandate a requirement in maintenance documentation for periodic checks on these clearances to be made. An assessment should also be made of the safety benefits of introducing lubrication at the axlebox/horn guide interface and, where practicable, identified improvements should be implemented.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Undertake a thorough examination of the track to identify existing and likely future areas of poor condition and implement a planned programme of remedial work. Particular attention should be paid to the presence of voiding. Until identified work is completed, appropriate temporary speed restrictions should be used.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
Develop and bring into use, a rolling stock maintenance regime which is based on the assessment of hazards identified from both past experience and analysis of possible future failure modes. This assessment should include consideration of allowable tolerances in track condition. The revised documentation should identify critical dimensional parameters and component conditions to be checked at maintenance.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Ensure drivers, guards and track maintenance staff are made aware of the signs of excessive sway and the resulting risk of derailment, especially when running empty, so that future problems are reported and actioned early.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

RECOMMENDATION	5	
Review the effectiveness of the existing system for reporting track faults, prioritisation of repairs and the use of temporary speed restrictions. Any identified improvements should then be Implemented and the system formalised and mandated.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	6	
Establish a system for routine inspection of the track condition and establish track standards such that temporary speed restrictions and/or remedial works are effected as appropriate to mitigate the risk of derailment due to excessive sway.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Review the existing suspension set up and maintenance and inspection regime of the 'Severn Lamb' type bogies to determine whether it is consistent with the track condition resulting from implementation of Recommendation 6.		
Comment		
Addressee has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
Develop and implement means of ensuring that the body/bogie bolsters remain lubricated between maintenance checks.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 1011.	Long Millgate, Manchester	08:03	22 March 2006	Derailment
RAIB Report No:	2007/08		Published:	17 April 2007

Summary

At 08:03 hrs on Wednesday 22 March 2006, two wheelsets of tram 1011, operating the 07:42 hrs Bury to Altrincham service on the Manchester Metrolink system, became derailed as the tram was entering the street running section of the network at Long Millgate, near Victoria Station. The derailed wheels remained close to the track, and the tram stopped 44 m from the point of derailment.

Recommendations — **Four recommendations are made.**

RECOMMENDATION	1	
GMPTE (Greater Manchester Passenger Transport Executive) should ensure that a standard for Metrolink grooved rail track, including tolerances and limits for wear and gauge, is developed and implemented, and that there is guidance to inspection staff on appropriate levels and types of intervention corresponding to measured values and observations.		
Comment		
GMPTE has accepted the recommendation, and are carrying it out. ORR is considering the response.		
Status	**Amber-Open**	

RECOMMENDATION	2	
GMPTE should ensure that the risk of transitions between flat-bottomed and grooved rail on curves on the system is assessed, and that they are repositioned on to straight track where this is warranted and it is reasonably practicable to do so.		
Comment		
GMPTE has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
The infrastructure maintainer of Manchester Metrolink and GMPTE should jointly introduce a system for initiating, planning and implementing track renewals on the Metrolink system.		
Comment		
GMPTE and Manchester Metrolink has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
GMPTE should ensure that the infrastructure design change and quality control procedures for the Metrolink system are reviewed, to ensure the proper control of alterations made to the infrastructure during maintenance.		
Comment		
GMPTE has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Locomotive 20310	**Bratts Blackhouse near Sizewell, Suffolk**	**09:21**	**22 May 2006**	**Freight train collision with road vehicle on level crossing.**
RAIB Report No:	**2007/09**		**Published:**	**26 April 2007**

Summary

On 22 May 2006, a freight train was conveying a discharged nuclear flask from Willesden Brent Yard to Sizewell via a freight only branch line that runs between Saxmundham and Sizewell . As the train crossed over Bratts Blackhouse No 1 User Worked Crossing (UWC) on the Sizewell Branch at 19 mph (30 km/h), it was in collision with a road vehicle travelling from the north side to one of the private dwellings on the south side of the crossing. The linespeed at this point is 25 mph (40 km/h). No one was injured in the collision. The train was not derailed but suffered some minor damage. The road vehicle also suffered some damage to its front and nearside front area.

Recommendations	**Eight recommendations are made.**

RECOMMENDATION	1	
Network Rail should explain to the authorised users about the method of safe operation of Bratts Blackhouse No 1 UWC and their responsibilities and confirm this in writing. In addition, a notice to comply with GI/RT7012 Part K3 (Railway Group Standard Requirements for Level Crossings August 2004 Issue 1), should be sent to the authorised users and a copy displayed at the crossing. Network Rail should also take reasonably practicable steps to verify users' compliance with the method of safe operation.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Network Rail should audit the effectiveness and implementation of the maintenance and inspection measures mandated by Network Rail company standards for UWCs within the maintenance area that includes Bratts Blackhouse No 1 UWC and amend company practices to address deficiencies that come to light.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
Network Rail should duplicate the stop sign on the north side to a position on the left hand side of the hinge gate post next to the 'Private' sign.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
Network Rail should initiate a programme to apply the All Level Crossing Risk Assessment Model (ALCRM), to UWCs and to ensure that if there are any UWCs where the warning time is less than the crossing time then they are provided with appropriate risk mitigation measures. Risk mitigation measure to be considered should include the following: • clear marking of the point at which the final decision to cross should be made (if this is between the instruction sign and the track); • the reduction of line speed; • the provision of telephones, MSLs (Miniature Stop Lights) or alternative warning systems where shown to be reasonably practicable; or • restrictions on the use of the crossing by the authorised user (where these can be agreed).		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	5	
Network Rail should ensure that all track maintenance staff in the Anglia Area are briefed on the need to preserve evidence following an accident that has been notified to the RAIB.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
Network Rail should modify the relevant company standard(s) to require the provision of a telephone number of the signaller on all signs at UWC's and to implement a programme for ensuring compliance.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Network Rail should ensure that the signaller at Saxmundham is made aware of power and UPS failures that will affect the operation of the voice recorder and other safety related equipment.		
Comment		
Network Rail have fitted a voice recorder with a back up auto fault to notify Engineering Support Centre (ESC). RAIB is satisfied with the alternative solution.		
Status	**Green 2-Completed**	

RECOMMENDATION	8	
Network Rail should install a sign at all UWCs indicating the name of the crossing to comply with Railway Safety Principles and Guidance, Section 2 part E, paragraph 287.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Class 313 electric multiple unit.	**Camden Road**	**16:22**	**7 April 2006**	**Traction control failure causing a signal to be passed at danger**
RAIB Report No:	**2007/10**		**Published:**	**30 April 2007**

Summary

A class 313 electric multiple unit (EMU) was returned to passenger carrying operation following attention in Alstom's Works at Wolverton with incorrectly connected traction control wiring. The fault in the control circuits caused the EMU to pass a signal at danger at Camden Road by one coach length. No other equipment was damaged or casualties caused.

Recommendations **Nine recommendations are made.**

RECOMMENDATION	1	
Railcare (Wolverton) should establish procedures which ensure that after the reconnection of cables the circuits affected are tested in accordance with an appropriate test procedure before testing is declared complete.		
Comment		
Railcare (Wolverton) has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
HSBC and Silverlink (as appropriate) should examine the condition of cable and terminal identification on class 313 rolling stock to establish its condition and the nature of any corrective action necessary.		
Comment		
HSBC have implemented an alternative solution in view of the short remaining life of the Scweich class 313 fleet, replacement trains are now on order. ORR and the RAIB are satisfied with this solution. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
While cable and terminal identification remains illegible, Railcare (Wolverton) should develop and implement a documented method of recording the terminals from which cables have been removed during the component replacement process.		
Comment		
Railcare (Wolverton) accepted the recommendation and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
HSBC should put in place arrangements to ensure that clear cable and terminal identification is maintained throughout the life of rolling stock which it procures.		
Comment		
HSBC has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	5	
HSBC and Silverlink (as appropriate) should introduce a procedure to ensure that tests specified to those contracted to work on rolling stock mandate any sequence necessary to ensure their integrity.		
Comment		
HSBC has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	6	
Railcare (Wolverton) should review the competence and authority of staff carrying out testing to undertake rectification work. Working practices examined in this review should be modified to mitigate any identified risks.		
Comment		
Railcare (Wolverton) has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	7	
HSBC and Silverlink (as appropriate) should, taking into account other recommendations in this report relating to rolling stock testing, assess the residual risk of a false feed involving the traction control circuitry of a class 313 EMU causing an unsafe condition and carry out any appropriate modifications to mitigate this risk.		
Comment		
HSBC has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
Railcare (Wolverton) should ensure that electrical fitting and testing staff have access to the relevant wiring diagrams.		
Comment		
Railcare (Wolverton) has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	9	
Railcare (Wolverton) and West Coast Traincare Ltd should review the processes used to put trains back into traffic to ensure that all departments understand and work within the limitations of any certificates on which they rely.		
Comment		
Railcare (Wolverton) has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Passenger train	Huntingdon	15:59	15 February 2006	Train door incident
RAIB Report No:	2007/11		Published:	30 April 2007

Summary

On Wednesday 15 February 2006 at 15:59 hrs a member of the public was standing on the edge of platform two at Huntingdon station seeing a passenger off when he became trapped by the edge of his coat in the leading door of the third vehicle of train 1P71, the15:44 hrs Peterborough to Kings Cross West Anglia and Great Northern (WAGN) service. 1. The Driver Only Operated (DOO) train departed and the person ran, then was pulled along the platform before falling down the gap between the train and platform edge. The person sustained serious injuries to his left arm and hand. The passenger that was accompanying the injured person prior to boarding the train had difficulty in following the correct procedure for stopping the train in the emergency. The person was not aware of the passenger emergency communication system on the train and ran towards the leading end to find and alert a member of staff, the Revenue Collection Officer (RCO). The train was brought to a stand when the RCO entered the cab and asked the driver to stop.

Recommendations	Six recommendations are made.

RECOMMENDATION	1	
FCC (First Capital Connect) should ensure that driver training is reviewed with a view to increasing the emphasis placed on, and understanding of, aligning the unit correctly with the optimum viewing position of the monitor bank. The training should also identify what actions the driver should take if a person is observed to be in close proximity to the side of the train when the driver is taking power.		
Comment		
FCC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Network Rail should ensure that the specification for replacement and new CCTV monitors require improved image contrast when viewed at an angle. The specified viewing angle should make a reasonable allowance for variation in a driver's stopping performance.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
HSBC should review the design of the Class 365 Unit door seal and the door control mechanism so as to reduce the door closing forces, with a view to reducing, so far as is reasonably practicable, the forces required to extract trapped objects. This review should take into account existing standards.		
Comment		
HSBC has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Network Rail should review the position of the cameras associated with the CCTV system for DOO at Huntingdon station with the objective of minimising the likelihood that a passenger standing in close proximity to the train will obstruct the driver's view of passengers standing at other doors.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Metro: Manually propelled track trolley	Notting Hill Gate	01:40	24 May 2006	Runaway permanent way trolley
RAIB Report No:	2007/12		Published:	2 May 2007

Summary

At 01:40 hrs on 24 May 2006, a manually propelled track trolley being used in connection with engineering works on the Circle Line of London Underground ran away down a gradient of 1 in 70 and collided with a stationary trolley of a similar type. A warning had been given and all staff were clear of the line. There were no injuries.

Recommendations — **Nine recommendations are made.**

RECOMMENDATION	1	
London Underground Ltd (LUL) should amend site management procedures to record the satisfactory completion of pre-use brake checks. This should consider predelivery and on-site physical inspections recognising that the current tests are only partially effective.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
LUL should ensure that standards which relate to trolley design and acceptance require assessment and mitigation of risks associated with unauthorised modification of brake systems.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
LUL should ensure that existing trolleys are assessed against the requirements of Recommendation 2.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
LUL and Network Rail should conduct studies into trolley design with an objective of improving the ergonomic issues connected with propelling and braking hand trolleys.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
LUL together with Metronet and Tube Lines, should review and determine how to ensure Track Trolley Operators are aware of and know how to apply the controls to mitigate the risks relating to gradients when operating track trolleys.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
LUL should ensure that the training of Track Trolley Operators includes the provision of appropriate reference material to carry on site.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

RECOMMENDATION	7	
LUL should revise the Site Person in Charge training and reference material to ensure that the SPIC's (Site Person in Charge) responsibilities for accident and incident reporting to LUL are defined.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	8	
LUL, Metronet and Tubelines, if applicable, should ensure that all contracts and subcontracts for work on the network are aligned in respect of legal accident and incident reporting requirements.		
Comment		
LUL has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	9	
The Network Rail M&EE (Mechanical & Electrical Engineering) Networking Group should consider the participation of LUL and the Infracos in its activities.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Locomotive 66 084, wagon MHA 394620	East Didsbury	01:58	27 August 2006	Locomotive runaway
RAIB Report No:	2007/13		Published:	24 May 2007

Summary

At around 01:58 hrs on 27 August 2006, unmanned locomotive 66 084 became uncoupled from the rear of train 6L22 as it approached Heald Green Station. The locomotive then ran back northwards towards Manchester in the direction from which the train had come for around 3 miles (4.8 km), through a worksite set up between Gatley and Mauldeth Road stations. 6 Staff working on the track within the worksite at East Didsbury station were not positioned on the same line as the runaway locomotive and consequently no one was injured.

Recommendations **Eight recommendations are made.**

RECOMMENDATION	1	
Operators of locomotives that require the manual operation of a cock to allow such locomotives to be safely dead-hauled in single piped trains, should investigate possible design changes to mitigate the risks associated with the cock not being correctly operated. Design changes should be implemented so far as is reasonably practicable.		
Comment		
TOCs have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
EWS should review and modify its procedures as necessary to ensure that when a maintenance action is not carried out at the scheduled time, the vehicle concerned is not returned to traffic and operated as if the maintenance action had taken place.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
EWS should train all drivers in the correct use of AFT cocks, include an assessment procedure to confirm that driver's understanding and thereafter put in place a monitoring regime to confirm that AFT cocks are being operated correctly. This should apply to all relevant classes of locomotives and methods of operation.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
EWS should modify their ongoing driver assessment procedures to ensure that drivers maintain a full understanding of, and can correctly use, the AFT cock. This should apply to all relevant classes of locomotives and methods of operation.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
EWS should ensure that all their procedures, documents and labels use the same terminology to describe the AFT cock. They should also assess whether moving away from the term, 'AFT cock' at this juncture will add to or reduce confusion, bearing in mind that if a design modification is implemented the AFT cock or a need to separately isolate it, may be obsolete.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

RECOMMENDATION	6	
EWS should ensure that the AFT cock is clearly labelled with its name, function and open/closed positions.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	7	
EWS should undertake a full and thorough review of their processes for conveying critical information to drivers in a consistent manner and for assessing that the information has been understood. The control of these processes should also be considered as should the ongoing access to the information and ongoing understanding by drivers. Reasonably practicable measures should be implemented.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	8	
EWS should review and if necessary modify their procedures to ensure that there are more thorough processes in accordance with best practice for hazard identification, risk assessment and mitigation associated with the introduction of technical or operational change. These processes should be proportionate to the change and be carried out before the change is implemented.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Train 6Z25	Deal, Kent	14:46	29 July 2006	Fatal accident involving a train driver
RAIB Report No:	2007/14		Published:	29 May 2007

Summary

At around 14:46 hrs on 29 July 2006 train 6Z25 arrived at signal EBZ41 on the down line between Dover Priory and Deal, near Deal station, Kent. Whilst checking that the brakes of one of the wagons were released the driver elected to enter between that wagon and the wagon behind with the objective of reaching the other side of the train. In doing so the driver came into simultaneous contact with the live conductor rail and the buffer of the wagon and was fatally injured.

