

ANNUAL REPORT ON RAILWAY SAFETY

2005



OFFICE OF RAIL REGULATION



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# Foreword

## **Linda Williams, Chief Inspector of Railways, HM Railway Inspectorate (HMRI), Office of Rail Regulation (ORR)**

This is my first annual report on Railway Safety. I took on the role of Chief Inspector from my predecessor, Dr Allan Sefton, in December 2005. In his last report Allan anticipated that HMRI would transfer from the Health and Safety Executive (HSE) to ORR during 2005; in fact the transfer did not take place until April 2006. So, while it is as ORR's Chief Inspector that I write, I am reporting on performance when HMRI was under the governance of HSC/E. This is also the first time that the report covers a complete calendar year, as we have now aligned our statistical reporting arrangements with the rest of Europe.

### **Industry performance**

I am pleased to report there were no major train incidents involving multiple injuries and fatalities. Sadly however, there were six worker fatalities compared with ten in 2004 and ten passengers died compared with 13 in 2004. Level crossings continue to have the greatest potential for catastrophic risk on Britain's railways. Two teenage girls (aged 13 and 14) were struck and tragically killed when using a pedestrian level crossing equipped with a miniature warning light at Elsenham station; and the driver of a miniature train was killed after colliding with a motorcar at an open level crossing on the Romney, Hythe and Dymchurch Railway. We should also not forget those who died or were injured in the bombings in London on 7 July. Although not directly involved, HMRI provided advice and assistance to London Underground.

While the number of incidents due to vandalism continues to fall, vandalism still accounts for almost half of all reportable incidents. The potential for serious consequences arising from obstructions on the track, arson and missiles thrown at trains remains a cause for concern.

### **Re-organisation of HMRI**

HMRI was reorganised in 2005, with major changes to our organisational structure and ways of working. This was needed to prepare us to deal with new legislation, including the change from safety cases to safety certificates and authorisations, and the gradual move away from formal HMRI approvals of new and substantial changes to the railway infrastructure and rolling stock.

In October 2005 the Rail Accident Investigation Branch (RAIB) became responsible for carrying out independent investigations into the most serious incidents on Britain's railways. HMRI remains responsible for investigating breaches of health and safety legislation and for following-up the industry's implementation of RAIB recommendations. A 'Memorandum of Understanding' (MOU) is in place and I am pleased to report that HMRI and RAIB have built good relationships as we carry out our different but closely related work.

## Focusing on risk

The mainline continues to report progress on managing down the level of risk in four of the precursor groups making up the 'Precursor Indicator Model', however there has been an increase in the risk associated with level crossing misuse and irregular working. The model demonstrates that incidents at level crossings, irregular working and infrastructure failures still hold the greatest potential for catastrophic risk on Britain's railways.

Research has been commissioned to better understand and seek solutions to risks at level crossings. Network Rail has continued its work to reduce level crossing risk, including eliminating some crossings and upgrading others. I am pleased to note that Network Rail has embarked on a £3 million campaign aimed at influencing behaviour of level crossing users, the single largest cause of incidents at level crossings.

Also noteworthy is Network Rail's work on engineering possessions, which focuses on effective possession management. Understanding human behaviour, including management performance, will be key and HMRI has developed a number of toolkits for use by our inspectors to examine fatigue and organisational culture.

I am concerned about the recent rise in 'irregular working' incidents, a railway term covering such actions as non-compliance with the rules and 'corner cutting'. I know that important work is being undertaken by the Railway Safety and Standards Board (RSSB) and Network Rail to better understand this catastrophic accident precursor group, and how we can better monitor and manage such incidents.

In 2005, HMRI began a new programme of inspections looking at how London Underground Limited (LUL) and Public Private Partnership (PPP) infrastructure companies (Infracos) addressed the risks posed by platform/train interface, track maintenance, control of contractors and emergency planning. HMRI also carried out educational and advisory work, in particular with railway trades unions.

Our newly formed Rail Companies Team (RCT) took on responsibility for co-ordinating our proactive work with mainline train and freight companies (TOCs and FOCs). RCT co-ordinated work on inspection topics including human factor issues, rolling stock maintenance and shunting, and also consulted widely on the content of our *National Train Freight Delivery Plan 2006-07*. TOCs introduced a programme aimed at improving driver-training techniques.

In focusing on the safety element, it is important not to forget the need to ensure that workers' health is not compromised and that the employer continues to protect the health and welfare of its workforce. ORR has an ongoing commitment to monitor this undertaking.

## Enforcement

The number of enforcement notices issued by the inspectorate has fallen slightly (18) compared with the previous year (21). The number of prosecutions heard fell from 17 to five. Our aim is firm but fair enforcement of health and safety law, and it is heartening to note that informal interventions can be effective before more formal enforcement becomes necessary.

## Looking Ahead

In 2005 HMRI had a very busy year preparing for changes in legislation, the start of operations by RAIB, and the transfer of railway health and safety responsibilities to ORR while continuing to carry out day-to-day statutory duties. The Railways and Other Guided Transport Systems (Safety) Regulations (ROGS) came into force on 10 April 2006, and will provide further challenges for both HMRI and the industry in 2006. As RAIB's recommendations begin to flow, we will continue to develop our links with them and good working practices in tracking the industry's progress.

The successful transfer of health and safety responsibilities to ORR took place in April 2006 when HMRI and Safety Policy Directorate merged with ORR. Work continues to integrate the activities of the safety and economic regulator as smoothly as possible. One of the ways we will do this is by joint project working with our new colleagues in ORR. One consequence of the transfer is likely to be a review of the future format and content of this report.

Finally, I would like to thank my staff for their positive outlook and hard work in a period of great change, and to commend the industry for the good work done in continuing to reduce the health and safety risks on Britain's railways





# The year in brief

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## January 2005

### **Metronet Rail BCV Limited fined £5,000**

On 19 January, Metronet Rail BCV Limited was fined £5,000 at the City of London Magistrates' Court after a contract cleaner sustained a serious leg injury on 11 February 2003 (<http://www.hse.gov.uk/press/2005/e05008.htm>).

### **Amey Rail Limited fined £4,000**

On 20 January, Amey Rail Limited was fined £4,000 at Camborne Magistrates' Court following an investigation into an incident which took place on 25 January 2004 at Hayle Station, Cornwall resulting in a machine controller contractor receiving serious injuries (<http://www.hse.gov.uk/press/2005/e05009.htm>).

## February 2005

### **New guide to railway approvals published**

On 28 February, HSE published a web-based revised guide on the Railway and Other Transport Systems (Approval of Works, Plant and Equipment) Regulations 1994 (ROTS) ([www.rail-reg.gov.uk/upload/pdf/rotsgn270106.pdf](http://www.rail-reg.gov.uk/upload/pdf/rotsgn270106.pdf)), which incorporates a new dispensation in the form of a General Notice (GN) under the regulations ([www.hse.gov.uk/press/2005/e05030.htm](http://www.hse.gov.uk/press/2005/e05030.htm)).

### **Granite boulder thrown at Truro – Falmouth train**

On 28 February, a granite boulder (estimated to weigh 30 – 35 kilograms) was thrown from a road bridge between Penmere and Penryn at a Truro – Falmouth Wessex train. It smashed through the train's windscreen and struck the driver, causing severe laceration to the train driver's eyes and legs. The driver was taken to hospital immediately. The 25 passengers on-board were safely evacuated from the train. BTP arrested a 14 year old boy in relation to the incident.