Recommendations — **Nine recommendations are made.**

RECOMMENDATION	1	
RSSB, in consultation with affected parties, should review the Rule Book module DC with a view to incorporating a specific provision prohibiting railway staff from stepping over a live conductor rail whilst passing between coupled vehicles.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Freight Operators in areas of DC electrification should provide specific training to all drivers and ground staff with the objective of ensuring that they are fully aware of safe working practices when attending trains on lines with conductor rails. This training should also reinforce the message that the conductor rail should always be treated as live within possessions.		
Comment		
FOC's have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
EWS should take steps to control oil contamination of brake blocks during lubrication of the brake rigging so far as is reasonably practicable.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
RSSB should develop a Railway Group Standard provision to prohibit the wearing of shorts by persons who may require to step over or walk close to live conductor rail that is not fitted with guard boarding as part of their duties. The specification for any long trousers that may be mandated should allow for comfort in hot weather and enhanced electrical resistance.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	5	
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: RSSB, in consultation with affected parties, should review the Rule Book modules DC and G2 with a view to incorporating an explicit statement that staff should always consider the conductor rail inside possessions to be live unless they have been briefed by a person holding a valid conductor rail permit. This should be incorporated into the PTS (Personal Track Safety) hand book and the requirements for PTS training courses.		
Comment		
TOC's & FOC's have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

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RECOMMENDATION	6	
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: Network Rail should review the reference to isolation limits in the WONs (Weekly Operating Notices) with a view to modifying its wording such that railway staff are not misled or confused as to its meaning.		
Comment		
Network Rail has responded and proposes taking no action to implement this recommendation; ORR has accepted this response and regard the recommendation as closed.		
Status	**Green 3 – Closed with no action taken**	

RECOMMENDATION	7	
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: Network Rail and Freight Operators, should jointly establish a regime for ensuring that all train crew working to and from engineering possessions are given a suitable safety briefing. In areas of DC electrification this should always include a reminder that the conductor rail inside the possession should be treated as live at all times.		
Comment		
TOCs & FOCs have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	8	
RSSB, in consultation with affected parties, should review the Rule Book module DC with a view to clarifying the instructions to staff when attending a train in the absence of an insulating trough.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		
Status	**Amber-Open**	

RECOMMENDATION	9	
Network Rail, in consultation with affected parties, should carry out a review of standards and specifications related to new and upgraded DC electrification systems with the objective of simplifying the arrangements for the taking of isolations, minimising the requirement for trackside staff, and permitting the extension of isolations to include a greater proportion of the associated engineering possessions (e.g. additional remote switching and remotely operated short circuit devices).		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 611	Starr Gate, Blackpool	12:00	30 May 2006	Derailment
RAIB Report No:	2007/15		Published:	29 May 2007

Summary

At 12:00 hrs on 30 May 2006, tram 611 was traversing the curve on the loop at Starr Gate on Blackpool Tramway when it became derailed. Tram 611 was a prototype design and was undertaking a series of test runs. It was a two car articulated vehicle and had a running gear arrangement under the connecting centralarticulation module which included an independent rotating wheel design. Independently rotating wheels have been used on trams in service on other tramways; however, the type of running gear used on tram 611 was significantly different to that used on other trams operating in Blackpool. The derailment occurred at low speed and involved only the pair of wheels under the articulation module. They derailed to the centre of the curve. There were no injuries or significant damage.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
BTS (Blackpool Transport Services), in association with Tram Power and BBC (Blackpool Borough Council), should undertake an assessment of operational and derailment behaviour of tram 611 in order to identify the mitigation measures necessary to allow its safe operation on the Blackpool Tramway. In conducting this assessment consideration should be given to the combined influence of the tram design (including the configuration of the running gear), operating parameters and the track design and maintenance (including rail head profiles).		
Comment		
BTS have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
BBC should take measures to control the pattern of wear on the rail gauge face throughout the Blackpool Tramway. This should include the definition of quantitative limits and guidance for the management of rail sidewear in the relevant track maintenance procedures and documentation.		
Comment		
BTS have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Class 66 locomotive 66508, train No 0D52	Crofton Old Station No 1 Level Crossing, W Yorks	12:45	1 May 2006	Two near misses dated 1 and 18 May 2006
RAIB Report No:	2007/16		Published:	29 May 2007

Summary

Incident 1: At around 12:45 hrs on 1 May 2006, Class 66 locomotive 66508, running light and forming train 0D52 from Midland Road to Sudforth Lane, passed over Crofton Old Station No.1 level crossing whilst the crossing gates were open to the road. The crossing gates had been open for approximately two minutes prior to the arrival of train 0D52. A car had used the crossing around a minute prior to the train passing over the crossing.
Incident 2: At around 09:45 hrs on 18 May 2006, Class 155 diesel multiple unit (DMU) 155345, forming train 2F65 from Wakefield Kirkgate to Knottingley, passed over Crofton Old Station No.1 level crossing whilst the down line side crossing gate was open to the road. At the time of the train's passage over the crossing, the crossing keeper was attempting to close the gates to the road.

Recommendations	Six recommendations are made.

RECOMMENDATION	1	
Network Rail should provide interlocking between the gates and all protecting signals at Crofton Old Station No.1 level crossing. This should ensure that the protecting signals are not able to indicate a proceed aspect to trains when the gates are not fully closed and locked to the road. A non-standard version of interlocking has already been implemented. Risk assessment should be undertaken to ensure that any residual risk which remains following fitment, including from sources of human error, is mitigated so far as is reasonably practicable.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Network Rail should undertake a risk assessment on all staffed level crossings that have no gate to signal interlocking safeguards to ensure that the risks from human errors are considered and are mitigated so far as is reasonably practicable.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
Network Rail should review operational level crossing standards relating to staffed level crossings, or those which are UWC temporarily staffed, where the safe system of operation relies solely upon the correct following of procedures. Such standards should enforce assessment of the risk from errors in the following of correct procedures.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
ORR should have processes in place to ensure that when issuing level crossing orders, any supporting risk assessments are suitable and sufficient.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
ORR should have processes in place to ensure that the requirements within level crossing orders have been implemented, and action when necessary is taken to ensure compliance.		
Comment		
ORR have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
Network Rail should assess the extent and review the practice of 'quick swings' on manually operated crossings where the crossing gates are not interlocked to the signalling to ensure either that the practice is banned or that risks are reasonably mitigated.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Light Rail: TMM trams 09 & 10	Soho Benson Road, Midland Metro	11:51	19 December 2006	Tram Collision
RAIB Report No:	**2007/17**		**Published:**	**7 June 2007**

Summary

At 11:51 hrs on 19 December 2006 TMM trams 09 and 10, both returning from Wolverhampton St. Georges to Birmingham Snow Hill, were involved in a collision near Soho Benson Road tram stop.

Recommendations	**Three recommendations are made.**

RECOMMENDATION	1	
TMM (Transport Midland Metro) should: (i) modify the design of the tram sunblinds to ensure that, when deployed, they remain in position during tram operation; (ii) amend the maintenance regime to ensure that sunblind mechanisms remain fit for purpose over their working lives; and (iii) amend their procedures to ensure that fleet checks are carried out to a standard sufficient to correctly identify faults.		
Comment		
TMM has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
TMM should amend their procedure for tram failure to require the use of hazard warning lights immediately a tram is causing an obstruction.		
Comment		
TMM has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
TMM should conduct a risk assessment into their off-street operation to identify improvements that could be made in the identification of and response to unexpected hazards, including obstructions on the tramway.		
Comment		
TMM has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Light Rail: TMM tram	New Swan Lane Level Crossing	09:44	8 June 2006	Collision between tram and road vehicle
RAIB Report No:	2007/18		Published:	7 June 2007

Summary

During the morning of 8 June 2006 at approximately 09:44 hrs, a Wolverhampton bound TMM tram collided with a road vehicle (taxi) on New Swan Lane Level Crossing. The location of New Swan Lane Level Crossing is shown in Figures 1 and 2, and the scene following the collision is shown in Figure 3. The taxi was pushed across the junction and collided with a stationary lorry. Both road vehicles and the tram suffered minor damage.

Recommendations	Two recommendations are made.

RECOMMENDATION	1
TMM (Travel Midland Metro) should review the driver training programme: • to ensure familiarity with use of the hazard brake, both at initial and refresher training. • to ensure that the training given to new drivers is keeping risks as low as is reasonably practicable; in particular they should consider the need for specific monitoring and assistance for newly qualified drivers.	
Comment	
TMM has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.	
Status	**Green 1-Closed**

RECOMMENDATION	2
TMM should review the arrangements for reporting and follow up on use of the hazard brake to ensure that they are not acting to discourage driver's use of the hazard brake.	
Comment	
TMM has accepted the recommendation, and has carried it out. ORR regard the recommendation as closed.	
Status	**Green 1-Closed**

5 Annexes

Equipment Type	Place	Time	Date	Incident
Metro: District Line train 73	High Street Kensington	23:09	29 April 2006	Unauthorised train movement
RAIB Report No:	2007/19		Published:	21 June 2007

Summary

At 23:09 hrs on 29 April, District Line train 73 left Earls Court with approximately 150 passengers on board en route for High Street Kensington. On the approach to High Street Kensington the Train Operator realised that the wrong route had been set and stopped the train. A wrong direction move (WDM) was authorised to reverse the train a short distance so that the route could be reset. After considerable delay, when the train reversed it did not stop at the authorised limit; shortly after it was halted by the discharge of traction current. After several minutes the traction current was recharged; the train was then authorised by the Service Controller to travel to High Street Kensington where it terminated 67 minutes late.

Recommendations	Fourteen recommendations are made.

RECOMMENDATION	1	
LUL should reassess the standards, and the associated training, familiarisation and necessary local knowledge for staff required to carry out specific duties for WDMs. Procedures should be amended and a delivery programme implemented to ensure that the necessary knowledge is imparted and retained and that staff only work within their skill and knowledge base.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
LUL should reassess the training, familiarisation and necessary local knowledge for staff required to use SPTs (Signal Post telephone). Procedures should be amended to ensure that the necessary knowledge is imparted and retained.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
LUL should rebrief their staff on the duties and responsibilities for undertaking WDMs, including emphasis on the person-in-charge having overall responsibility to instruct movement or stopping of the train, and, if appropriate, of the need to appoint a WDM Protector.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
LUL should rebrief control room staff on the necessity of clearly establishing the position of any train before any recovery moves are authorised.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	5	
LUL should review procedures for maintaining emergency equipment in a state of readiness and amend them as necessary.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
LUL should introduce procedures to ensure that staff are advised where emergency equipment such as station train radio, station radio and portable phones may be expected to work and where not.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	7	
LUL should consider the use of a common or standardised means of filing / locating WDM (and other operational) forms that may be needed at short notice at their stations and implement reasonably practical changes.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
LUL should ensure the instructions necessary for undertaking safety critical communications detailed within the new Rule Book are supported by training, familiarisation and a system of regular monitoring to confirm compliance with the instructions.		
Comment		
Rule Book Number One covers Communications and is monitored by a range of safety related audits covering train, station and service control activities as part of LUL's established Safety and Technical Audit Programme which is approved on an annual basis by the LUL Board HSE Committee. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	9	
LUL should review the instructions for undertaking WDMs to ensure that it contains no requirements capable of misinterpretation and that the WDM form contains information that will remind staff of key procedures when carrying out the move.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	10	
LUL should review the Connect Radio project to determine the feasibility of an accelerated implementation programme. If reasonably practical this should be implemented.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	11	
LUL should ensure that all operational staff are rebriefed about actions to be taken when a breakdown of safety critical communications occurs.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

RECOMMENDATION	12	
LUL should review the need to appoint a WDM Protector when route collaring or other suitable protection can be undertaken. The operating rules should be amended as necessary.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	13	
LUL should introduce procedures so that serious incidents of radio equipment failure or poor communication links are fully investigated. This should include full functional testing of the equipment involved.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	14	
LUL should review the capability, disciplines and capacity of the Earls Court Control Room for the control of the District Line in times of normal and disrupted operations. The review should include the time necessary for a disciplined application of working procedures.		
Comment		
LUL have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Heritage: Passenger Train	Ropley (Mid Hants Railway)	11:15	25 July 2006	Derailment
RAIB Report No:	2007/20		Published:	21 June 2007

Summary

At approximately 11:15 hrs on Tuesday 25 July 2006, the leading bogie of the 10:50 hrs Mid Hants Railway (MHR) service from Alton to Alresford derailed on No.4 points approaching Ropley station. The derailed bogie followed a path midway between the routes to platforms 1 and 2, while the second bogie remained on the track, but followed the route towards platform 1. An instructor who was in the cab with the driver applied the emergency brake and the train stopped within 20 metres of the point where the front bogie derailed.

Recommendations	Six recommendations are made.

RECOMMENDATION	1	
MHRPLC (The Mid Hants Railway plc) should ensure that existing plans for the provision of train detection on No.4 points at Ropley are implemented without further delay.		
Comment		
The MHRPLC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
The MHRPLC should ensure that if staff other than signalmen are to be involved in receiving tokens from or handing tokens to drivers at any station: a. their use should be planned; b. the specific individual undertaking the role should be identified within the relevant operating notice; c. they should always work under the supervision of the signalman; d. they should be competent to perform the role.		
Comment		
The MHRPLC have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
The MHRPLC should make explicit in its procedures that staff who are to be subject to drugs and alcohol screening do not leave MHR premises until the screening has been undertaken.		
Comment		
The MHRPLC have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
The MHRPLC should conduct a review of its safety management system to identify non-compliances and develop/implement actions plans to resolve them.		
Comment		
The MHRPLC have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
The MHRPLC should provide train detection on the points at the north end of Medstead station.		
Comment		
The MHRPLC have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

RECOMMENDATION	6	
The HRA should: a. Issue new guidance on competence and medical standards for safety-critical staff. This should be based on the advice contained within the letter from the ORR to the HRA of August 2006. It should include the standards to be achieved for all staff that undertake safety critical duties, denoted on a role-based model. b. When the guidance has been prepared and issued, advise heritage railway operators to review their safety management systems to take account of its provisions.		
Comment		
The HRA have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram No 10	Seaton Tramway	12:55	18 March 2007	Derailment
RAIB Report No:	2007/21		Published:	3 July 2007

Summary

On 18 March 2007 at 12:55 hrs tram No 10 was approaching Seaton station on the Seaton Tramway, when it derailed at the points at the entry to the station. There were no casualties. The derailment was probably caused by persons unknown placing an object in the points. The RAIB has made two recommendations with regard to modifying the operation of points on the Seaton Tramway.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
The Seaton Tramway should replace the weighted lever at the entry to Seaton station with a point lever that is capable of being locked when not in use, in order to prevent it from being used to move the points without authority. The points could be operated from the lever via a slotted joint, and be spring loaded, so that operational flexibility is not lost.		
Comment		
The Seaton Tramway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
The Seaton Tramway should implement, so far as is reasonably practicable, the provision of visual indicators that show to drivers whether sprung and weighted points on the system that are used by trams carrying passengers are correctly set for the normal route.		
Comment		
The Seaton Tramway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Class 03 Locomotive and Carriages	Bronwydd Arms Station, Gwili Railway	10:27	19 July 2006	Train Guard crushed between two carriages.
RAIB Report No:	2007/22		Published:	3 July 2007

Summary

A volunteer train guard on the Gwili Railway became trapped between two carriages as they were being coupled together during a shunting manoeuvre at Bronwydd Arms station at 10:27 hrs on Wednesday 19 July 2006. The injuries he sustained were so severe that he died in hospital later that day.

Recommendations **Nine recommendations are made.**

RECOMMENDATION	1	
The Gwili Railway should ensure that all personnel involved in shunting operations are aware who is designated as the shunter.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
The Gwili Railway should introduce a procedure whereby if one shunter is replaced by another there is to be a positive transfer of responsibility between them. If this occurs during shunting operations the shunter giving up responsibility should advise the driver of the change.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
The Gwili Railway should ensure that a responsible person with the role of overseeing operational staff activity is present whenever there are movements of rail vehicles.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
The Gwili Railway rule book should include a description of all hand signals in use, and that for 'ease-up' or 'couple-up' should be incorporated. There should also be instructions on stopping or not starting movements when hand signals are not understood.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	5	
The Gwili Railway should ensure that a safety advisor is appointed and that he reviews compliance with legislation, and adequacy and conformity with standards.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	6	
The Heritage Railway Association (HRA) should issue new guidance on competence and medical standards for safety critical staff. This should be based on the views contained within the letter from the ORR to the HRA of 15 August 2006, ref 4004066. It should include the standards to be achieved for all staff that undertake safety critical duties, denoted on a role based model. Consideration should also be given to examination of safety critical staff of all ages when returning to duty after significant surgery, illness or injury; or if there has been a significant loss of physical health or mental acuity.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	7	
The Gwili Railway should ensure that all staff undertaking safety critical work take account of the medical standards outlined in Recommendation 6.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
The Gwili Railway should manage and retain training and competency records for staff who undertake safety critical work in an orderly and centralised manner.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	9	
The Gwili Railway should ensure that line managers are briefed on the requirement under the Railways (Accident Investigation and Reporting) Regulations 2005 for advising RAIB of reportable incidents in a timely manner.		
Comment		
The Gwili Railway have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Locomotive 47 811, wagon, No. FRA 613035	Dagenham Dock	12:22	17 July 2006	Fatal accident to Shunter
RAIB Report No:	**2007/23**		**Published:**	**12 July 2007**

Summary

At 12:22 hrs on 17 July 2006, a 42-year-old shunter, employed by Freightliner Heavy Haul Limited (Freightliner), was crushed between a locomotive and a wagon during a shunting move at Dagenham Dock own yard. There were no immediate witnesses.

Recommendations	**Seven recommendations are made.**

RECOMMENDATION	1	
Freightliner should review the management of its infrastructure to ensure that risk factors identified in the local working instructions are recorded and assessed by trained personnel. The process should include follow-through checks to an agreed timescale to ensure that remedial action has been taken, and should provide a mechanism to elevate the issue to senior managers if compliance is not achieved. The local working arrangements should be changed where necessary.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Freightliner should review the method of working at Dagenham and similar facilities to ensure that wagons are loaded from the points end wherever possible. Wagons could then easily be detached if there were not enough containers for a full train, and the number of shunting movements reduced. The local working arrangements should be changed where necessary.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Freightliner should designate safe walking routes between frequently used parts of its yards. This includes marking or signing any hazards, and should include an instruction not to use walkways with substandard clearances where moving trains are present.		
Comment		
Freightliner have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Freightliner should review its methods for checking and enforcing compliance with the Rule Book during shunting activities, in particular those relating to the proximity of staff to moving trains, the control of locomotives and the use of correct radio procedure.		
Comment		
Freightliner have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
Freightliner should review and enhance the training given to new staff and ensure that it is overseen by independent assessors.		
Comment		
Freightliner have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	6	
Freightliner should re-brief staff on the importance of being in a position of safety before giving instructions for a driver to move a locomotive or train.		
Comment		
Freightliner have accepted the recommendation and taken action to carry it out. ORR are reviewing this action with Freightliner.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Freightliner should re-brief staff on wearing headgear that provides protection from impact and excessive exposure to the sun.		
Comment		
Freightliner have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Freight train 6C51	Maltby North	03:00	28 June 2006	Derailment of freight train
RAIB Report No:	2007/24		Published:	18 July 2007

Summary

On 28 June 2006 train 6C51, a Freightliner Heavy Haul coal train from Redcar to West Burton, was traversing the facing turnout in the crossover (points number 31B) from the single South Yorkshire Joint Line to the loop at Maltby North (Figure 1 shows a map of the area) when three of the wagons became derailed. The derailed wagons remained upright and did not spill their loads. The track was damaged for a distance of 80 m.The train was travelling at 17 mph (27 km/h) at the time of the derailment and was quickly brought to a halt by the automatic air brake. Nobody was injured in the accident.

Recommendations	Four recommendations are made.

RECOMMENDATION	1	
Network Rail should implement a system to prevent 31 points at Maltby from operating as a train is approaching or passing over them. Time of operation locking of 31 points was implemented in May 2007.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	2	
Network Rail should find out whether there are other similar installations where time of operation locking is specified but not implemented. Based on this, Network Rail should implement appropriate control measures to control the risk of a similar incident occurring at these locations.		
Comment		
Network Rail has demonstrated that implementation of the recommendation would not produce a proportinate reduction in risk. ORR is considering this response.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Network Rail should design roster patterns for signal boxes that are manned by a single person such that the signaller is not subjected to undue fatigue.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
Network Rail should alter the design of the interlocking at Maltby so that movement of lever 31 positively destroys detection on the points until they have moved to the new position.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Plasser & Theurer 08 series tamper & Ballast Regul	Trooperslane near Carrickfergus	09:17	23 April 2006	Derailment
RAIB Report No:	2007/25		Published:	18 July 2007

Summary

On Sunday 23 April 2006, a Northern Ireland Railways (NIR) engineering train, head code 1C93 departed York Road depot in Belfast on the down Larne line en route to a planned possession at Whitehead (Figure 1). The train consisted of a Plasser & Theurer 08 series tamper towing a Plasser & Theurer USP Type 3000 ballast regulator. At approximately 09:17 hrs whilst travelling at 33 mph (54 km/h), the train traveled over Trooperslane Manually Controlled Barrier (MCB) crossing located immediately prior to Trooperslane station (Figure 1). The torque arm of the ballast regulator, which had become partially detached, hit the road surface panels of the crossing, causing the derailment of the ballast regulator. The tamper did not derail but suffered major damage during the incident. The ballast regulator had just emerged from a 3-month maintenance program which also included some refurbishment at York Road depot (Figure 2). The incident journey was its first operational use since that work had been completed.

Recommendations	Eight recommendations are made.

RECOMMENDATION	1	
NIR should review its maintenance procedures for OTP (On Track Plant) to identify the specific risks for each type of plant, and ensure that such risks are addressed in the relevant VMI (Vehicle Maintenance Inspection).		
Comment		
NIR are considering the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Northern Ireland Railways should ensure restraining keeps are retrofitted to any operational vehicles where a single point failure could result in a piece of equipment falling and causing a derailment.		
Comment		
NIR have accepted the recommendation, and have carried it out. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
NIR should ensure that all operational and infrastructure staff receive a controlled copy of the WON and other relevant operating documents.		
Comment		
NIR have accepted the recommendation, and have carried it out. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
NIR should review their process for staff training in incident, communications and post incident management and should ensure that all relevant staff involved in the incident and post incident management are appropriately trained.		
Comment		
NIR have accepted the recommendation, and have carried it out. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	5	
NIR should either: a. cease the towing of one piece of OTP to site by another; or b. ensure that any such towing moves have a continuous brake operational, and an adequate, purpose designed, coupling.		
Comment		
NIR have accepted the recommendation, and have carried it out. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 1-Closed**	

5 Annexes

RECOMMENDATION	6	
NIR to re-review the practicability of fitting data recorders to engineering vehicles in the light of this derailment and other OTP accidents on the UK mainland. If it is considered to be reasonably practicable then OTMR (On Train Monitoring Recorder) should be fitted to the OTP fleet.		
Comment		
NIR has demonstrated, to the satisfaction of the safety authority and the RAIB that implementation of the recommendation would not produce a proportinate reduction in risk. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 3 – Closed with no action taken**	

RECOMMENDATION	7	
NIR should ensure all appropriate staff are briefed on the requirements of the RAIR with particular reference to reporting incident promptly to RAIB and the management and access to site and evidence preservation.		
Comment		
NIR have accepted the recommendation, and have carried it out. The Department of Regional Development regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
RSSB should grant Plasser & Theurer second tier supplier access rights to the National Incident Reporting database to ensure safety information relating to their products reaches them as soon as practicable.		
Comment		
RSSB have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Passenger train 1Y06	Manor Park	09:23	19 March 2006	Possesion irregularity, train struck wheelbarrows.
RAIB Report No:	2007/26		Published:	25 July 2007

Summary

At 09:23 hrs on Sunday 19 March 2006, train 1Y06, the 09:02 hrs London Liverpool Street to Ipswich service, struck two wheelbarrows as it approached Manor Park station at over 80 mph under clear signals. The staff on the track with the wheelbarrows had been able to jump clear, but two members of staff were injured.

Recommendations	Three recommendations are made.

RECOMMENDATION	1	
(a) Network Rail should: Review their possession planning principles and formulate criteria for limiting the complexity of work sites within a possession. This is to aid compliance with Rule T3 10.7 which requires that COSSs sign form RT3199 personally; (b) Network Rail should: Undertake a review of the risks/benefits associated with long work sites covering different items of work compared to multiple short work sites unless those items of work are less than 300 m apart; (c) Network Rail should: Review, and implement changes as necessary in, procedures to ensure that contractors are aware of major changes to planned possessions and that a record of this communication is maintained.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
(a) Kier Rail should: Introduce systems to ensure that any changes to planned possessions are identified by systematic review of Network Rail planning documents, and are identified to all staff involved in the planning and mobilisation of the work. (b) Kier Rail should: Introduce formal controls over the handling of changes to possessions and work sites so that the changes can be tracked, and so that it is clear that all involved have been correctly informed. (c) Kier Rail should: Revise their *RIMINI* plan design to highlight key information such as the possession and site location and times, and to remove superfluous information; (d) Kier Rail should: Revise their document distribution system to allow COSSs sufficient time to read RIMINI plans thoroughly before they start shifts. (e) Kier Rail should: Revise their contract supervision systems to ensure that COSSs are appropriately briefed by their supervisors before they start work, and that the contract supervisor and the COSS have a clear understanding of the work to be carried out, its time and location.		
Comment		
Kier Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
(a) Network Rail should: Review the possession planning system to ensure that any changes in possessions reflect back into the planned work sites that are recorded in the system. (b) Network Rail should; review the procedures for the storage of archived data, particularly any information associated with an incident which may be required to support a subsequent investigation, whether internally or by a statutory body.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Freight train 6V66	Signal T172 SPAD Purley Station	11:03	18 August 2006	Signal Passed at Danger SPAD
RAIB Report No:	2007/27		Published:	8 August 2007

Summary

On 18 August 2006 a freight train conveying empty wagons from Purley yard to Acton yard passed signal T172 at danger by 35 m (38.27 yards) following a shunting move at Purley station. The freight train was stopped following a Train Protection Warning System (TPWS) intervention. The driver immediately reset the equipment without speaking to the signaler and continued his journey towards Acton yard.The freight train was finally stopped by the driver at signal T160 at Purley Oaks station,which had been changed to show a red aspect by the signaller at Three Bridges Area Signalling Centre (ASC).

Recommendations	Five recommendations are made.