## March 2005

### **Proposals for new Railways and Other Guided Transport Systems (Safety) Regulations**

In March, the proposed ROGS regulations were submitted to the Health and Safety Commission (HSC). However, it was decided that the regulations would not be finalised until the Department for

Transport (DfT) had also consulted publicly on new regulations to implement European requirements on interoperability (<http://www.rail-reg.gov.uk/upload/pdf/285.pdf>).

## **April 2005**

### **Trackworker fatality**

On 5 April, a train struck and killed a trackworker, employed as a lookout, at Newbridge Junction, near Edinburgh. The train driver involved said that the lookout had acknowledged the second sounding of the horn, but was standing with his back to the train.

### **Railways Act, 2005**

On 7 April, the Railways Bill received Royal Assent. The Act ([http://www.dft.gov.uk/pns/displaypn.cgi?pn\\_id=2005\\_0046](http://www.dft.gov.uk/pns/displaypn.cgi?pn_id=2005_0046)) allows the Government to take charge of setting the strategy for the railway, and to streamline the structure of the rail industry at the national level.

### **Driver fatality (trackside)**

On 13 April, the driver of an EWS freight train was struck and killed by a passenger train at Edgeley Junction near Stockport. It is believed that the driver was changing ends of 1,000 feet long train at a signal.

## **May 2005**

### **Exemptions granted for heritage/charter 'slam-door' train operations**

In May, HSE granted exemptions to enable twelve heritage/charter train companies and others to continue operating Mark 1 slam-door rolling stock without central door locking (<http://www.hse.gov.uk/press/2005/e05063.htm>).

## **June 2005**

### **Railway industry benefits from new 'human factors' web pages**

On 21 June, HSC's Rail Industry Advisory Committee (RIAC) launched its Railway Human Factors pages (<http://www.rail-reg.gov.uk/server/show/ConWebDoc.7816>) which is aimed at empowering railway staff, particularly those on the front line, to become better able to manage human factors risks in their work (<http://www.hse.gov.uk/press/2005/c05015.htm>).

### **Gerrards Cross tunnel collapse**

On 30 June, a construction project caused a partial railway tunnel collapse at Gerrards Cross. The driver of a Stratford-upon-Avon to London Marylebone service initiated an emergency radio broadcast via signalling staff at Marylebone, thereby reducing the risks to a fast train that could have been affected by the collapse (<http://www.rail-reg.gov.uk/server/show/ConWebDoc.7825>).

### **Level crossing incident at Rawcliffe Bridge near Goole, East Yorkshire**

On 30 June, a Doncaster to Scarborough train collided with a car on a user-operated level crossing at Rawcliffe Bridge, near Goole, East Yorkshire. The driver of the car was killed and five train passengers were injured. The crossing equipment was investigated and found to have operated correctly.

## **July 2005**

### **Hatfield train derailment – dismissal of charges**

On 14 July, the Old Bailey judge dismissed manslaughter charges against five executives - three from Railtrack and two from Balfour Beatty - accused of the manslaughter of the four people who died in the Hatfield derailment. A corporate manslaughter charge against engineering firm Balfour Beatty was also dismissed by the judge. On 18 July 2005, Balfour Beatty pleaded guilty to a health and safety charge relating to the derailment.

### **Publication of HSE's railway safety annual report for 2004**

On 19 July, HSE published its railway safety annual report for 2004. Director of Rail Safety, Dr Allan Sefton, announced that the overall picture of safety performance on Britain's railways remained "one of steady and positive progress" (<http://www.rail-reg.gov.uk/upload/pdf/railsafety04.pdf>).

## **August 2005**

### **HSE keeping track of human factors on level crossings**

In August, HMRI published new research ([www.hse.gov.uk/research/rrhtm/rr359.htm](http://www.hse.gov.uk/research/rrhtm/rr359.htm)) highlighting conditions that may lead to people making errors at railway level crossings (<http://www.hse.gov.uk/press/2005/e05103.htm>).

### **Transfer of the Strategic Rail Authority's (SRA) functions to DfT's Rail Group**

By 22 August, the transfer of most of the SRA's functions to DfT's Rail Group was completed, as specified in the Railways Act 2005 ([http://www.dft.gov.uk/pns/displaypn.cgi?pn\\_id=2005\\_0046](http://www.dft.gov.uk/pns/displaypn.cgi?pn_id=2005_0046)).

## **September 2005**

### **Hatfield train derailment trial**

On 6 September, Network Rail (formerly Railtrack) was found guilty of health and safety offences relating to the Hatfield train derailment ([http://www.cps.gov.uk/news/pressreleases/archive/2005/144\\_05.html](http://www.cps.gov.uk/news/pressreleases/archive/2005/144_05.html)).

### **Proposed Railways and Other Guided Transport Systems (Safety) Regulations (ROGS)**

On 6 September, HSC decided to consult on the extension of safety verification to the mainline railway, as part of the Government's consultation on interoperability (<http://www.rail-reg.gov.uk/upload/pdf/285.pdf>).

## October 2005

### **Balfour Beatty and Network Rail fined over Hatfield train derailment**

On 7 October, having been previously found guilty of health and safety charges, Balfour Beatty was fined £10million and Network Rail (formerly Railtrack) was fined £3.5million; and they were ordered to pay £300,000 each in prosecution costs.

### **HSE prosecution decision on Potters Bar train derailment**

On 17 October, Allan Sefton, Director of Rail Safety, announced that a decision on whether to prosecute for health and safety offences in relation to the Potters Bar train derailment would be taken once the Coroner's Inquest was concluded (<http://www.hse.gov.uk/press/2005/e05132.htm>).

### **Launch of the Rail Accident Investigation Branch**

On 17 October, Alistair Darling, the Secretary of State for Transport, launched (RAIB), which has responsibility for carrying out independent investigations into railway incidents in Britain (<http://www.raib.gov.uk/home/index.cfm>).

### **Merseyrail derailment**

On 26 October, a Merseyrail train derailed at low speed between Liverpool Central and Liverpool Lime Street stations, in a single bore tunnel. No significant injuries resulted. RAIB investigated the derailment and HMRI conducted a separate investigation to examine the extent to which the parties involved had complied with health and safety law (<http://www.rail-reg.gov.uk/server/show/ConWebDoc.7824>).

## November 2005

### **HSE publishes final monthly Signals Passed at Danger (SPAD) report**

On 1 November, HSE published its final (for September 2005) monthly SPAD report before moving to a quarterly report. The change had the support of the DfT, the ORR and the Parliamentary Advisory Council for Transport Safety. The first quarterly SPAD report was published on 31 January 2006 (covering October, November and December 2005) (<http://www.hse.gov.uk/press/2005/e05145.htm>).

### **Railway Industry Advisory Committee (RIAC) public meeting**

On 2 November, HSC's RIAC hosted an open public meeting at HSC's London headquarters, debating crowding, trespass and vandalism on the mainline and underground railways (<http://www.hse.gov.uk/aboutus/hsc/iacs/riac/index.htm>).

### **Prosecution of Network Rail and Amey Rail**

On 4 November, HSE announced that it would prosecute Network Rail Infrastructure Ltd and Amey Rail Ltd in connection with the partial derailment of a high-speed train near Southall station, west London in November 2002 (<http://www.hse.gov.uk/press/2005/e05146.htm>).

### **Level crossing fatality at Swainsthorpe**

On 13 November, a Norwich – Diss train service collided with a road vehicle on Swainsthorpe automatic half barrier level crossing; the car driver was killed. The train did not derail and no injuries were reported by passengers or train crew, although the train driver was taken to hospital suffering from shock (<http://news.bbc.co.uk/1/hi/england/norfolk/4433424.stm>).