RECOMMENDATION	1	
EWS should install a specific stop marker 26 m (28.43 yards) on the approach to signal T172 on platform 4 at Purley station to mark the point at which the driver of a freight train should stop his front cab when propelling from Purley yard; or in consultation with Network Rail, EWS should prohibit the use of platform 4 by freight trains exiting from the yard. In both cases above, a revised MOW (Method of Working) for drivers, ground staff and signallers should be produced by EWS, in conjunction with Network Rail, for all train shunting movements at Purley. EWS should also ensure that the route knowledge of all relevant drivers includes an awareness of the signalling arrangements and any associated stop markers at Purley.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
EWS should deliver a specific TPWS training module for all drivers and assessors; new and experienced. This should include the correct procedures in the case of TPWS intervention.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
EWS should put in place a company process for the initiating, checking, authorising, issuing and briefing of local method of work instructions.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
RSSB should make a Proposal, in accordance with the Railway Group Standards Code, to amend Railway Group Standards as appropriate to: mandate that in-cab TPWS should specifically identify a TPWS activation associated with a SPAD, (if reasonably practicable); and prevent the use of the driver's reverser key to reset TPWS once activated.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
Subject to the retention of arrangements for shunting into platforms 4 and 5, EWS should review the method of working instructions for ground staff in order to eliminate the requirement for staff to cross over a live conductor rail.		
Comment		
EWS have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 2532	Phipps Bridge on Croydon Tramlink	15:57	25 May 2006	Derailment
RAIB Report No:	2007/28		Published:	8 August 2007

Summary

At 15:57 hrs on Thursday 25 May 2006, tram 2532 approached Phipps Bridge tram stop on its journey from Wimbledon to Elmers End. The Points Position Indicator (PPI) for facing points PBR02G was displaying a single white dot, indicating that the points were not correctly set for the normal route (to the left, in the direction the tram was travelling). The tram driver did not react to this indication, and drove the tram over the points. The points were set, incorrectly, to reverse (for the right-hand route). The leading bogie of the tram followed this route. As the tram passed over the points they sprang back to normal, and the center bogie of the tram followed the route to the left. The leading wheels of the centre bogie became derailed and the tram stopped abruptly after travelling 43 m past the points, about 50 m before the tram stop platform. There were about 180 passengers on board the tram. There were no injuries to staff or passengers. The tram was re-railed at 21:40 hrs and normal services resumed at 22:10 hrs.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
TCL (Tramtrack Croydon Limited) should demonstrate to ORR that they have overhauled the arrangements for investigating and rectifying faults in Hanning and Kahl point mechanisms so as to ensure systematic control of the risk from derailment.		
Comment		
TCL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	Green 1-Closed	

RECOMMENDATION	2	
TOL (Tram Operations Ltd) should review its driver training programme, to ensure that the training given to new drivers is keeping risks as low as is reasonably practicable.		
Comment		
TCL have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	Green 1-Closed	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Steam locomotive number 62005	Collision at Pickering Station	15:24	5 May 2007	Locomotive collision with Carriages
RAIB Report No:	2007/29		Published:	8 August 2007

Summary

On 5 May 2007 at approximately 15:24 hrs a former British Railways (BR) steam locomotive, number 62005, in the process of running round its train at Pickering station on the North Yorkshire Moors Railway (NYMR), entered the platform line from which it had come, and collided with the carriages it had left there. The collision was caused by the driver of the locomotive becoming distracted, and not changing the points before giving the fireman permission to drive the locomotive across them. The RAIB has made two recommendations to modify the operation of points at the headshunt at Pickering, and one recommendation concerning actions after an accident.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
The NYMR should immediately mandate that the person who operates the hand points at Pickering south should remain at the points after operating them, and should only call a locomotive past them when the ground signal clears, after again checking the lie of the points; or The NYMR should install a system at Pickering south that provides an indication to the train crew in the cab as to the lie of the points.		
Comment		
The NYMR have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
The NYMR should introduce procedures to ensure that after an accident no rolling stock or other evidence is moved without considering the effect on people involved, and only in compliance with the Railways (Accident Investigation and Reporting) Regulations, 2005.		
Comment		
The NYMR have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Two self-propelled track maintenance machines	Collision at Badminton	22:54	31 October 2006	Collision between two track maintenance machines
RAIB Report No:	2007/30		Published:	22 August 2007

Summary

At about 22:54 hrs on Tuesday 31 October 2006 two self-propelled track maintenance machines, a tamper and a ballast regulator, collided near the site of the former station at Badminton, Gloucestershire. The collision occurred on the up line of the railway between Bristol Parkway and Swindon stations, on a section of line that was closed to normal traffic for track renewal work. 7 The tamper was travelling at about 35 mph (56 km/h), and the ballast regulator was stationary. All four people on board the machines, the drivers and two machine operators, were injured, two of them seriously.

Recommendations — **Four recommendations are made.**

RECOMMENDATION	1	
RSSB should make a proposal, in accordance with the Railway Group Standards Code, to amend Module T3 of the Rule Book to require work sites to be kept as short as possible.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is still considering the position with this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
First Engineering should review their driver monitoring and assessment system to ensure that incidents of overspeeding are, so far as is reasonably practicable, detected and effectively dealt with.		
Comment		
First Engineering have accepted the recommendation, and have carried it out. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	3	
RSSB should make a proposal, in accordance with the Railway Group Standards Code, to amend Module T11 of the Rule Book to require that on-track machines are operated in tandem/multiple within possessions and work sites where it is practicable to do so.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is still considering the position with this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Operators and suppliers of on-track machines should assess the hazards to staff working in them from contact with sharp edges and corners, and take appropriate action to reduce the risk of injury.		
Comment		
Colas Rail and Plasser have completed the recommendation, but the RAIB is not aware of progress by the operators to whom the recommendation is targeted.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Train 1D17 CLASS 222 Meridian unit	Desborough	11:34	10 June 2007	Passenger door open on a moving train
RAIB Report No:	2007/31		Published:	30 August 2007

Summary

At 11:34 hrs on Saturday 10 June 2006, a passenger on train 1D17, the 10:30 hrs London St Pancras to Sheffield service, reported to on-board staff that an exterior door was open in the first class coach (vehicle 60249) while the train was moving. The train was formed of a class 222 Meridian unit, number 222 009. The door became unlocked and able to open as result of a locking fault which occurred at 10:52 hrs when the train stopped at Luton station (30 miles 19 chains). The door came open at 11:31 hrs, two minutes after departing from Kettering station (72 miles 1 chain) while the train was travelling at 79 mph (127 km/h). There was no obvious indication – such as a visual or audible alarm – to the on-board staff of the locking fault at the station stop at Luton or afterwards. To the driver, the indications in the cab, when the door opened north of Kettering, were ambiguous. The train travelled for about five minutes with the door open, and it was only secured closed after the driver finally brought the train to a stand. Following this, the train went forward to Market Harborough (82 miles 74 chains) where the service was terminated and the passengers detrained. There were no injuries or material damage as a result of the incident.

Recommendations **Nine recommendations are made.**

RECOMMENDATION	1	

HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review, in conjunction with Bombardier Transportation UK and Faiveley Transport, the door control algorithm and implement any changes necessary to ensure that:

- when door locking is required, the falling latch engages with the locking hook in all normal and degraded operating scenarios; and
- following the identification of a locking fault, real or otherwise, the motor is controlled so that the door is not left in an unrestrained condition.

Comment

HSBC Rail (UK) has considered and is carrying out the recommendation.

Status **Amber-Open**

RECOMMENDATION	2	

Bombardier Transportation UK, Faiveley Transport and operators of class 222 trains (as appropriate) should review, in the light of the investigation findings, their processes for software specification, development, upgrading and verification. They should implement any changes necessary to ensure they identify and manage the risks due to performance errors occurring during fault conditions.

Comment

Bombardier Transportation UK, Faiveley Transport and operators of class 222 trains have considered and are carrying out the recommendation.

Status **Amber-Open**

RECOMMENDATION	3	

Bombardier Transportation UK and Faiveley Transport (as appropriate) should require their supplier Schaltbau to review and, if necessary, upgrade its manufacturing process and switch design in the light of the evidence presented in this report with the objective of minimising the risk of foreign bodies being present.

Comment

Bombardier Transportation UK and Faiveley Transport have considered and are carrying out the recommendation.

Status **Amber-Open**

RECOMMENDATION	4	

HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains (as appropriate), should review fault alarms and handling on class 222 units and implement any changes necessary to ensure that on-board staff are adequately warned and able to take the appropriate action (for instance, operation of the out-of-service lock or stopping the train) in the event of a door system failure. This should include the need for:

- the train manager to be aware of door locking faults before authorising train departure; and
- the driver to be aware of any door-related fault which may put the safety of the train 'in danger'.

Comment

HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains have considered and are carrying out the recommendation.

Status **Amber-Open**

RECOMMENDATION	5	
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the design of the 'pass comm/door activated' indication light and the two conditions requiring it to illuminate. If necessary, improvements should be made to the general design of indications on class 222 trains to ensure that the driver is clearly aware of which condition has occurred.		
Comment		
HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains have considered and are carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	6	
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the ergonomics of the 'door close/locked' light to determine whether its conspicuity could be improved and therefore be more likely to be observed by drivers if a door opens when the train is moving.		
Comment		
HSBC Rail (UK) Limited and operators of class 222 trains have considered and are carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Operators of class 222 trains should review the content of training courses and the assessment of drivers, train managers and customer hosts in the practical application of procedures relating to unexpected incidents that may occur while trains are running in service. This should include ensuring that on-board staff members have an adequate understanding of their roles and responsibilities, particularly with regard to the use of the emergency brake override (and where the train should be brought to a stand), the operation of the passenger communication alarm system, and the use of the TMS and other sources of fault and event indication.		
Comment		
Operators of class 222 trains have considered and are carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	8	
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the ergonomics of the PCA emergency brake handle and, if necessary, make improvements to ensure that, when either passengers or on-board staff attempt to use it, it will successfully operate.		
Comment		
HSBC Rail (UK) Limited and operators of class 222 trains have considered and are carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	9	
RSSB should make a Proposal, in accordance with the Railway Group Standards Code, to clarify the various requirements of the Rule Book relating to PCA and power operated doors to ensure they minimise the duration of any hazard affecting the safety of a train. This should include conditions for the use of the emergency brake override.		
Comment		
RSSB has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Steam locomotive, 'Wroxham Broad' and 7 carriages	Fisherground on Ravenglass & Eskdale	19:00	12 May 2007	Derailment
RAIB Report No:	2007/32		Published:	30 August 2007

Summary

On 12 May 2007, a steam locomotive hauled passenger train, fully laden with passengers, was travelling from Dalegarth to Ravenglass when the leading wheelset of the trailing bogie on the third coach derailed at Hollin How near Fisherground. The derailment occurred while the train was travelling at between 5 and 7 mph (8 and 11 km/h). There were no passenger injuries or significant damage to the train or the track.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	

Review and identify safety critical elements of engineering work on their bogies, including the re-fitting of compensating bars, and implement work procedures which include:

- a primary check by the person undertaking the work; and
- a secondary independent check signed off by a competent R&ER person to ensure that any problems are detected before entering service.

Comment

Ravenglass & Eskdale Railway have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

Status	Green 2-Completed

RECOMMENDATION	2	

Review their safety management system and operational procedures to identify if there are other areas where safety critical maintenance or design work is undertaken, or decisions are made, which should be subject to independent checking, and implement appropriate changes to procedures.

Comment

Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.

Status	Amber-Open

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Virgin Cross Country class 221 Super Voyager train	Copmanthorpe	20:56	25 September 2006	Collision between Train and Car
RAIB Report No:	2007/33		Published:	5 September 2007

Summary

At 20:56 hrs on 25 September 2006, a car passed through the fence at the end of Moor Lane just outside Copmanthorpe, south of York. Moor Lane is the site of a former level crossing, closed in 1982. The car came to rest with its front wheels in the four foot of the nearest railway line, the down Leeds line. It was dark and the weather was drizzly with some fog. At that time, a Virgin Cross Country class 221 Super Voyager train was approaching Copmanthorpe on the down Leeds line travelling towards York at 100 mph (161 km/h).The train was the 14:25 hrs Plymouth to Edinburgh service, reporting number 1S91. The driver of the train sounded the horn and applied the emergency brakes after he first saw the car approximately a quarter of a kilometre ahead of him. However there was not sufficient time to decelerate, and at 20:57 hrs the train struck the car and pushed it along the track, breaking it up in the process. The driver of the car died from his injuries. As parts of the front-half of the car broke up, they passed under the train and caused wheelsets two, three, and four of the leading vehicle to derail. The leading wheelset remained on the track. However, the train remained upright and ran in-line throughout its deceleration; no one on the train was injured. The train came to a stand 907 metres beyond the point of the collision. The train crew performed all necessary train protection duties and the emergency services were informed

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
Network Rail should ensure that all cul-de-sacs currently leading directly to their railway are or have been assessed in line with the DfT guidance, and that their procedures enforce such assessment for any future changes to the highway infrastructure immediately adjacent to their boundary.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Bombardier, in conjunction with HSBC, Voyager Leasing and Angel Trains, should review the protection provided to vulnerable components in the underfloor equipment areas of Class 220, 221 and 222 trains, and assess whether further improved protection against being struck by objects likely to pass under the train can be provided to reduce the risk of damage to safety or environmental related systems in accidents.		
Comment		
Bombardier, in conjunction with HSBC, Voyager Leasing and Angel Trains, have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Two 455 electric multiple units (EMUs)+ 8 Carriage	Derailment at Epsom	19:42	12 September 2006	Derailment
RAIB Report No:	2007/34		**Published:**	13 September 2007

Summary

A South West Trains service from London Waterloo to Effingham Junction became derailed as it approached Epsom station, Surrey, at 19:42 hrs on Tuesday 12 September 2006. One bogie of the fourth coach of the eight-carriage train derailed towards the left as the train was travelling at about 17 mph (27 km/h). The train came to a stop partly in Epsom station, and the passengers (estimated at between 300 and 400 people) were able to alight onto the platform. There were no injuries, and minor damage to the train and track.

Recommendations	**Three recommendations are made.**

RECOMMENDATION	1	
Network Rail should review the resourcing of the track maintenance organisation in the Wessex area, Wimbledon section to ensure that it is adequate for its existing and planned workload. The review should consider the recruitment and retention arrangements in the area, the numbers of posts and the necessary competences, the arrangements for ensuring that all sections of line are given appropriate levels of attention, and the technical and professional support available to the inspection and maintenance staff.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Network Rail should revise its instructions to staff to ensure that patrollers and local track managers have clear and specific instruction and guidance on the identification of and response to alignment faults and localised poor rail condition.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is still considering the position with this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Network Rail should review Company standard NR/SP/TRK/8006 to provide improved guidance on the use and siting of remote rail lubricators, and the action to be taken in the event of lubrication failure, to reduce the risk of potential derailment.		
Comment		
Network Rail (NR) has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

Equipment Type	Place	Time	Date	Incident
Heritage: Class 33/1 diesel locomotive 33 108(engineer train)	Swanage Station	12:21	16 November 2006	Collision of locomotive with carriages
RAIB Report No:	2007/35		Published:	13 September 2007

Summary

At 12:21 hrs on Thursday 16 November 2006 an engineer's train entered platform 2 at Swanage and collided with a rake of carriages that were stabled there.
Two members of Swanage Railway personnel were treated by ambulance staff, but neither required hospital treatment. The locomotive and one carriage sustained damage to the buffers and surrounding bodywork.

Recommendations	Five recommendations are made.

RECOMMENDATION	1	
The Swanage Railway should amend their Rule Book to • ensure that shunting movements are made by the safest possible route; and • ensure that whenever possible shunting moves are driven from the leading cab of the locomotive.		
Comment		
The Swanage Railway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
The Swanage Railway should review its implementation and monitoring of the rule book requirements for safety critical communication to ensure that the requirements are being complied with, and implement such changes as are found necessary.		
Comment		
The Swanage Railway have accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	3	
The Swanage Railway should amend its medical standards for drivers to comply with the new guidance from the Heritage Railways Association when that guidance is issued.		
Comment		
The Swanage Railway has accepted the recommendation, and have carried it out.		
Status	**Amber-Open**	

RECOMMENDATION	4	
The Swanage Railway should implement the use of a system that informs staff that trains are not to be moved whilst work such as maintenance or interior cleaning is being carried out on them.		
Comment		
The Swanage Railway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
The Swanage Railway should enforce rule F 22.2, with illuminated lights provided, when vehicles are stabled in Swanage platform.		
Comment		
The Swanage Railway have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Passenger Train	M20 overline bridge, Aylesford	22:25	5 February 2007	Collision between a train and a road vehicle
RAIB Report No:	2007/36		Published:	26 September 2007

Summary

On 5 February 2007 a bridge inspection unit working on the M20 was deployed over a railway bridge between Maidstone Barracks and Aylesford stations. The gantry on the bridge inspection unit was struck by a scheduled passenger train, causing significant damage to the leading carriage and wrecking the gantry. The train driver and the sole passenger were slightly injured. Nobody was on the gantry at the time.

Recommendations	Six recommendations are made.

RECOMMENDATION	1
InterRoute should review the briefing process for their staff and contractors to ensure that all concerned are adequately aware of any railway that crosses or adjoins the highway worksite. Procedures should be amended where necessary.	
Comment	
Formal site safety management training for bridge inspectors and similar worksite supervisory personnel has been carried out. The subcontractor and plant hire procurement process has been strengthened to ensure that method statements are incorporated and understood. The method statements and risk assessments for bridge inspection works have been rewritten to incorporate lessons learned.	
Status	**Green 2-Completed**

RECOMMENDATION	2
InterRoute should rebrief the bridge inspector on the processes for managing safety at a worksite.	
Comment	
All concerned have been briefed on the revised risk assessments and method statements.	
Status	**Green 2-Completed**

RECOMMENDATION	3
InterRoute should review their systems in order to ensure site supervisory competence is effective for the duties required.	
Comment	
The revised procedures require competence checks and pre-site briefings for all personnel.	
Status	**Green 2-Completed**

RECOMMENDATION	4
E.S. Access Platforms (NE) Ltd. should ensure that the Moog operator is retrained in railway Personal Track Safety.	
Comment	
The operator concerned will re-attend and complete the PTS Training Scheme.	
Status	**Amber-Open**

RECOMMENDATION	5
E.S. Access Platforms (NE) Ltd. should ensure their staff know to receive a site safety briefing prior to entering a worksite, and ask for one if it is not provided by the person in charge at the site.	
Comment	
Site procedures regarding site inductions for Underbridge Unit Operators have been amended. There is a formal 'signing off procedure, which requires the client contact and the driver to confirm that a site induction has been carried out and received. The client contact must also sign to say that the driver has been escorted to the correct bridge. Work must not start until these declarations are made.	
Status	**Green 2-Completed**

RECOMMENDATION	6	
InterRoute should review their Safety Induction system so that the cards issued have an expiry date, and that there is a robust method of rebriefing personnel when changes are made to working practices.		
Comment		
The safety induction system has been amended with cards expiring after 2 years. All employees, and subcontractors were reinducted at the end of 2007 and new cards issued. There is an annual health & safety update with interim ones as required.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heavy Rail: HGV Shuttle Mission 7370	Fire on HGV shuttle in the Channel Tunnel	13:23	21 August 2006	Fire on Heavy Goods Vehicle
RAIB Report No:	**2007/37**		**Published:**	**23 October 2007**

Summary

On 21 August 2006 a fire broke out in the load compartment of a lorry on HGV Shuttle Mission 7370, the 13:23 hrs service from the UK terminal to France. The shuttle train was brought to a controlled stop at PK3050, 20.5 km from the UK portal, at 13:40 hrs. All 34 persons on board (30 lorry drivers and 4 Eurotunnel staff) were evacuated into the service tunnel by 13:49 hrs without injury. They were subsequently evacuated out of the service tunnel to the French terminal, reaching the French service tunnel portal at 15:47 hrs.

Recommendations	**Sixteen recommendations are made.**

RECOMMENDATION	1	
Eurotunnel should update the procedure for HGV loading staff to include the requirement to visually check the roof and doors of the load compartment for signs of smoke escaping.		
Comment		
Eurotunnel considers that its existing visual checking procedure is sufficiently precise and detailed. This procedure states that the Agents responsible for loading and chocking vehicles must note any anomaly involving the vehicle and its load. This check covers defects relating to the condition of the vehicle (hot spot detected after a physical check, checks on electrical connections, fuel leaks, etc.), together with defects relating to the load itself (movement in the load, load not securely stowed, noting any anomaly, including the appearance of signs of fire). Training for Agents includes all these points, and the fire risk aspect is emphasised in particular, as the feedback process (retour d'expérience - REX) has shown the vital role prevention plays in this area. Consequently, Eurotunnel believes that the aim of this recommendation is already correctly covered. IGC Response: Eurotunnel's existing procedures do not specifically include a requirement to visually check the roof and doors of load compartments. The IGC accepts the principle that the procedures should specifically include, in writing, a requirement for these checks and has asked the CTSA to pursue the matter further with Eurotunnel. The IGC will report further to the RAIB on this matter around the end of this year.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Eurotunnel should review alternative means of more reliably detecting signs of fire or other abnormal situations on the rear sections of departing shuttles, which would include the number and positioning of Agents de Feu and should implement improved measures as appropriate.		
Comment		
Eurotunnel considers that the Agents de Feu, located at the head of the platform under the current arrangements, do a satisfactory job in detecting any anomalies on the entire Shuttle as it departs. Eurotunnel's records show that a number of anomalies have indeed been detected on trucks onboard the rear rakes. With regard to this particular incident, Eurotunnel is of the view that the deployment of Agents de Feu high up at the mid-point would not have helped to detect signs of smoke, since these only appeared just before the Shuttle entered the Tunnel. Nonetheless, Eurotunnel recognises the need to look into this problem, and will be exploring possible ways to improve the effectiveness of surveillance. The position of Agents and their ability to carry out a legitimate check of the entire length of the trains will be analysed, and any reasonable opportunity for improvement will be examined with a view to a decision being taken in summer 2008.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Eurotunnel should investigate the possibility of providing the Agents de Feu with a direct method of stopping a departing shuttle and implement it if reasonably practicable.		
Comment		
Eurotunnel has looked into the possibilities for direct action on train movements by the Agents de Feu (action upon signalling). Eurotunnel has concluded that the introduction of such arrangements would have a detrimental effect on overall operational safety. The Eurotunnel signalling system is highly complex and is based on a series of safety interlocks, for which the centralisation of the control points is a major factor. Any external action which interferes with the central control system carries a risk in terms of its operating integrity and, therefore, to the safety of movements. Eurotunnel has also researched the possibility of using alternatives to the current approach of making an emergency call to the RCC. The effectiveness of the possible alternatives considered (e.g. dedicated landline, call via the Operator who has greater availability, etc.) and the complex nature of the organisation which would be required to implement them did not, however, enable a suitable alternative to be identified. Moreover, the alert time which would have resulted from the possible alternatives was in all cases greater than the amount of time required under the current procedure. IGC Response: The IGC accepts Eurotunnel's conclusions regarding this recommendation. Providing the Agents de Feu with a direct means of stopping the train would involve a major change to the signalling system with the consequent risks of substantial change for little benefit on a global safety scale. The CTSA has advised that it would be inappropriate to take away control of train movements from the RCC. The IGC has therefore concluded that no further action is required in respect of this recommendation.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
Eurotunnel should provide a means for the automatic transmission of alarms from the on-board fire detection system on the HGV shuttles to the RCC.		
Comment		
Eurotunnel has demonstrated, to the satisfaction of the safety authority that implementation of the recommendation would not produce a proportinate reduction in risk.		
Status	**Green 3 – Closed with no action taken**	

RECOMMENDATION	5	
Eurotunnel should ensure that the findings of this investigation are incorporated into the briefing and training of HGV shuttle drivers. This should include a re-briefing in topic areas associated with the non-compliance with Eurotunnel procedures.		
Comment		
On 21st August 2006, the driver of Mission 7370 did not actually transmit the onboard alarm to the RCC (Ref. paragraph 363 of the RAIB report). In fact, as stated in the RAIB report, at the time that this communication should have been transmitted, he was already in contact with the RCC, who was asking him to reduce his speed to 100 km/h following the activation of the Level 1 alarm given by the fixed detectors. Given that numerous cases of onboard alarms have always demonstrated a satisfactory level of reaction from drivers on this point, Eurotunnel had initially considered that this should be treated as an isolated case. In order to respond to RAIB's request, Eurotunnel will, however, conduct before the end of April 2008 a reminder briefing aimed at all HGV Shuttle drivers. Copies of the briefing distributed in December 2006 and that which will be distributed during April 2008 have been provided to the CTSA. IGC Response: The IGC accepts Eurotunnel's response above and has verified that this recommendation has been implemented so far as necessary and no further action is therefore required. However, the IGC has asked the CTSA to confirm, via its inspection activities that drivers continue to be suitably trained and briefed.		
Status	**Green 1-Closed**	

5 Annexes

RECOMMENDATION	6	
Eurotunnel should undertake a detailed survey of radio reception in the tunnel and make further improvements as necessary.		
Comment		
Eurotunnel confirms that this recommendation has been taken into account. A general campaign of checks and repairs to the Tunnel radio transmission system was carried out between November 2006 and September 2007. This programme to improve the track-to-train radio system enabled the existing transmission/reception issues to be addressed, by installing new connections to the radiating cable between the Service Tunnel and the Running Tunnel. This programme led to significant improvements to the system, including in those areas which were most affected by the loss of transmission. The IGC accepts Eurotunnel's response above and has concluded that this recommendation has been implemented and no further action is therefore required. However, the IGC has asked the CTSA to confirm, via its inspection activities, that the situation regarding radio reception in the tunnel is kept under review.		
Status	**Green 1-Closed**	

RECOMMENDATION	7	
Eurotunnel should examine the feasibility of using TVM to enforce a speed of 10 km/h and implement a modification to achieve this if it is found to be reasonably practicable.		
Comment		
Eurotunnel has studied the feasibility of using TVM to enforce a speed of 10km/h. However, such a modification has not been implemented in view of the criticality and complexity of the railway signalling system. This system provides a very high level of reliability and safety and cannot be modified without in-depth studies being conducted in order to ensure that there is no regression of the nominal system. Furthermore, as the 10 km/h value was not planned when the system was developed, its implementation would require large-scale modifications to the fixed and onboard installations, with the risks inherent to any modifications of a system with a high level of integrity. Finally, as the TVM system used in the Channel Tunnel was originally developed in France for TGV lines, Eurotunnel itself is not in a position to obtain the development of a modification of this signalling system which would also affect rolling stock of Operators using these lines. The IGC accepts Eurotunnel's response above and has concluded that no further action is required in relation to this recommendation. The suggested modification would have significant implications for those other than Eurotunnel. It would require extensive software changes to the on-board systems which would be both costly and subject to extensive testing trials and re-certification (or re-authorisation). The IGC does not therefore consider that the implementation of such a modification would be reasonably practicable.		
Status	**Green 1-Closed**	

RECOMMENDATION	8	
Eurotunnel should ensure that drivers are given a visual warning of the approach to the start and finish of go zones.		
Comment		
Eurotunnel confirms that this recommendation is accepted and is being implemented. Boards to warn of the approach to the start and finish of these zones have been designed, and will be installed soon. The installation of the boards is due to be completed by September 2008. The IGC accepts Eurotunnel's response above and has concluded that this recommendation is being implemented and no further action is therefore required.		
Status	**Green 1-Closed**	

RECOMMENDATION	9	
Eurotunnel should ensure that all drivers routinely practise stopping at cross passage doors.		
Comment		
Eurotunnel confirms that this recommendation is accepted and implemented. Controlled stop exercises are regularly organised, both in the Running Tunnels and during driving drills carried out regularly on the driving simulator. Every driver practices on the simulator at least once a year and controlled stops are planned in the Tunnel at a rate of 2 to 3 stops every Sunday evening. In the event that a driver fails the procedure in the Tunnel or on the simulator, a fresh drill is scheduled for that driver as soon as possible. The IGC accepts Eurotunnel's response above and has concluded that no further action is required in relation to this recommendation. An issue not addressed by the RAIB report is the application of the recommendation to other operators, particularly Eurostar. The IGC understands that while Eurostar drivers routinely practice stopping at cross-passage doors using the simulator it would be impractical for them to carry out controlled stop exercises in the tunnel.		
Status	**Green 1-Closed**	

RECOMMENDATION	10	
Eurotunnel should ensure that the findings of this investigation are incorporated in the briefing and training procedures of RTM and EMS controllers. This should include a re-briefing in topic areas associated with the non-compliances with Eurotunnel procedures.		
Comment		
Eurotunnel confirms that this recommendation is accepted and has been implemented. A review has been carried out of the RCC Controller training modules, in order to ensure that they clearly identify the rules which were not complied with during the incident on 21st August 2006. This review confirmed the fact that the information provided was correct, but that it gave the Controllers the option of acting in two different ways to reconfigure the ventilation. Eurotunnel therefore decided that Controllers should be issued with a reminder, during their regular training sessions on the traffic management simulator, to ensure that they apply the quickest possible procedure, which is directly accessible from their emergency screen. All Controllers have now attended such sessions. The IGC accepts Eurotunnel's response above and has concluded that no further action is required in relation to this recommendation.		
Status	**Green 1-Closed**	

RECOMMENDATION	11	
Eurotunnel should review the design of the ventilation control system with a view to reducing the possibility of controllers selecting a sub-optimal configuration.		
Comment		
Eurotunnel Response: A study has been carried out to identify possible improvements to the supplementary ventilation system (SVS) control screens. The possibility of implementing an automatic function to adjust the SVS depending on the location of the event from the EMS emergency screen was examined in particular. The analysis concluded, however, that the proposal for such automation could not be retained. Given the large number of possible configurations (number of trains, running direction, location, etc.), the Operator would have to select a large number of menus before being able to actually start the ventilation. This operation, as cumbersome as the current arrangement of consulting adjustment tables, would in addition delay the emergency start of the ventilation on the ground. Eurotunnel therefore prefers to keep its current precautionary measure in place, which involves starting the ventilation on the highest setting immediately, followed by fine-tuning to ensure that it is appropriate to the given circumstances, once they have been calmly analysed. The IGC considers that Eurotunnel has made a responsible response to this recommendation. The CTSA's experts have not examined Eurotunnel's analysis and cannot therefore comment on Eurotunnel's conclusions. There is no reason to believe that the analysis was conducted in other than a systematic manner. However, because of the importance of being able to optimise the SVS configuration to suit the specific characteristics of the incident in hand, and to do so with procedures that are likely to lead to the minimum of human error, the IGC has asked the CTSA to examine the analysis and undertake an inspection, in its 2008/9 inspection programme, to seek assurance that what has been claimed is reasonable and has been sufficiently justified. The IGC will make a further response on this recommendation to RAIB around the end of this year.		
Status	**Amber-Open**	