### **Suspected vandal arrested – West Midlands**

On 23 November, the British Transport Police (BTP) reported that an agency rail worker had been arrested in the West Midlands area in connection with the arson/vandalism attacks on railway infrastructure in and around the West Midlands during 2004 and 2005. The person was charged with twelve serious offences.

### **Rail public inquiries: work on recommendations heads for completion**

On 24 November, HSC published its tenth and final progress report on recommendations made following Public Inquiries into the Southall and Ladbroke Grove rail incidents and Joint Inquiry into 'Train Protection Systems'. Four of the original 295 recommendations remain to be completed (<http://www.hse.gov.uk/press/2005/c05031.htm>).

## **December 2005**

### **HSE's Director of HSE Rail Safety retires**

On 2 December, Dr Allan Sefton, Director of HSE Rail Safety, retired. On 5 December, Linda Williams replaced Dr Sefton, on secondment from ORR, until the merger of 'HSE Rail' and the ORR on 1 April 2006.

### **Two teenagers fatally injured at Elsenham level crossing**

On 3 December, two teenage girls were struck and fatally injured by a Cambridge-bound train while using the foot crossing at Elsenham station. Both RAIB and HMRI are investigating the incident (<http://news.bbc.co.uk/1/hi/england/essex/3472865.stm>).

### **Crown Prosecution Service (CPS) announcement on Ladbroke Grove**

On 6 December, the CPS announced that there was insufficient evidence to provide a realistic prospect of conviction of any individual for any offences in relation to the fatal train crash at Ladbroke Grove, London, on 5 October 1999. However, it is the intention of the CPS to prosecute Network Rail Infrastructure Ltd (formerly Railtrack PLC) for health and safety offences ([http://www.cps.gov.uk/news/pressreleases/archive/2005/166\\_05.html](http://www.cps.gov.uk/news/pressreleases/archive/2005/166_05.html)).

### **Potters Bar**

On 8 December 2005, Alistair Darling announced that he did not see grounds for calling a public inquiry into the derailment at Potters Bar on 10 May 2002, in which seven people died ([http://www.publications.parliament.uk/pa/cm200506/cmhansrd/cm051208/wmstext/51208m04.htm#51208m04.html\\_spm11](http://www.publications.parliament.uk/pa/cm200506/cmhansrd/cm051208/wmstext/51208m04.htm#51208m04.html_spm11)).



# Incident investigation

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## Key facts

- RAIB took over responsibility for investigating the cause of the most serious incidents on Britain's railways, with effect from 17 October 2005;
- In 2005, there were seven fatalities in incidents involving road vehicles of all descriptions at level crossings;
- Two derailments occurred when the trains struck debris on the track caused by landslips;
- Six railway employees died in incidents on the railways; and
- Of the 295 recommendations arising from the Public Inquiries into the Southall and Ladbroke Grove rail crashes, and the subsequent joint inquiry into train protection systems, HSC's final progress report published in November 2005 showed that only four remained to be closed out.

## Summary

This year saw a significant change in the responsibility for the investigation of train incidents. From 17 October 2005, RAIB took over responsibility for investigating the most serious incidents on Britain's railways. RAIB is Britain's independent railway accident investigation organisation. It investigates railway incidents to improve safety, not to establish blame. HMRI continues to have responsibility for investigating incidents as part of its duties to enforce Health and Safety Law.

RAIB is concerned with the investigation of incidents on:

- the national railway networks in Great Britain and Northern Ireland;
- the Channel Tunnel;
- the London and Glasgow underground systems and other metro systems;
- tramways;
- heritage railways; and
- cable-hauled systems of 1km or longer.

The purpose of a RAIB investigation is to improve the safety of railways, and to prevent further accidents from occurring. RAIB achieves this by identifying the causes of accidents and contributory factors.

RAIB's investigations are entirely independent and are focused solely on safety improvement. RAIB does not apportion blame or liability nor enforce law or carry out prosecutions.

## Incident investigations

Presented here are summaries of some of the incident investigations undertaken by HMRI inspectors in 2005. Further details may be found under the *Train incidents* and *Level crossings* sections of this report. Information on incidents involving railway employees is at *Health and safety of rail employees*.

A car driver was killed when the vehicle was struck by a train at Creykes level crossing in South Yorkshire. A report was prepared by HMRI for the Coroner, and the Inquest returned a verdict of accidental death.

The driver of a miniature passenger train was killed in a derailment following a collision with a car at a level crossing on the Romney, Hythe and Dymchurch Railway. The Inquest recorded a verdict of accidental death.

A 14 year-old cyclist collided with a train and was killed at Coleshill footpath crossing in Warwickshire. A report was prepared for the Coroner and the Inquest returned a verdict of accidental death.

A cyclist was struck by a train and killed at a level crossing at Newstead, Nottinghamshire. The Inquest returned a verdict of accidental death.

A car driver was killed when the vehicle was struck by a train at Rillington level crossing in North Yorkshire. HMRI assisted the Coroner's Inquest.

A tractor driver was killed when the tractor was struck by a train at Black Horse Drove user worked crossing in Norfolk. RAIB are investigating this incident.

A car driver died when the vehicle was struck by a train at Swainsthorpe level crossing in Norfolk. In March 2006 RAIB published a report on the findings of its investigation.

A passenger train derailed after striking material caused by a landslip between Culloden and Moy. The 74 passengers were evacuated from the train. Six passengers and two on-board staff received injuries and were air-lifted to hospital. RAIB lead the investigation into the cause and plans to publish a report.

A passenger train derailed after striking material on the track caused by a landslip at Oubeck. There were no injuries and the train was successfully evacuated. RAIB lead the investigation into cause and plans to publish a report.

A passenger train derailed on an underground single-track line shortly after leaving Liverpool Lime Street station. There were no casualties and passengers and crew were evacuated. RAIB lead the investigation into the cause and plans to publish a report.



## Public Inquiry report recommendations

The final HSC progress report on the 295 recommendations arising from the Public Inquiries into the Southall and Ladbroke Grove rail crashes, and the subsequent joint inquiry into train protection systems, was published on 24 November 2005. At that stage there were four remaining recommendations, although one of these one has subsequently been closed out, while the others are ongoing. Progress on the four recommendations is given below.

### Joint Inquiry Report- Recommendation 22

*Pilot schemes using ETCS or ETCS elements should be carried out.*

*Action on: Railtrack, TOCs, Rolling Stock Leasing Companies (ROSCOS).*

*Target for completion: not specified.*

*Progress.* The 3<sup>rd</sup> National European Rail Traffic Management System (ERTMS) programme (NEP) report was published on 23 June 2005. It takes stock of progress being made in a number of areas in the development of ERTMS. A pilot scheme led by Network Rail is due to enter full operational service in 2008. ORR will continue to monitor progress through the NEP where they attend meetings as an observer pending the start of the operational trial.

### Joint Inquiry Report- Recommendation 25

*The selective fitment of GSM-R radio in advance of ETCS fitment to trains should be considered. For this purpose lines should be identified for the early fitment of ground and track equipment, to be followed by train-borne equipment (para 11.27).*

*Action on: Railtrack, TOCs, ROSCOs*

*Target for completion: January 2004*

### Ladbroke Grove Rail Inquiry Part 1 Report - Recommendation 51

*There should be a national system of direct communication between trains and signallers (para 12.29).*

*Action on: Railtrack, TOCs*

*Target for completion: June 2003*

*Progress on both recommendations:* The first use of GSM-R technology on the network will be in a trial in the Strathclyde area. The trial is expected to start in Autumn 2006 when the necessary standards and rules have been revised/issued. A series of industry led workshops have been held where industry representatives had the opportunity to pose questions to the Network Rail led National GSM-R Programme team. ORR will continue to monitor progress through the NEP where they attend meetings as an observer.

## Ladbroke Grove Rail Inquiry Part 2 Report - Recommendation 24

*Suppliers of products or services of a safety-critical kind for use on, or in regard to, the railways in Great Britain should be required to hold an accreditation as a condition of being able to engage in that activity. But the features of such a system require further study (para 7.73).*

*Action on: HSC*

*Target for completion: September 2004*

*Progress:* HSC decided not to regulate in this area following HSE's consultation on accreditation with industry stakeholders. Industry has since developed the Rail Industry Supplier Approval Scheme (RISAS). RSSB has taken the lead in developing a system comprising an accreditation body, approvals bodies, an IT application to facilitate the process, and a Board to oversee the scheme. RISAS came into being in May 2006. We therefore consider adequate action to have been taken to regard this recommendation as completed, and no further progress will be reported.

# Enforcement

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### Key fact

- There were 18 enforcement notices issued in 2005. This compares with 21 issued during the 2004 calendar year.

### Summary

During the year, HMRI inspectors issued 18 enforcement notices: 14 improvement notices (IN) and four prohibition notices (PN). This is the fourth consecutive year where there has been a reduction in the need to issue enforcement notices.

We cannot afford to be complacent, but it is heartening to note that most deficiencies were addressed before formal HMRI enforcement became necessary.

Notices are used by HMRI to underpin or stimulate action by duty holders, including infrastructure and station controllers, train operators and contractors.

An improvement notice is issued where prompt action is deemed necessary to rectify a specific health and/or safety issue.

A prohibition notice is used to stop work in order to prevent serious personal injury.

### Prohibition notices

A prohibition notice (PN) was served on English Welsh and Scottish Railway Ltd (EWS), preventing movement of a wagon until the cause of frequent derailment had been established and rectified.

A PN was served on Harry Needle (Railroad) Co Ltd, halting the dismantling of railway carriages until compliance with the Control of Asbestos at work Regulations (CAW) was secured.

A PN was served on HW Martin (Fencing Contractors) Ltd, stopping the erection of fencing adjacent to the railway, until adequate worker protection was provided.

A PN was served on Mid-Hants Railway plc, preventing operation of trains at above 25mph (40kph) at a railways diesel gala.

### Summary of enforcement notices issued 2001 – 2005

	Improvement (IN)	Prohibition (PN)	Total

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2001	79	15	94
2002	73	24	97
2003	59	23	82
2004	16	5	21
2005	14	4	18

# Prosecutions

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## Key fact

- In 2005, there were five prosecutions heard, resulting in fines totalling £11 019 000. This compares with 25 prosecutions heard in 2004, where fines totalled £3 652 600.

## Summary

The five prosecution cases resulted in fines totalling £11 019 000, with £614 051 being awarded in costs. Two of the prosecutions related to offences occurring during 2004, one in 2003, and two in 2000. The two offences in 2000 relate to the prosecution (by the CPS) of Balfour Beatty Rail Infrastructure Services Ltd and Network Rail Infrastructure Ltd (formerly Railtrack Ltd) regarding their roles in the Hatfield derailment.

The table below summarises prosecutions and fines over the last five years, with a further table detailing the prosecution cases heard between 1 January and 31 December 2005.

### Summary of prosecutions heard 2001-2005

Year	Number of prosecutions heard	Total fines	Total costs
2001	11	£457 000	£65 683
2002	9	£149 500	£35 722
2003	11	£113 500	£59 173
2004	25	£3 652 600	£395 955
2005	5	£11 019 000	£614 051

Prosecutions heard 1 January 2005 – 31 December 2005

HSE Case No.	Defendant	Date of offence	Location	Legislation breached	Date of hearing	Penalty imposed	Costs	Nature of incident
F220000088	Metronet Rail BCV Limited (pka Infracore BCV Limited)	11/02/2003	Oxford Circus Underground Station	HSW Act 1974 S3	19/01/2005	£5 000	£9 842	Non-fatal accident of IP working under contract for Metronet Rail BCV Limited (MRBCV) under the direct supervision of site person in charge employed by (MRBCV). While carrying out cleaning works to an escalator the IP fell through a gap in the escalator steps, trapping his right leg in the running escalator.
F220000079	Amey Rail Ltd	25/01/2004	Hayle Station	HSW Act 1974 S3	20/01/2005	£4 000	£4 209	Contract employee injured when thrown from rail mounted trolley not adapted for transport of personnel. Failure to control movement of road rail vehicles in engineering possession, and to conduct risk assessment for transfer of staff within possession.
F220000089	Network Rail Infrastructure Ltd	19/10/2004	Between Tulloch and Corrou, Scotland	HSW Act 1974 S2	11/08/2005	£10 000	£0	A GWS minitamper mounted track maintenance machine, operated by an employee of Network Rail Infrastructure Ltd, struck & injured a worker (also a Network Rail employee) carrying out maintenance work.
	Balfour Beatty Rail Infrastructure Services Ltd (formerly Balfour Beatty Rail Maintenance Ltd)	17/10/2000	Hatfield derailment	HSW Act 1974 S3/S33	7/10/2005	£7 500 000	£300 000	Four people died when GNER passenger train derailed at Hatfield. Company charged as (maintenance contractor) with breaches of the Health & Safety at Work Act 1974.
	Network Rail Infrastructure Ltd (formerly Railtrack Ltd)	17/10/2000	Hatfield derailment	HSW Act 1974 S3/S33	7/10/2005	£3 500 000	£300 000	Four people died when GNER passenger train derailed at Hatfield. Company charged (as infrastructure controller) with breaches of the Health & Safety at Work Act 1974.
TOTALS						£11 019 000	£614 051	

**Note:** Balfour Beatty's £10 million fine was reduced on Appeal to £7.5 million on 5 July 2006, leading to an overall reduction in total fines for 2005 from £13 510 000 to £11 019 000.

# Complaints

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This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key fact

- During 2005, HMRI responded to 575 complaints concerning conditions on the railway. This compares favourably with the 676 recorded for the previous twelve-month period ending 31 December 2004.

## Summary

During the 12-month period 1 January 2005 to 31 December 2005, 575 complaints about conditions on the railway were recorded and dealt with by HMRI inspectors or by Railway Inspectorate Contact Officers (RICOs).

The majority of complaints again came from members of the public, although a small number came from rail employees and from trade union or safety representatives.





# Train incidents

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## Key facts

- From 17 October 2005, RAIB took over responsibility for investigating the most serious train incidents on Britain's railways;
- There were 1057 train incidents in 2005, compared with 1336 in 2004;
- There were no train incident passenger fatalities in 2005;
- Train collisions in 2005 totalled 27, compared with 60 in 2004;
- Two derailments occurred after the trains struck debris on the track caused by landslips; and
- Damage to train windows totalled 299 in 2005 (368 in 2004).

## Summary

This year saw a significant change in the responsibility for the investigation of train incidents. From 17 October 2005, RAIB took over responsibility for investigating the most serious incidents on Britain's railway network.

There were 26 passenger (including trams) derailments in 2005, and 38 freight derailments. This compares with 26 and 36 respectively in 2004.