RECOMMENDATION	12	
Eurotunnel should ensure that the FDC has immediate access to the postcode of the Longport reception area.		
Comment		
Eurotunnel confirms that this recommendation has been taken into account. The postcode and exact address appeared in the documents available to the FDC Controller, but he did not think to look for them there. All Controllers have therefore been reminded that this information is contained in their working documents. The various UK Emergency Services likely to intervene were also reminded of this information so that it may be included in their Eurotunnel intervention documents on a permanent basis. The IGC accepts Eurotunnel's response above and has concluded that no further action is required in relation to this recommendation. The BINAT Exercise in January 2008 provided evidence that the FDC in the French RCC was in possession of the correct postcode.		
Status	**Green 1-Closed**	

5 Annexes

RECOMMENDATION	13	
Eurotunnel, in consultation with the emergency services in France and the UK, should carry out a study to assess the feasibility of decreasing the time taken to earth the catenary during an emergency situation. The best solution identified should then be implemented if reasonably practicable to do so.		
Comment		
This important recommendation follows on from the observation of the most serious dysfunction identified in the management of the fire on 21st August 2006, i.e. the significant amount of time taken to earth the catenary. Eurotunnel's investigation report emphasised the need to improve this part of the fire-fighting process. In order to better understand the electrical phenomena present in its 50 km long Tunnels, Eurotunnel carried out in summer 2007 a test to measure residual voltages. This test validated the assertion that there was no residual voltage in the event of catenary power being cut, in all possible configurations (live catenary in the other Tunnel / crossover doors in the open position). In addition, discussions were held with the heads of the UK and French Emergency Services. These discussions involved reviewing the current process of earthing the catenary in the event of a fire, so that quicker and more effective intervention could take place on the site. These discussions focused on determining whether earthing the catenary was appropriate as well as – if considered appropriate – appointing the teams responsible for carrying this out. Eurotunnel proposed that this should be carried out by the First Line of Response (FLOR) Teams. IGC Response – The Eurotunnel response suggests that discussions are further forward than is in fact the case. It is understood that initial discussions have been undertaken with FLOR but these have yet to lead to firm proposals to modify the current procedures for isolation and earthing of the catenary. Any such proposals would need to be assessed by the CTSA and would need to be accompanied by a robust risk assessment of the proposed new arrangements, evidence of a safe system of work, and, if it is proposed that FLOR should be involved, consideration of the impact on the teams' roles and responsibilities in responding to an incident. Eurotunnel's response refers to tests it has conducted to measure residual voltage. However, it is important to note that earthing in advance of fire-fighting activities is the accepted practice by the emergency response organisations (i.e; both SLORs) and that the CTSA's experts have advised that earthing in such circumstances is essential. It should be noted that immediately following the 21 August 2006 fire Eurotunnel amended its earthing procedures to ensure a quicker response using its own technicians. The CTSA's experts have advised that these amended procedures are acceptable provided adequate and timely alerting mechanisms are in place and are operated correctly. The IGC therefore concludes that this recommendation should continue to be the subject of consideration between Eurotunnel and the CTSA and that a further report should be made to the RAIB around the end of this year.		
Status	**Amber-Open**	

RECOMMENDATION	14	
Eurotunnel, in conjunction with the Emergency Services, should review its emergency plan (and associated bi-national arrangements) with a view to ensuring that accurate information from the incident site is available promptly to those making strategic decisions within the ICCs.		
Comment		
Eurotunnel considers that this recommendation is intended for the National Emergency Services within the context of the Bi-National Emergency Plan. Eurotunnel will, however, be happy to offer its expertise and knowledge of the system to the Emergency Services when drawing up the incident management plan in order to help them determine the actions to ensure that the events are resolved satisfactorily. Such collaboration already exists in the context of the BINAT Exercises (annual incident simulation where the Emergency Services are deployed on the site), as was the case in particular for the recent Exercise BINAT 18 and will be for the next Exercise BINAT 19, following which a joint analysis is carried out on the various interventions in order to ensure that they are constantly improved. IGC Response: While Eurotunnel considers that this recommendation is intended for the emergency response organisations it has declared its willingness to continue to work with the emergency services in order to ensure effective incident management. Evidence from the BINAT Exercise which took place in January 2008 shows that this particular aspect of communications worked well. The IGC therefore considers that no further action is required in respect of this recommendation. However, the IGC has asked the CTSA to consider the issue of effective communications in the context of future BINAT exercises and in the course of any future revision of the Bi-National Emergency Plan.		
Status	**Amber-Open**	

RECOMMENDATION	15	
Eurotunnel, in conjunction with the emergency services, should revise its arrangements for formal multi-party reviews of lessons to be learnt following major safety incidents.		
Comment		
Eurotunnel had thought that the work of the "Rescue & Public Safety" Working Group of the CTSA, carried out jointly between Eurotunnel and the Emergency Services, had fulfilled this role. Further to this recommendation, Eurotunnel has decided that in future it will take the initiative to organise a specific debriefing with all of the parties involved. Further to an event which occurred on 3rd August 2007 (different in nature, but which resulted in serious disruption to the system), Eurotunnel did in fact hold such a debriefing, which brought together all of the parties involved. The IGC is pleased to note that Eurotunnel has agreed to implement this recommendation and will in future organise specific debriefing with all the parties involved. The IGC therefore considers that no further action is required and this recommendation can be considered closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	16	
Eurotunnel should modify the RTM procedure to incorporate an explicit requirement to advise the RCC Supervisor when a message regarding a fire alarm on an HGV shuttle has been received and clarify the sequence of actions to be taken by the RTM Controller in the event that a rolling stock alarm and a Level 2 alarm are declared almost simultaneously.		
Comment		
Eurotunnel has checked the content of the procedures for responding to fire alarms made available to Operators, and can confirm that they do indeed include the obligation placed on the RTM Controller to alert the Supervisor in the event of an alarm being triggered, whether this is a Level 1 or Level 2 alarm. We indeed have no doubt of the fact that this information was correctly transmitted on the day of the incident, bearing in mind that the Supervisor and the Controller are always located in the same room a few metres from each other. It should also be noted that the actions to be carried out by the Operators (Agents de trains, RCC Controllers, Emergency Services, etc.) are identical, whether it is a Level 2 alarm triggered by the fixed detectors or an onboard alarm (also Level 2). Consequently, during the fire on 21st August 2006, the fixed detectors having triggered a Level 2 alarm, the arrival of a second Level 2 alarm for the same event (by the train's onboard detector when it was already braking in order to stop and evacuate) was simply considered to be confirmation of fire onboard the train, and no additional measure was therefore necessary. The Supervisor was immediately informed thereof by the RTM Controller, as indicated above. Eurotunnel therefore considers that the management of simultaneous alarms is correctly handled. The IGC has noted Eurotunnel's view that the existing procedures are adequate and do not require modification. The IGC has asked the CTSA's experts to review the relevant procedures and to confirm whether it shares Eurotunnel's view. The IGC will therefore report further to the RAIB on this recommendation around the end of this year.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 06	Derailment at Birmingham Snow Hill, Midland Metro	14:25	29 January 2007	Derailment
RAIB Report No:	2007/38		Published:	24 October 2007

Summary

At 14:25 hrs on Monday 29 January 2007, the centre bogie of tram 06 became derailed at the switch and crossing (S&C) on the approach to Birmingham Snow Hill terminus. Tram 06 was operating the 13:50 hrs service from Wolverhampton to Birmingham at the time of the derailment.

Recommendations	Four recommendations are made.

RECOMMENDATION	1	
TMM should either employ or provide from elsewhere, personnel competent to specify and approve the inspection, maintenance and repair of switches and crossings.		
Comment		
TMM has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
TMM should develop or adopt and implement standards and procedures for effective switch and crossing inspection, maintenance and repair.		
Comment		
TMM has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
Carillion should verify by audit that switch and crossing work its Doncaster Welding Depot undertakes elsewhere is carried out by competent staff.		
Comment		
Carillion has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1-Closed**	

RECOMMENDATION	4	
TMM should verify, by monitoring and auditing, that switch and crossing inspection, maintenance and repair is carried out by them or on their behalf to a standard that achieves safe operation.		
Comment		
TMM has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Train 4026	Washwood Heath	11:47	9 September 2006	Derailment
RAIB Report No:	2007/39		Published:	21/11/2007

Summary

Train 4O26 was the 11:47 hrs service from Burton to Southampton Docks, operated by EWS. It comprised locomotive 66070 hauling 17 flatbed wagons. At about 15:48 hrs on the 9 September 2006 the train departed from Washwood Heath Up Side sidings. It left the yard along a reception siding from where it was routed onto the Down Goods via the series of four crossovers that link all tracks at the southwest end of Washwood Heath. As the train passed over the crossover between the Down & Up Goods line and the Up Main line the leading bogie of the 13th wagon, 609001, derailed to the left-hand side.

Recommendations **Four recommendations are made.**

RECOMMENDATION	1	
EWS should complete its programme for installing UIC sprung side bearers in FAA wagons in order to overcome the known deficiencies with the existing arrangement.		
Comment		
EWS has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
EWS, pending the replacement of all existing side bearers, should test a representative sample of the unmodified fleet of FAA wagons in order to confirm that the values obtained for bogie rotational resistance and torsional stiffness remain acceptable once the central pivot and side bearer components have been subject to wear and to measure any change in the performance of the side bearer lubrication between PPM.		
Comment		
EWS has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Engineering Support Group Ltd. (formerly part of EWS - engineering service group), in its capacity as a Conformance Certification Body, should review the design scrutiny process that was applied to certify the FAA wagon type and its subsequent modifications. The review should identify any weakness in the management systems that resulted in the non-identification of the design defects associated with the side bearer assembly. The review should also consider the checks that are carried out to confirm the validity of testing done in support of the design. ESG Ltd. should implement any changes to its processes found necessary following this review.		
Comment		
Engineering Support Group Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Engineering Support Group Ltd. should implement changes to its processes to mandate that when undertaking scrutiny of design and proposed maintenance the degradation of components in service is taken into account and the railway undertaking is advised of any additional maintenance and/or inspection requirements to keep the vehicle in a safe state as components wear.		
Comment		
Engineering Support Group Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 611	Blackpool	16:15	24 January 2007	Fire on prototype tram
RAIB Report No:	2007/41		Published:	27 November 2007

Summary

On 24 January 2007 at approximately 16:15 hrs, tram 611, a prototype City Class tram, was stationary near Foxhall Square in Blackpool when a fire occurred inside the vehicle near the front (B end) driving position. There were no casualties.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
Blackpool Transport Services (BTS) should develop vehicle acceptance procedures and integrate these into the "management of change" procedure within the Safety Management System.		
Comment		
BTS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Trampower Ltd should carry out an appropriate risk assessment relating to the design, construction and operation of the vehicle with reference to Regulation 3 of the Management of Health and Safety at Work Regulations. Part of this assessment should consider whether components and systems are appropriately constructed and installed in a way that is fit for their intended use. This risk assessment, and related currently-applicable technical documentation, should be provided to the operators of any network where the vehicle is used.		
Comment		
Trampower Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Diesel electric locomotive no. 8113+test vehicle	Cromore, Northern Ireland	01:00	14 April 2007	Derailment
RAIB Report No:	2007/42		Published:	28 November 2007

Summary

At about 01:00 hrs on Saturday 14 April 2007, a Northern Ireland Railways (NIR) ultrasonic test train became derailed near Cromore, Antrim, while travelling at about 49 mph (77 km/h). The train consisted of a locomotive and a single ultrasonic test vehicle. All four wheels of the test vehicle were derailed. There was some damage to the track and to the test vehicle. No-one was hurt.

Recommendations — **Seven recommendations are made.**

RECOMMENDATION	1	
Northern Ireland Railways (NIR) should revise their process for the preparation and issue of the Weekly Operating Notice (WON) so the process ensures that the information that it contains is accurate and complete.		
Comment		
NIR has considered and has carried out the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Northern Ireland Railways should revise their process for the preparation, issue and circulation of Special Operating Instructions (SOIs) to ensure that they are seen and acted upon by all relevant staff at the appropriate time.		
Comment		
NIR has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Sperry Rail International should modify the suspension of the wagons that they use for ultrasonic testing to minimise their sensitivity to track irregularities including cyclic top (already complete).		
Comment		
Sperry Rail International has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	4	
Northern Ireland Railways should revise their operating instructions to ensure that, where staff who are not qualified to act as guards travel unaccompanied in the rear cab of locomotives and trains, they are suitably briefed on action to be taken in case of emergency.		
Comment		
NIR has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	5	
Northern Ireland Railways should assess the risk arising from the absence of communication between the front and rear cabs of locomotives and trains, and either provide suitable fixed equipment or make other appropriate arrangements to control such risk.		
Comment		
NIR has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	6	
Sperry Rail International should revise the vehicle weight information that is marked on the ultrasonic test vehicle and shown in the maintenance documentation to accurately reflect the unladen and laden weights of the vehicle.		
Comment		
Sperry Rail International has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

5 Annexes

RECOMMENDATION	7	
Northern Ireland Railways should establish appropriate standards for track installation and maintenance throughout its network, define a timetable for the adoption of these standards, and implement them accordingly.		
Comment		
NIR has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Train 1M20	Tinsley Green Junction	09:33	17 March 2007	Near miss involving track worker
RAIB Report No:	2007/43		Published:	18 December 2007

Summary

This incident occurred at 09:33 hrs on the morning of Saturday 17 March 2007, at Tinsley Green Junction, near Gatwick Airport. The driver of train 1M20, the 08:55 hrs Brighton to Watford Junction service, reported to the signaller that a member of track maintenance staff had dived clear of his train with only seconds to spare. The incident had occurred as train 1M20 was being routed from the up fast line towards the up platform loop via a series of high-speed crossovers.

Recommendations	Eight recommendations are made.