'Potentially higher risk train accidents' (PHRTAs) have now replaced the previous definition 'significant train accidents'. This change ensures alignment with RSSB, which already uses PHRTAs as the standard.

Poor maintenance of the infrastructure continues to be significant in the cause of derailments.

Although a low speed derailment with no injuries, the derailment at Leigham Junction (caused by the incorrect adjustment of contacts on a point motor) could have been more significant in other circumstances.

At Steeton a passenger train derailed after striking cattle on the line, fortunately there were no injuries to passengers or staff. It is a reminder that the industry and its neighbours must be vigilant of the condition of fences and walls where large animals are present, because they have the potential to derail trains, as happened at Polmont on 30 July 1984.

## Train incidents

A freight train became derailed near the Pontois Mill Bridge on the Newquay branch line, with 15 vehicles derailed and two overturned and hanging over the adjacent river. The derailment was caused by poor maintenance of timbers and fittings over the Prideaux viaduct;

An out-of-service Thameslink unit derailed near New Kew Junction. There were no injuries. The gauge spread was caused by corrosion of the steel reinforcing in the concrete sleepers, which in turn was caused by the fact that this area is subject to regular flooding. Network Rail is looking at drainage improvement in order to prevent a reoccurrence;

A passenger train derailed on a set of points at Leigham Junction. There were no injuries. The derailment was caused by the poor adjustment of motor parts exacerbated by abnormally hot weather. Network Rail has reviewed their maintenance procedures for type-63 point motors in order to reduce the likelihood of a similar failure;

A passenger train became derailed after striking cattle on the track at Steeton. There were no injuries to employees or passengers although several cattle were killed. Maintenance staff who were repairing a dry stone wall were unable to prevent the cattle gaining access to the line;

A passenger train derailed on an underground single-track line shortly after leaving Liverpool Lime Street station. There were no casualties. The emergency services attended and evacuated the passengers and crew through Liverpool Central station. RAIB leads the investigation into cause and plans to publish a report;

A passenger train derailed after striking material on the track caused by a landslip at Oubeck. There were no injuries and the train was successfully evacuated. RAIB is leading the investigation into cause and plans to publish a report; and

A passenger train derailed after striking material caused by a landslip between Culloden and Moy. There were 74 passengers on the train, of whom six received injuries, as did the driver and conductor. The injured were air-lifted to hospital. Further evacuation was carried out using an assisting train. RAIB is leading the investigation into cause and plan to publish a report.

### Potentially higher risk train accidents (PHRTA) – all railways 2000 – 2005

Category	2000	2001	2002	2003	2004	2005
Collisions between trains (excluding roll-backs, open door collisions and out-of-gauge collisions)	11	8	9	6	10	9
Derailements (excluding those at level crossings)	90	86	69	60	59	63
Buffer-stop collisions	14	9	10	0	7	5
Trains striking road vehicles at level crossings (including derailements at level crossings)	26	17	16	30	20	21

Category	2000	2001	2002	2003	2004	2005
Trains running into road vehicles not at level crossings and with no derailment (excluding those on a tramway)	3	6	4	1	5	6
Total	144	126	108	97	101	104

In 2005, PHRTAs replaced the previous significant train accidents (STAs) definition - PHRTAs are also used by RSSB.

### Potentially higher risk train accidents (PHRTA) – Network Rail controlled infrastructure (NRCI) 2000 – 2005

Category	2000	2001	2002	2003	2004	2005
Collisions between trains (excluding roll-backs, open door collisions and out-of-gauge collisions)	8	5	5	5	4	5
Derailments (excluding those at level crossings)	69	50	46	36	40	37
Buffer-stop collisions	9	7	8	0	7	2
Trains striking road vehicles at level crossings (including derailments at level crossings)	17	15	16	26	17	17
Trains running into road vehicles not at level crossings and with no derailment (excluding those on a tramway)	3	6	4	1	5	6
Total	106	83	79	68	73	67

In 2005, PHRTAs replaced the previous significant train accidents (STAs) definition - PHRTAs are also used by RSSB.

### Train incident fatalities 1975 – 2005

Year	Passengers	Railway Staff	Other Persons	Total	Major incidents 5 or more fatalities	Other incidents less than 5 fatalities
1975	47	7	3	57	43	14
1976	0	8	10	18	0	18
1977	0	3	9	12	0	12
1978	13	3	6	22	12	10
1979	8	8	4	20	7	13
1980	0	4	3	7	0	7
1981	4	1	2	7	0	7
1982	0	8	3	11	0	11
1983	2	1	7	10	0	10
1984	18	6	6	30	13	17

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Year	Passengers	Railway Staff	Other Persons	Total	Major incidents 5 or more fatalities	Other incidents less than 5 fatalities
1985	0	0	6	6	0	6
1986	8	5	14	27	9	18
1987	3	1	6	10	0	10
1988	34	2	4	40	35	5
1989	6	6	6	18	5	13
1990	0	1	3	4	0	4
1991	4	2	5	11	0	11
1992	0	1	7	8	0	8
1993	0	0	5	5	0	5
1994	3	4	5	12	5	7
1995	1	1	3	5	0	5
1996	1	1	3	5	0	5
1997	7	0	1	8	7	1
1998	0	0	4	4	0	4
1999	29	2	3	34	31	3
2000	4	0	3	7	0	7
2001	6	4	3	13	10	3
2002	6	1	4	11	7	4
2003	0	1	10	11	0	11
2004	5	2	5	12	7	5
2005	0	1	6	7	0	7
Total	209	84	159	452	191	261

# Incidents involving passengers, staff, and members of the public

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## Key facts

- In 2005 a total of 33 passengers, railway staff and other members of the public were fatally injured, compared with 35 in 2004;
- There were ten passenger fatalities from all causes in 2005, compared with 13 in 2004;
- There were no passenger fatalities resulting from train incidents in 2005;
- Six railway staff fatalities occurred in 2005, compared with ten in 2004; and
- There were 17 deaths of other members of the public, compared with twelve in 2004.

## Summary

During 2005, 33 people died in incidents on the railways, excluding trespassers and suicides.

## Casualties in all incidents 2003 - 2005

	2003					2004					2005				
	Fatal	Major injury	Over-3-day injury	Hospital treatment	Totals	Fatal	Major injury	Over-3-day injury	Hospital treatment	Totals	Fatal	Major injury	Over-3-day injury	Hospital treatment	Totals
<b>Total all incidents</b>	37	338	2010	2645	5030	35	402	1898	2696	5031	33	332	1947	2860	5172
Passenger	13	0	0	2550	2563	13	0	0	2627	2640	10	0	0	2800	2810
Railway staff	5	338	2010	0	2353	10	402	1898	0	2310	6	332	1947	0	2285
Other persons	19	0	0	95	114	12	0	0	69	81	17	0	0	60	77
<b>Train incidents</b>															
<b>Total</b>	11	0	12	72	95	12	5	21	85	123	7	0	20	31	58
Passenger	0	0	0	53	53	5	0	0	76	81	0	0	0	22	22
Railway staff	1	0	12	0	13	2	5	21	0	28	1	0	20	0	21
Other persons	10	0	0	19	29	5	0	0	9	14	6	0	0	9	15
<b>Movement incidents</b>															
<b>Total</b>	17	35	299	600	951	17	48	328	563	956	20	28	311	595	954
Passenger	8	0	0	584	592	3	0	0	547	550	5	0	0	580	585
Railway staff	1	35	299	0	335	7	48	328	0	383	5	28	311	0	344
Other persons	8	0	0	16	24	7	0	0	16	23	10	0	0	15	25
<b>Non-movement incidents</b>															
<b>Total</b>	9	303	1699	1973	3984	6	349	1549	2048	3952	6	304	1616	2234	4160
Passenger	5	0	0	1913	1918	5	0	0	2004	2009	5	0	0	2198	2203
Railway staff	3	303	1699	0	2005	1	349	1549	0	1899	0	304	1616	0	1920
Other persons	1	0	0	60	61	0	0	0	44	44	1	0	0	36	37

## Train incidents 2005 – analysis by primary cause

	Total	Collisions	Derailments	Running into obstructions	Fires in trains	Other accidents	Damage to train windows inc drivers windscreen
<b>Total</b>	<b>1057</b>	<b>27</b>	<b>64</b>	<b>480</b>	<b>187</b>	<b>0</b>	<b>299</b>
<b>Management &amp; supervisory failures total</b>	<b>57</b>	<b>1</b>	<b>7</b>	<b>48</b>	<b>1</b>	<b>0</b>	<b>0</b>
Management & supervisory failures total	57	1	7	48	1	0	0
<b>Staff error total</b>	<b>82</b>	<b>20</b>	<b>30</b>	<b>24</b>	<b>5</b>	<b>0</b>	<b>3</b>
<i>Train crews (including guards)</i>							
a) passing signals at danger	2	1	1	0	0	0	0
b) other irregularities or want of care							
i) drivers	25	13	8	2	2	0	0
ii) guards	0	0	0	0	0	0	0
iii) drivers and guards	6	2	3	0	1	0	0
<i>Signalmen:</i>							
a) irregular block working	1	0	1	0	0	0	0
b) other irregularities or want of care	3	0	1	2	0	0	0
<i>Other staff</i>							
a) in traffic departments	9	2	6	1	0	0	0
b) in other departments	22	1	4	17	0	0	0
Train crews and signalmen	4	1	3	0	0	0	0
Train crews and other staff	4	0	2	0	2	0	0
Signalmen and other staff	2	0	1	1	0	0	0
Faulty loading	4	0	0	1	0	0	3
<b>Technical defects total</b>	<b>123</b>	<b>3</b>	<b>20</b>	<b>22</b>	<b>72</b>	<b>0</b>	<b>6</b>
Locomotive and multiple units	54	1	1	2	48	0	2
Vehicles	22	0	4	4	14	0	0
Track	29	1	13	10	1	0	4
Signalling apparatus	2	1	0	1	0	0	0
Overhead line equipment	4	0	0	4	0	0	0
Other structures	0	0	0	0	0	0	0
Combined defects	2	0	2	0	0	0	0
Traction and braking shocks	10	0	0	1	9	0	0
<b>Other causes total</b>	<b>795</b>	<b>3</b>	<b>7</b>	<b>386</b>	<b>109</b>	<b>0</b>	<b>290</b>
Snow landslides floods etc	25	0	3	19	3	0	0
Animals on the line	82	0	0	66	2	0	14
<i>Irresponsibility of the public</i>							
a) irregular opening of doors	1	1	0	0	0	0	0
b) at level crossings	14	0	0	14	0	0	0
c) malicious	452	1	3	98	96	0	254
d) other	11	0	0	10	1	0	0
e) road vehicles on tramways	158	0	1	157	0	0	0
Miscellaneous and cause not determined	52	1	0	22	7	0	22

## Casualties in movement incidents 2005

	FATAL					HOSPITAL TREATMENT					All totals					
	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total						
<b>Passenger Total</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>301</b>	<b>211</b>	<b>45</b>	<b>23</b>	<b>580</b>	<b>585</b>					
Entering or alighting from trains	2	1	0	0	3	170	115	18	14	317	320					
Falling off platforms or being struck or run over by train	1	1	0	0	2	3	3	1	0	7	9					
Crossing the lines at stations	0	0	0	0	0	0	0	0	0	0	0					
Opening or closing of carriage doors	0	0	0	0	0	22	22	1	2	47	47					
Falling out of carriages during the running of trains	0	0	0	0	0	0	0	0	2	2	2					
Other incidents	0	0	0	0	0	106	71	25	5	207	207					
<b>Other Members of the Public Total</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>5</b>	<b>15</b>	<b>25</b>					
At level crossings	9	0	0	0	9	1	0	0	0	1	10					
On business at stations, on tramways etc	0	0	1	0	1	0	1	8	5	14	15					
Postal workers	0	0	0	0	0	0	0	0	0	0	0					
	FATAL					MAJOR INJURIES					OVER 3 DAY INJURIES					All totals
	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	
<b>Railway employee total</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>24</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>28</b>	<b>222</b>	<b>65</b>	<b>11</b>	<b>13</b>	<b>311</b>	<b>344</b>
<b>Shunting incidents</b>																
Getting on or off, or falling off, moving locomotive wagons	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	2
Coming into contact with vehicles or fixed lineside objects when riding on locomotives etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Staff on train involved in a collision sidings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Being caught between vehicles while coupling or uncoupling	0	0	0	0	0	0	0	0	1	1	3	0	0	0	3	4
Struck or caught between vehicles when walking on the line	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Miscellaneous	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
<b>Incidents during the running of trains</b>																
Getting on or off or falling from, locomotives, wagons etc	0	0	0	0	0	4	0	0	0	4	63	11	1	4	79	83
Coming into contact with fixed lineside objects when riding on trains etc	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Train staff while on board train	0	0	0	0	0	11	0	1	1	13	86	25	6	5	122	135
Miscellaneous	0	0	0	0	0	2	0	0	0	2	13	4	0	1	18	20
<b>Incidents to staff working on or about the track:</b>																
Struck by train etc when acting as lookout or handsignaller	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Struck by train etc when working on or about the track	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	2
Struck by train etc when authorised to walk on the track	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Struck by flying objects or out-of-gauge parts of a train	0	0	0	0	0	3	0	0	0	3	4	1	0	0	5	8
Miscellaneous	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	3
<b>Other movement incident</b>																
Struck by train etc when required to cross the line of duty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Struck by train etc when not required to walk on the track	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(inc failure to use an authorised route)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Through movement of vehicles at which workers were engaged	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Miscellaneous	0	0	0	0	0	0	0	0	0	0	49	24	4	2	79	79



## Casualties in non-movement incidents 2005

## Casualties in non-movement incidents 2005

	FATAL					HOSPITAL TREATMENT					All totals
	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	
<b>Passengers total</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1063</b>	<b>1022</b>	<b>26</b>	<b>87</b>	<b>2198</b>	<b>2203</b>
Ascending or descending steps and escalators at stations	1	2	0	0	3	463	765	11	56	1295	1298
Being struck by barrows, falling materials, falling over packages etc	0	0	0	0	0	40	6	1	4	51	51
Falling from platform onto line	1	0	0	0	1	48	8	4	1	61	62
Electric shock on electrified railways	0	0	0	0	0	1	0	0	0	1	1
Slips, trips and falls	1	0	0	0	1	475	203	9	24	711	712
Other incidents	0	0	0	0	0	36	40	1	2	79	79
<b>Other persons total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>36</b>	<b>37</b>
On business/miscellaneous	1	0	0	0	1	17	6	2	3	28	29
Pedestrians at level crossings	0	0	0	0	0	8	0	0	0	8	8
Postal workers	0	0	0	0	0	0	0	0	0	0	0