RECOMMENDATION	1	
Network Rail's IMM (Infrastructue Maintenance Manager) Sussex should identify all welders in the Area who have only limited experience of working in the Red Zone. The IMM should ensure that all such welders that are qualified to act as COSS have the necessary skills, knowledge and experience to set up a safe system of work in the Red Zone.		
Comment		
Network Rail;s IMM Sussex has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Network Rail should update the COSS handbook and associated training material with the objective of ensuring that staff that are qualified to act as COSS are fully aware of the hazards associated with working in a Red Zone at locations beyond facing points and can set up appropriate safe systems of work. Included in the revised documentation should be a clear definition of the term 'approaching train'.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Network Rail should prohibit lookouts from being required to observe the position of points as a means of determining if an approaching train is routed towards the site of work. Associated rules (e.g. rule book, module T7) and training documentation should clearly state that when working beyond facing points lookouts should give a warning, and staff move to the position of safety, for all trains approaching those points in the facing direction.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	4	
Network Rail should modify its management processes to require that all RT9909 'Record of Site Safety Arrangements and Briefing' forms issued to Controllers of Site Safety contain details of any high speed crossovers and/or points, the direction and speed of associated train movements and a specific warning about the hazards at such locations.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

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RECOMMENDATION	5	
Network Rail should carry out a detailed assessment of the way in which Business Process Document 0019 and Standard Maintenance Procedure 0094 are being applied. This assessment should include a survey of Work Schedulers to assess the extent to which they feel able to question, or challenge, requests made to them. The results of this assessment should be used to inform a review of the effectiveness of the existing management arrangements and steps taken to rectify any deficiencies identified.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	6	
Network Rail should implement a process to ensure that any person requesting that a plan be prepared by a Works Scheduler checks that an appropriate safe system of work has been selected and the adequacy of the resulting 'Record of Site Safety Arrangements and Briefing' form. This check should include a review of the accuracy of data contained and completeness of hazard identification.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Network Rail should assess the feasibility of configuring the SSOWPS (Safe System of Work Planning System) to automatically check that the work site data entered in the system corresponds with the work site location.		
Comment		
Network Rail are considering the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	8	
Network Rail should review the presentation of information in Table A of its Sectional Appendices with the objective of clarifying the direction of signalled train movements through junctions and crossovers.		
Comment		
Network Rail are considering the recommendation.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Heavy Rail: Two class 455 electric multiple units	London Waterloo	22:48	11 September 2006	Derailment
RAIB Report No:	**2007/44**		**Published:**	**18 December 2007**

Summary

At 22:48 hrs on 11 September 2006, a train formed of two class 455 electric multiple units derailed on 1565 points, which were traversed in the facing direction as the train made an empty coaching stock move into Waterloo south sidings. The points had recently been subject to unplanned maintenance.
At 18:27 hrs on 24 October 2006, a loaded passenger train, also formed of two class 455 units derailed on 1507 points, which were traversed in the facing direction as the train approached Waterloo station from Dorking. These points had also been subject to recent unplanned maintenance.

Recommendations	**Fourteen recommendations are made.**

RECOMMENDATION	1	
Network Rail should review and revise the guidance provided for staff undertaking or supervising standard 053 inspections to make clear the following: a. the detailed requirements for visual and increased-frequency inspections, including the use of photographs, and the development of standard forms with suitable prompts for this purpose; b. the conditions where a switch blade repair cannot be safely achieved such that staff understand the alternative courses of action available; and c. that work should be suitably planned and organised so that there is time for it to be carried out and with sufficient lighting for individuals to complete necessary inspections.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	2	
Network Rail should review the frequency and content of training to: a. improve skills retention amongst occasional standard 053 inspection practitioners; b. introduce a mentoring programme with individual staff log books; c. introduce refresher training; and d. introduce a programme of periodic monitoring of AIs and TSMs by a supervising manager.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	3	
Network Rail should provide a handbook for use by front-line and supervisory staff which summarises the requirements of standard 053 inspections, post-inspection actions, and pre and post-grinding inspections. This should contain the necessary inspection forms. The handbook should be written in plain English and certified as such.		
Comment		
NR considers that the information is available in Company documentation (TM A06). A review will be undertaken to establish whether a different format/presentation (i.e. handbook) would better provide this information to frontline staff. Timescale 31/5/08		
Status	**Amber-Open**	

5 Annexes

RECOMMENDATION	4	
Network Rail should establish a formal communication channel between Asset Inspection staff and TSMs such that the relevant TSM reviews and signs-off all standard 053 inspection reports.		
Comment		
Issue 4 of Standard NR/L2/TRK/0053 now makes this a requirement. Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	5	
Network Rail should carry out a detailed assessment of the way in which Business Process Document 0019 and Standard Maintenance Procedure 0094 are being applied. This assessment should include a survey of Work Schedulers to assess the extent to which they feel able to question, or challenge, requests made to them. The results of this assessment should be used to inform a review of the effectiveness of the existing management arrangements and steps taken to rectify any deficiencies identified.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	6	
Network Rail should introduce the requirement for a follow-up inspection after a standard 053 repair is carried out involving welding or grinding. This should be undertaken by an independent and competent person within a timescale commensurate with minimising the risk of derailment.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	7	
Network Rail should undertake a check of all S&C components held in stock within the Wessex area to check whether information on any remaining legacy renewal plans is identified and captured within the current planning system as appropriate.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	8	
Network Rail and South West Trains should jointly review and amend track access arrangements to ensure that sufficient and appropriate track access is provided to enable the safe inspection of switches and crossings between Waterloo and Clapham Junction. This should include consideration of Network Rail's daily T2(H) line blockage initiative and an extension of the existing Sunday possesssion arrangements if appropriate.		
Comment		
Network Rail (NR) and South West Trains have considered and are carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	9	
Network Rail should review resource requirements for the undertaking of special inspections in complex track areas to ensure that the problems identified at Waterloo do not exist elsewhere. Sufficient AI positions should be provided to allow the mandated inspections to be completed, and planning resources should be aligned to support TISE requirements for track access.		
Comment		
Network Rail (NR) has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	10	
KCI Rail should ensure that any appointed GSM retains full authority and responsibility for site activities. Any transfer of responsibility between staff should be undertaken with the agreement of both parties and by reference to the grinding manager or duty shift manager.		
Comment		
KCI Rail has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	11	
Network Rail should provide sufficient technical resources to select and manage sub-contractors engaged in rail grinding activity effectively. This should include the pre-scoping of any non-routine work and the undertaking of on-site checks including periodic technical audits. Standard 053 repairs should not be attempted unless the work has been scoped in advance by an appropriately experienced and qualified person.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	12	
Network Rail should review inspection regimes at recognised high-risk sites (ie sites with little used turnouts, a history of sidewear, or a turnout of similar flexure) to ensure these are effective. This should consider the introduction of bespoke inspection regimes such as more frequent visual inspections or periodic detailed inspections regardless of the degree of wear apparent.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	13	
Network Rail should develop a handbook for use by staff who operate or otherwise use the Ellipse system. This document should provide guidance on the nature of information to be presented, and interpretation of the resulting reports.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

RECOMMENDATION	14	
Network Rail should mandate the provision of a standard 053 detailed inspection report or equivalent paperwork prior to all switch repair activity. The report should describe the defect and proposed repair and identify who will undertake the post-repair inspection and any subsequent inspections.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		
Status	**Green 2-Completed**	

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Diesel locomotive number 80+4 Carraiges	Leighton Buzzard	13:08	25 March 2007	Collision on level crossing with car
RAIB Report No:	2007/45		Published:	19 December 2007

Summary

At approximately 13:08 hrs on 25 March 2007 a train on the Leighton Buzzard Railway (LBR), collided with a road vehicle at low speed on a level crossing at Shenley Hill Road on the outskirts of Leighton Buzzard, Bedfordshire.

Recommendations **Three recommendations are made.**

RECOMMENDATION	1	
Leighton Buzzard Railway Ltd (LBR ltd) should change the method of working of Shenley Hill Road open crossing to require the train to stop and allow road traffic to halt before entering the level crossing.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	2	
Bedfordshire County Council should cut down the vegetation around Shenley Hill Road open crossing and introduce a process of vegetation management in order to meet the viewing zone requirements of RSPG 2E Appendix B.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

RECOMMENDATION	3	
Bedfordshire County Council and Leighton Buzzard Railway Limited, as appropriate should ensure that traffic signs and road surface markings for which they are each responsible at LBR level crossings comply with diagrams 771, 775 and 785 as defined in the Traffic Signs Regulations and General Directions 2002, and recommended in Railway Safety Principles and Guidance Part 2E (Health and Safety Executive, 1996), Diagram 6.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		
Status	**Amber-Open**	

Equipment Type	Place	Time	Date	Incident
Heritage: Locomotive, number 11+ 3 carriages	Leighton Buzzard (Cavalry Horse)	12:40	25 August 2007	Train struck a tractor. Minor injury
RAIB Report No:	2007/46		Published:	19 December 2007

Summary

At approximately 12:40 hrs on the 25 August 2007 the 12:20 hrs train from Pages Park to Stonehenge Works on the Leighton Buzzard Railway (LBR), collided with a tractor at low speed on Cavalry Horse User Worked Crossing (UWC) on the outskirts of Leighton Buzzard, Bedfordshire. One passenger was slightly injured, and damage was caused to the locomotive and the tractor.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	
The LBR should complete the briefings and works identified in its assessment of field crossings dated 25 September 2007, to the timescales laid down in that document.		
Comment		
LBR Ltd has considered and is carrying out the recommendation. ORR are considering the response.		
Status	**Amber-Open**	

RECOMMENDATION	2	
The LBR should install signing for all farm crossings on the railway so as to ensure that users are informed of how to use the crossing.		
Comment		
LBR Ltd has considered and is carrying out the recommendation. ORR are considering the response.		
Status	**Amber-Open**	

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ANNEX C Appendix 6

List of investigations published in 2007

Section 1			
National Networks	**Location**	**Date**	**Accident / Incident**
Mainline Passenger Trains	Autumn Adhesion Investigation Pt 1, 2 and 3	25-Nov-05	Review of adhesion-related incidents
Class 66 locomotive and 35 loaded ballast wagons.	Haymarket, Edinburgh	14-Jan-06	Unauthorised train movement and subsequent derailment
Class 66 locomotive and 21 HTA bogie hopper wagons.	Waterside, East Ayrshire[10]	21-Jan-06	Derailment
Class 59 locomotive and 18 bogie hopper wagons.	Cricklewood Curve	31-Jan-06	Derailment
Class 66 locomotive freight train	Brentingby Junction, near Melton Mowbray	09-Feb-06	Derailment
Class 365 electric multiple unit passenger train	Huntingdon	15-Feb-06	Train door incident
Class 67 locomotive, 14 Salmon wagons.	Basford Hall Yard, Crewe	21-Feb-06	Dispatch of train with an insecure load
Class 360 electric multiple unit passenger train	Manor Park	19-Mar-06	Possession irregularity, train struck wheelbarrows.
Class 313 electric multiple unit	Camden Road	07-Apr-06	Traction control failure causing a signal to be passed at danger
Tamper & Ballast Regulator	Trooperslane near Carrickfergus	23-Apr-06	Derailment
Class 66 locomotive & Class 155 diesel multiple unit	Crofton Old Station No 1 Level Crossing, W York's	01-May-06	Two near misses dated 1 and 18 May 2006
Freight train	Bratts Blackhouse near Sizewell, Suffolk	22-May-06	Freight train collision with road vehicle on level crossing.
Class 66 locomotive freight train	Maltby North	28-Jun-06	Derailment of freight train
Class 47 locomotive , FRA wagon	Dagenham Dock	17-Jul-06	Fatal accident to Shunter
Freight train	Deal, Kent	29-Jul-06	Fatal accident involving a train driver
Freight train	Signal T172 SPAD Purley Station	18-Aug-06	Signal Passed at Danger SPAD
Class 66 locomotive freight train	East Didsbury	27-Aug-06	Locomotive runaway
Class 66 locomotive freight train	Washwood Heath	09-Sep-06	Derailment
Class 455 electric multiple units	London Waterloo	11-Sep-06	Derailment
Class 455 electric multiple units	Derailment at Epsom	12-Sep-06	Derailment
Class 221diesel multiple unit Super Voyager train	Copmanthorpe	25-Sep-06	Collision between Train and Car
Two self-propelled track maintenance machines	Collision at Badminton	31-Oct-06	Collision between two track maintenance machines
Passenger train	M20 over line bridge, Aylesford	05-Feb-07	Collision between a train and a road vehicle
Class 377 electric multiple unit	Tinsley Green Junction	17-Mar-07	Near miss involving track worker
Diesel locomotive + test vehicle	Cromore, Northern Ireland	14-Apr-07	Derailment
Class 222 Meridian unit passenger train	Desborough	10-Jun-07	Passenger door open on a moving train

[10] This accident occurred on privately owned railway infrastructure that exists solely for use by the infrastructure owner for its own freight operations.

Section 2			
Light Rail	**Location**	**Date**	**Accident / Incident**
Tram	Long Millgate, Manchester	22-Mar-06	Derailment
Tram	Phipps Bridge on Croydon Tramlink	25-May-06	Derailment
Tram	Starr Gate, Blackpool	30-May-06	Derailment
Tram	New Swan Lane Level Crossing	08-Jun-06	Collision between tram and road vehicle
Tram	Soho Benson Road, Midland Metro	19-Dec-06	Tram Collision
Tram	Blackpool	24-Jan-07	Fire on prototype tram
Tram	Derailment at Birmingham Snow Hill, Midland Metro	29-Jan-07	Derailment
Tram	Seaton Tramway	18-Mar-07	Derailment

Section 3			
Metro	**Location**	**Date**	**Accident / Incident**
District Line train	High Street Kensington	29-Apr-06	Unauthorized train movement
Manually propelled track trolley	Notting Hill Gate	24-May-06	Runaway permanent way trolley
1995 Stock Tube Train	Near Miss incident Camden Town	10-Jun-07	Underground Train directed to incorrect branch of line

Section 4			
Heritage	**Location**	**Date**	**Accident / Incident**
Steam Locomotive	Grosmont on the North Yorkshire Moors Railway	16-Apr-06	The blowback of a locomotive fire.
Diesel locomotive and 7 coaches.	Ravenglass & Eskdale Railway	29-May-06	Passenger Train Derailments
Locomotive and Carriages	Bronwydd Arms Station, Gwili Railway	19-Jul-06	Train Guard crushed between two carriages.
Passenger Train	Ropley (Mid Hants Railway)	25-Jul-06	Derailment
Class 33/1 diesel locomotive (Engineer Train)	Swanage Station	16-Nov-06	Collision of locomotive with carriages
Diesel locomotive +4 Carriages	Leighton Buzzard	25-Mar-07	Collision on level crossing with car
Steam locomotive	Collision at Pickering Station	05-May-07	Locomotive collision with Carriages
Steam locomotive, and 7 carriages	Fisherground on Ravenglass & Eskdale	12-May-07	Derailment
Locomotive, + 3 carriages	Leighton Buzzard (Cavalry Horse)	25-Aug-07	Train struck a tractor. Minor injury

Section 5			
Channel Tunnel	**Location**	**Date**	**Accident / Incident**
HGV Shuttle Mission	Fire on HGV shuttle in the Channel Tunnel	21-Aug-06	Fire on Heavy Goods Vehicle

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ANNEX D

Summary of Ipsos MORI's Findings

Awareness and understanding of the RAIB

At the time of the survey, the RAIB had been in operation for just two years and, in that time, had established itself as the key investigatory authority in the rail industry. The overall view is that establishing the RAIB was a positive move and that it is making a real difference to the raising of rail safety standards because the organisation is thorough, independent, and has a no-blame approach.