	FATAL					MAJOR INJURIES					OVER 3-DAY INJURIES					All totals
	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	
<b>Railway staff total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>265</b>	<b>24</b>	<b>3</b>	<b>12</b>	<b>304</b>	<b>1050</b>	<b>486</b>	<b>20</b>	<b>60</b>	<b>1616</b>	<b>1920</b>
Contact with or being trapped by moving machinery	0	0	0	0	0	5	0	0	0	5	9	4	0	3	16	21
Struck by moving, including flying or falling object, other than rails	0	0	0	0	0	39	4	0	1	44	98	61	0	7	166	210
Struck by moving vehicle (other than rail vehicle)	0	0	0	0	0	3	0	0	0	3	12	2	0	0	14	17
Struck against something fixed or stationary	0	0	0	0	0	6	0	0	0	6	37	17	0	2	56	62
Injured while handling, lifting or carrying other than rails	0	0	0	0	0	7	0	0	0	7	140	27	5	10	182	189
Fall through height of more than 2 metres	0	0	0	0	0	6	1	0	1	8	4	0	1	1	6	14
Fall through height of 2 metres or less	0	0	0	0	0	27	4	0	1	32	60	18	0	2	80	112
Fall from a stationary rail vehicle	0	0	0	0	0	4	0	0	0	4	3	2	0	0	5	9
Slip, trip or fall on the same level	0	0	0	0	0	84	6	1	3	94	283	84	4	10	381	475
Trapped by something collapsing or overturning	0	0	0	0	0	2	0	0	0	2	1	1	0	0	2	4
Burnt or scalded other than by chemical or electrical agents	0	0	0	0	0	2	0	0	0	2	6	1	1	2	10	12
Using power-driven hand tools	0	0	0	0	0	1	0	0	0	1	10	1	0	0	11	12
Using unpowered hand tools	0	0	0	0	0	5	0	0	0	5	27	7	1	1	36	41
Handling rails by manual or mechanical means	0	0	0	0	0	17	0	0	0	17	31	4	0	1	36	53
Electric shock or burns from plant or equipment	0	0	0	0	0	1	1	0	1	3	5	3	0	1	9	12
Electric shock or burns from live rail on electrified lines	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
Electric shock or burns from overhead electrification equipment	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Harmed by lack of oxygen (eg drowning/asphyxiation)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injured in an explosion	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Contact with or exposure to harmful substances	0	0	0	0	0	2	4	0	0	6	2	4	0	0	6	12
Assaulted while on duty	0	0	0	0	0	25	0	2	0	27	112	132	6	5	255	282
Miscellaneous	0	0	0	0	0	28	4	0	5	37	208	117	2	15	342	379



# Train protection strategy – TPWS and SPADs

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## Key facts

- Within the Railway Group, SPAD risk was reduced by 86% since the March 2001 benchmark;
- There were 339 SPADs, 18 fewer than in 2004;
- 119 SPADs were categorised as serious, 14 fewer than in 2004;
- No collisions, injuries or fatalities to staff or passengers were caused by SPADs in 2005;
- The 'Train Protection and Warning System' (TPWS) continued to deliver the safety benefits identified in the last Annual Report;
- Network Rail fitment of TPWS+ was completed; and
- 'Reset and continue' incidents greatly reduced.

## Summary

HMRI has been developing a 'Command, Control and Signalling Risk Profile Topic Strategy' that incorporates the train protection strategy produced as part of HMRI's 2004/05 Rail Delivery Programme. The strategy will guide HMRI's work for the period 2006 to 2009, identifying key objectives and workstreams.

The reduction in risk from SPADs and buffer stop collisions associated with initial TPWS fitment has continued. Reset and continue incidents, which were limiting the overall effectiveness of TPWS in cutting SPAD risk, have greatly reduced compared with 2004.

HMRI is considering the implications of the extended timescales for ERTMS for existing signalling and train protection systems.

HMRI has continued to monitor work on the Cambrian Line Early Deployment Site for ERTMS, due to commence operation in 2008.

In November 2005, the periodic SPAD report produced by HMRI changed from a monthly to a quarterly report, after agreement with Transport Ministers.

## TPWS

Network Rail has completed the planned installation of TPWS+ to enhance the protection afforded by standard TPWS, fitted in accordance with the Railway Safety Regulations. At the end of 2005 a small number of sites were still to be commissioned, with the work scheduled for early 2006. TPWS+ increases protection afforded to trains travelling at speeds up to 100mph.

HMRI and Safety Policy Directorate (SPD) continued to participate in discussions about future deployment of TPWS equipment, including installation at temporary speed restrictions and plain line signals.

The evidence that TPWS is proving to be effective in reducing the consequences of SPADs at fitted signals has continued to increase. The number of serious (Category A) SPADs at signals fitted with TPWS reduced further in 2005.

In the 2004 HMRI annual report, it was noted that reset and continue incidents were significantly reducing the overall effectiveness of TPWS in cutting SPAD risk. In these incidents, the driver fails to contact the signaller after a TPWS brake activation resets the system and continues the journey without contacting the signaller. Steps taken by the industry to understand and address the causes of reset and continue activity have successfully reduced the number of incidents. Measures have included improvements to driver training, amendments to the Rule Book procedures and technical adjustments to the system. Numbers of such incidents are now very low, with consequent beneficial impact on SPAD risk reduction.

The National ERTMS Programme Team (which had been led by the SRA) produced its third and final annual report in June 2005. The report recommended proposals that integrate installation of ERTMS with renewal/upgrade of existing signalling systems and rolling stock. The proposals extend the timescale for delivery of ERTMS beyond that recommended by the Joint Inquiry into Train Protection Systems, and also beyond the slower-than-anticipated technological development delay identified by HSC's advice to Ministers in 2003. ORR will be considering this issue in 2006.

HMRI is considering the impact of the extended implementation of ERTMS, as the TPWS system was originally conceived with a relatively short design life. This work will continue through 2006.

During 2005, HMRI received one application for exemption from the train protection requirements of the Railway Safety Regulations 1999. The application was from Network Rail and related to the requirement to fit TPWS at 'Permanent Speed Restrictions'. Assessment of the application has commenced and will include consultation with those affected in accordance with formal procedures.

## SPADs

A target to reduce SPAD risk by 80% by 2009 was set in March 2001, and so the Railway Group is well ahead of target with an 86% reduction by December 2005. The withdrawal in 2005 of Mark1 slam-door stock not fitted with central door locking contributed to the reduction of overall consequences of SPAD risk, as did the continued fitment of TPWS+. Further reduction largely reflects 'non-hardware' efforts made by the industry, most notably to raise the level of professional performance of drivers, signallers, engineering possession staff and their immediate managers. A new

system for the ranking of SPADs to take a more realistic account of risk factors was introduced in 2005 by RSSB and endorsed by HMRI – see HSE’s SPAD report of September 2005, and RSSB’s report ([www.rssb.co.uk/pdf/reports/category\\_A\\_SPAD\\_Report\\_Quarter\\_2\\_2005.pdf](http://www.rssb.co.uk/pdf/reports/category_A_SPAD_Report_Quarter_2_2005.pdf)).

The National SPAD Focus Group, sponsored by RSSB and attended by senior managers from the Railway Group as well as HMRI, monitors progress towards the 80% reduction in SPAD risk target, and is a forum for developing and disseminating industry-wide good practice. A significant contribution also continues to be made by local SPADRAM (SPAD Reduction and Mitigation) groups. HMRI maintains regular liaison with SPADRAM leaders, who are also on the National SPAD Focus Group.

The following incidents in 2005 illustrate some of the issues of particular concern to HMRI.