The RAIB is well known, widely understood and well regarded and stakeholder understanding of the role of the RAIB is generally accurate. It is seen to be independent, does not apportion blame and is focused on getting to the cause of the incident in order to recommend any necessary safety measures to improve rail safety in the future. This is the view of the majority of both middle managers where these factors were measured, and also anecdotally amongst senior stakeholders. There were however, a few middle managers (6%) who are yet to understand that the RAIB is impartial and does not seek to point the finger of blame.

There are also a minority of middle managers who think that the recommendations made by the RAIB are mandatory (19%) and that they have the power to prosecute (7%), whereas the RAIB's powers are not mandatory and they do not have powers to prosecute.

Whilst there was broadly a clear understanding across the industry at senior level, just over half (54%) of middle managers say there is confusion between the RAIB's roles and responsibilities compared with other similar organisations, in particular between the RAIB and ORR.

Contact with the RAIB

General contact with the RAIB is considered sufficient by the majority of middle managers (72%). Some industry members, at both senior and middle management, felt there would be benefit if the RAIB had occasional but regular contact with the industry to remind them of the precise role of the RAIB.

Senior stakeholders tend to be very familiar with the key players of many of the organisations in the rail industry so it is not surprising that they know the Chief Inspector of the RAIB well. Indeed, the RAIB consulted widely during the setting up of the organisation, which senior stakeholders recall very well. Moreover they appear pleased to have been consulted at that early stage and they praise the RAIB staff for their commitment, dedication, professionalism and focus on their objectives.

Most know that if they want to read reports they can go to the RAIB website to find them.

Branch performance

The RAIB is regarded in the main as extremely professional. The organisation is respected, considered approachable and experienced and open to sharing information.

Investigation Performance Evaluation

Around a third of stakeholders don't know how the RAIB assesses which incidents to investigate, but some of those are amongst the 68% who say that, now the RAIB are established, they are good at determining which incidents need their attention. Only 11% say the RAIB is fairly poor at this, the rest (21%) don't have a view.

Ninety percent say the Branch communicates effectively, and 83% say the Branch liaises well during an investigation. This is underpinned by senior stakeholders saying RAIB Inspectors are good at sharing information and being open and transparent.

Stakeholders at both levels are highly complimentary about the quality of final reports, with the vast majority agreeing that the reports are thorough, easy to read with succinct summaries that tell you what you need to know. Some agreement ratings reach 100% amongst Network Rail / LUL stakeholder audiences. Another indication that stakeholders are happy with the quality of reports is that most (90%) agree the content of the reports is sufficient.

Stakeholders accept that RAIB seems to publish reports quicker than other safety organisations in the past, but would still like to see RAIB reports published earlier. In saying this, however, they may be overlooking the time required for comments, the mandatory consultation period and subsequent consideration that has to be built in. This can add several weeks to the publication process.

RAIB Recommendations

Generally, most senior stakeholders say that fourteen days is long enough for them to be given to comment on recommendations. Two thirds of middle management stakeholders say they were satisfied with the amount of consultation they had.

Overall, the recommendations given in reports are believed to be worth considering by 86% of respondents and most people say they are practical (72%), achievable (66%) and easy to understand (78%). Only 3% say that there were sometimes too many or questionable recommendations.

Almost a fifth of middle managers think the recommendations are mandatory, as opposed to something the RAIB suggests that they should consider.

Prioritising recommendations is raised by senior stakeholders as something that the RAIB does not do, indicating there is some confusion about who is responsible for prioritising what changes are deemed necessary to improve safety, or indicating that stakeholders would like more guidance on how they could prioritise recommendations. Such prioritisation is beyond the remit of the RAIB, as each organisation is responsible for establishing their own priority and timescale taking into account the health and safety responsibilities, safety risk profile, and safety priorities within their organisation.

5 Annexes

ANNEX E

Summary of Schedules and notification requirements for accident and incidents on UK railways (Annexes to the Regulations)

Schedule 1 – Notify immediately by telephone		*Schedule 2 – Notify in 3 working days in writing*		*Schedule 3 – Notify in bulk monthly in writing*
1 (1) Deaths to passengers, members of the public or staff, caused in accidents or incidents involving moving trains.	**Except:** Deaths as a result of suicide, trespass, assault, natural causes, any deaths as a result of an accident not involving moving trains.	2 (1) Collisions with objects other than animals or items placed by vandals on railway or tram tracks which would not otherwise have required reporting under any of the headings in Schedule 1.		**3 (1) Failures of equipment at level crossings which affect the level of railway safety at that crossing, that are not notified under Schedule 1 (9).**
1 (1) Serious injuries to passengers, members of the public, or staff, caused in accidents or incidents involving moving trains.	**Except:** Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	2 (2) Serious injuries to one person on trains, trams, stations or other railway property if the event leading to injury was connected with the operation of trains.	**Except:** Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	**3 (2) Broken rails or rails where pieces have broken off and buckled rails where the route has to be closed or a speed restriction put in place.** **(NB: Precautionary weather related speed restrictions need not be notified)**
1 (2) Level crossing accidents involving death or serious injury to a person except suicide and trespass as above.		2 (2) Incidents where road vehicles foul running lines or damage track.		**3 (3) Failures of structures on the railways such as cuttings, bridges, embankments and stations where under slightly different conditions there may have been a death, two or more serious injuries or 2 million euros worth of damage to rolling stock, infrastructure or the environment.**
1 (3) (between rolling stock), 1 (5) (buffer stops) Collisions between trains or trams on running lines or with buffer stops or other automatic stop devices which cause damage to the vehicles involved.		2 (4) Unintended divisions of any trains or trams while in service or being prepared for service.		**3 (4) Signal failures which reduce the level of railway safety by affecting the ability of the system to detect or protect trains that are not notified under Schedule 1 (9).**
1 (4) Derailments on lines open to traffic or which block running lines open to traffic.		2 (5) Failures of axles, wheels or tyres.		**3 (5) Signals passed at danger unless the incident is notified under Schedule 1 (9).**
1 (6) Release of, or fires involving dangerous goods (including radioactive material) requiring an area to be evacuated.		2 (5) Train fires, severe electrical arcing or fusing.		**3 (6) Collisions between trams and road vehicles which are not notified under Schedule 1(1).**
1 (7) Accidents or incidents leading to the closure of a route for more than 6 hours (but not including weather related matters).		2 (6) Failures of ropes on cable hauled railways whose total length is greater than 1 km.		
1 (8) Accidents causing an excess of 2 million euros worth of damage to trains, infrastructure or the environment. This includes rolling stock which is written off, major track or structure damage or significant pollution incidents.				
1 (9) Accidents or incidents which could have lead to deaths, serious injuries or 2 million euros worth of damage to trains, infrastructure or the environment but did not do so.				

ANNEX E - Appendix 1

Summary of Schedules and notification requirements for accidents and incidents on the Channel Tunnel

Schedule 4 – Notify immediately by telephone		*Schedule 5 – Notify in 3 working days in writing*
4 (1) An accident resulting in death or serious injury to a person.	**Except:** Deaths or serious injury as a result of suicide, trespass, assault, natural causes. Any deaths or serious injuries as a result of an accident not involving moving trains.	5(1) A fire, arcing or fusing which adversely affects the functioning of signalling, catenary or rolling stock control equipment
4(2) A derailment of rolling stock which causes damage to or blocks a running line.		5(2) A fire that results in the suspension of railway services or closure of a part or railway property affecting the track, for a period of more than one hour.
4(3) A collision that occurs on any line other than a siding, between rolling stock and: (a) other rolling stock; (b) an object capable of causing damage to or derailment of the rolling stock; or (c) a buffer stop.		5(3) Any unintended division of a train, or breakage of coupling.
4(4) An accident that causes extensive damage to rolling stock, the infrastructure or the environment.		5(4) The failure of rolling stock on the track caused by: (a) the failure or seizing of an axle; (b) the failure of a wheel or tyre, including a tyre loose on its wheel; (c) the failure of brakes on a train; or (d) a fire or severe electrical arching or fusing on rolling stock, whether or not extinguished by a fire fighting service.
4(5) A collision on a level crossing involving a vehicle or a pedestrian and rolling stock, whether or not a person suffers death or injury.		5(5) A broken rail, major failure or track equipment (weld, fastenings etc) or track deformation.
4(6) An accident involving the release or combustion of dangerous goods that necessitates the evacuation of a tunnel or part of the terminal.		5(6) Any significant safety related breakdown or any serious destruction or collapse of equipment, installations or structures.
4(7) Fire necessitating evacuation of passengers from one part of a train to another part of the same train or intervention of the fire brigade.		5(7) Any failure in the signalling system, or any other safety system, which endangers or potentially endangers the safe operation of the railway.
4(8) An accident or incident leading to the evacuation of passengers from a train.		5(8) Submersion of track that necessitates its closure.
4(9) Unauthorised passing of a closed marker or signal.		5(9) Unscheduled stopping of a train in a tunnel for more than 30 minutes.
4(10) Runaway train on a line.		5(10) Damage to track caused by rolling stock or a dragging object.
4(11) An accident or incident which, under slightly different conditions might have led to serious injury or extensive damage to rolling stock, the infrastructure or the environment.		5(11) Spillage of fuel from a road vehicle being carried on a shuttle train.
		5(12) A breach of the requirements for the transport of dangerous goods contained or referred to in the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004(a)
		5(13) Any incident during which installations, equipment or rolling stock come into unintended contact with live overhead power lines with a voltage in excess of 200 volts.

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ANNEX F

Statistics

Summary of investigations opened in 2007 by type

Type of incident	Total
Passenger train derailment (all trains)	8
Freight train derailment	4
Collision with other train	4
Collision with other object	2
Train door incident	2
Level crossing incidents (fatalities)	1
Level crossing incidents (injuries)	2
Level crossing incidents (near miss)	1
Staff hit by train (fatalities)	2
Staff hit by train (injury or near miss)	3
Run away incidents	3
Unsafe Loads	0
Train defects	0
Unauthorised movement of train/ vehicle	3
Possession issues	0
Signal passed at danger by a significant distance (SPAD)	1
Electrocution	0
Fire on rolling stock	1
Total	**37**

Industry Sector Name	Total
Mainline passenger train operating company involved	3
Mainline freight train operating company involved	7
Tramways	4
Network Rail/Contractors involved	11
Heritage lines	6
LUL	4
Euro Tunnel [11]	0
Northern Ireland Railway	2
Total	**37**

[11] The regulations in respect of accidents and incidents occurring on the Channel Tunnel did not come into effect until 31 January 2006

ANNEX G

Glossary of abbreviations and acronyms

COSS	Controller of Site Safety
DfT	Department for Transport
EWS	English Welsh & Scottish Railways, a freight operating company
FOC	Freight Operating Company
LUL	London Underground Ltd
ORR	Office of Rail Regulation (Her Majesty's Railway Inspectorate)
MoU	Memorandum of Understanding
PICOP	Person in Charge of the Possession
SPAD	Signal Passed At Danger
TOC	Train Operating Company
TPWS	Train Protection and Warning System

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ANNEX H

Glossary of terms

All definitions marked with an asterisk, thus (*), have been taken from Ellis' British Railway Engineering Encyclopaedia © Iain Ellis. www.iainellis.com

Exchange sidings	Exchange sidings are locations where wagons bound for a private terminal or factory are placed and collected/returned by an industrial locomotive.
Facing points	Points where two routes diverge in the direction of travel.
Fouling point	The position on the track beyond which a tram will be certain to be hit by another tram on a conflicting track or route.
Ground Frame	A small group of signal and points levers located close to some isolated and infrequently used facility such as a trailing crossover. These levers are locked by the controlling signal box, and only *released* when required.*
Hot wheel detector	A track-mounted sensor which detects heat from skidding wheels or dragging brakes.
Infrastructure Manager	Any person who is responsible for establishing and maintaining infrastructure or a part thereof, which may also include the management of infrastructure control and safety systems, but does not include a maintainer.
Miniature stop lights	Miniature lights, most often Red (R) and Green (G), used as the warning at certain types of Automatic Level Crossing.*
Multiple Unit Train	A train consisting of one or more vehicles (semi permanently coupled together) with a driving cab at both ends. Some or all the vehicles may be equipped with powered axles.
On Track Plant	Engineering Plant with Rail Wheels, including On Track Machines (OTM) and Road Rail Vehicles.
Possession	A period of time during which one or more tracks are blocked to trains to permit work to be safely carried out on or near the line.*
Rimini	(rimm-inn-ee) Risk Minimisation, a standardised process for identifying and recording the safest practical Protection system for a particular activity undertaken On or Near the Line. *
Release	For a *ground frame* to be operated the signaller in the local signal box has to 'release' the frame, usually by operating a switch on the signalling control panel. Until the 'release' is given, the levers in the frame remain locked.

Sentinel	Operated by the National Competency Control Agency (NCCA), Sentinel is the brandname for the competency control system based on photographic identity cards, covering medical fitness and AOD:HS, AOD:LXA, AOD:PO, Authorised Person (AP), Controller of Site Safety (COSS), Engineering Supervisor (ES), Handsignaller (HS), Individual Working Alone (IWA), Lookout (LKT, LO), Nominated Person (NP), Personal Track Safety (PTS), Person In Charge of Possession (PICOP), Protection Controller (PC), Points Operator (PO), Rail Incident Officer (RIO), Senior Person In Charge of Possession (SPICOP), Signaller, Track Welder (TW) competencies. The Sentinel branding is now being phased out.*
Tie-bar	A temporary piece of equipment that can be fitted across the bottom of two rails to prevent gauge widening occurring that is no part of the design.
Track circuit	An electrical train detection system, based on the principle of proving the absence of a train. In its basic form, a source of electrical current is connected between the running rails at one end of the section to be detected. At the other end a relay coil (or equivalent) is connected between the rails. When there is no rail vehicle present, the current source energises the relay coil and the section is proved clear. When a rail vehicle enters the section, the action of wheels and axles is to short the relay out, causing it drop away and create an open circuit.*
User worked crossing	A level crossing where the barriers or gates are operated by the user. There is generally no indication of the approach of trains, but a telephone will be provided to contact the Signaller.*
Weekly Operating Notice	A document published on a Region basis, providing information about engineering work, speed restrictions, alterations to the network and other relevant information to train drivers.

This report is published by the Rail Accident Investigation Branch,
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Any enquiries about this publication should be sent to:

RAIB
The Wharf
Stores Road
Derby UK
DE21 4BA

Telephone: 01332 253300
Fax: 01332 253301
Email: enquiries@raib.gov.uk
Website: www.raib.gov.uk