- Signal PF231 at Liss, Hampshire on 12 May 2005. This signal protects a level crossing and the train passed over the crossing when the barriers were raised. Network Rail and HMRI are examining signalbox procedures for the operation of this and similar level crossings, and looking at the possibility of installing TPWS in some cases;
- Signal P486 near Peterborough on 11 December 2005. The train had been brought to a stand at a previous signal, beyond which ‘Temporary Block Working’ was in force. The driver was instructed by a handsignaller to pass that signal at red, to ignore the next signal and to come to a stand at P486. The incident raised questions over the quality of safety critical communications, a subject that forms a major element in HMRI’s future inspection work; and
- Signal MN760 at Manchester Victoria on 19 December 2005. In this incident, the driver received a TPWS intervention but overrode it and continued past the signal towards a train that had been signalled to use the same line in the opposite direction. This signal is listed as a multiple SPAD signal, with two incidents in 2005. HMRI is following up questions relating to remedial work following the earlier incident, as well as the issue of TPWS use and reliability.



# Level crossings

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key Facts

- 27 train incidents at level crossings in 2005;
- Seven non-pedestrian fatalities at level crossings, comprising
  - four drivers of road vehicles
  - two cyclists
  - one train driver.
- Nine pedestrian fatalities at level crossings
- 7674 level crossings on the Network Rail national network; the fourth successive year there has been a reduction in the total number of level crossings on Network Rail Controlled Infrastructure (NRCI).

## Summary

During 2005 there were 27 train incidents at level crossings, compared with 29 in the preceding twelve months. Not included are incidents where trains were damaged after striking objects placed on the line at level crossings by vandals, nor incidents of trains striking animals on level crossings.

During 2005 a total of 16 people were killed in incidents at level crossings.

A train driver was killed as a result of a collision between a car and train at a level crossing. There were four occupants of road vehicles, and two cyclists struck and killed while using level crossings. These figures compare with one railway employee, three vehicle occupants and one cyclist killed during 2004, in addition to the five train passenger fatalities in the Ufton automatic half barrier derailment.

The nine pedestrian fatalities are more than in 2004, but comparable to previous years.


## General

The table below contains the number of crossings on NRCI, with a further table showing a breakdown by Network Rail Route. The number of crossings in some categories varies from those previously recorded. These variations can arise as a result of the closure of some footpath and private vehicular


## Annual report on railway safety 2005

crossings, the conversion from one type of crossing protection to another, or a change in the status of some crossings, for example from 'user worked vehicular crossing' to 'footpath crossing'.

### Level crossings on NRCI by type 1998/99 – 2005

		Protected								Unprotected					
		Manual			Automatic					Manual					
Year	Total	MG	MCB	MCB with ccTV	AHB	ABCL	AOCR	AOCL	UWC with MWL	UWC	UWC with 	OC	FP	SFB	
1998/99	8323	278	270	336	462	41	1	141	134	2555	1397	60	2650		
1999/00	8228	268	274	338	465	43	1	140	135	2507	1381	60	2616		
2000/01	8106	268	262	341	468	44	1	140	137	2425	1385	60	2575		
2001/02	8128	265	255	345	477	43	1	140	150	2377	1415	60	2600		
2002/03	8188	264	242	358	470	45	1	140	155	2290	1617	60	2546		
2003/04	7937	259	255	361	462	49	1	134	172	1979	1677	60	2528		
2004	7833	245	249	364	457	49	1	131	162	2003	1613	62	2497		
2005	7674	253	235	373	456	49	1	127	129	1551	1668	58	2593	181	

### Level Crossings on NRCI by route and by type as at 31 December 2005

		Protected								Unprotected					
		Manual			Automatic					Manual					
Route	Total	MG	MCB	MCB with CCTV	AHB	ABCL	AOCR	AOCL	UWC with MWL	UWC	UWC with 	OC	FP	SFB	
East Anglia	954	45	19	50	95	17	0	18	36	209	180	2	259	24	
Kent	318	9	10	13	21	2	0	3	3	83	23	11	140	0	
Sussex	226	2	7	33	25	0	0	0	0	33	24	0	93	9	



Route	Total	Protected								Unprotected				
		MG	MCB	MCB with CCTV	AHB	ABCL	AOCR	AOCL	UWC with MWL	UWC	UWC with	OC	FP	SFB
Wessex	315	3	8	41	31	0	0	4	6	31	40	0	149	2
Lon NE	2238	126	100	141	188	11	0	28	39	521	408	17	601	58
Lon NW	1083	26	38	47	23	2	0	9	17	282	200	6	393	40
Scotland	648	6	16	15	28	3	1	27	10	168	294	3	70	7
Western	1892	36	37	33	45	14	0	38	18	224	499	19	888	41
Total	7674	253	235	373	456	49	1	127	129	1551	1668	58	2593	181

## Notes:

ABCL automatic barrier crossings, locally monitored.

AHB automatic half barrier

AOCL automatic open crossing, locally monitored.

AOCR automatic open crossing, remotely monitored.

CCTV closed circuit television.

FP footpath crossing

MCB manually controlled barriers operated by a railway employee including those operated by train crew.

MG manual gates operated by a railway employee including those operated by train crew.

MWL miniature warning lights.

OC open crossing.

SFB station foot and barrow level crossing.

UWC user-worked crossing with either gates or lifting barriers not operated by a railway employee.

'Protected' is defined as having gates or barriers operated by railway employees, or as having road traffic signals or miniature red/green lights giving a positive warning of the approach of trains.

## Fatal incidents involving vehicular traffic at level crossings

During 2005, there were seven fatalities in incidents involving road vehicles of all descriptions at level crossings.

On 30 June 2005, at Creykes miniature warning light user worked crossing (UWC with MWL) in South Yorkshire, a car driver was killed when the vehicle was struck by a train. HMRI carried out an investigation which found that the crossing had been working correctly. A report was prepared for the Coroner and the Inquest returned a verdict of accidental death.

On 10 July 2005, a passenger train driver was killed in a derailment following a collision with a car at Battery Road automatic open crossing, locally monitored (AOCL) on the Romney, Hythe and Dymchurch Miniature Railway. HMRI has investigated the incident and provided assistance to the Coroner. The Inquest recorded a verdict of accidental death.

On 18 July 2005, at Coleshill footpath crossing (FP) in Warwickshire a 14 year-old cyclist collided with a train and was killed. A report was prepared for the Coroner and the Inquest returned a verdict of accidental death.

On 20 July 2005, a cyclist was struck by a train and received fatal injuries at Newstead, Tilford Road automatic half barrier crossing (AHB) in Nottinghamshire. The Inquest returned a verdict of accidental death.

On 17 September 2005, a car was struck by a train and the car driver received fatal injuries at Rillington AHB in North Yorkshire. HMRI assisted the Coroner's Inquest.

On 19 October 2005, a tractor driver was killed when the vehicle was struck by a train at Black Horse Drove UWC in Norfolk. RAIB is investigating this incident.

On 13 November 2005, a car was struck by a train and the car driver was killed at Swainsthorpe (AHB) in Norfolk. As a result of the collision the car caught fire and further damaged the train. This incident was investigated by RAIB and the report of that investigation was published in March 2006 ([http://www.raib.gov.uk/latest\\_news/060328\\_pn\\_swainsthorpelevelcrossing.cfm](http://www.raib.gov.uk/latest_news/060328_pn_swainsthorpelevelcrossing.cfm)).

## Ufton AHB level crossing derailment 6 November 2004

The Coroner's Inquest into the accident at Ufton AHB, in which seven people died, was postponed in October 2005. The Inquest will now take place after the conclusion of considerations of legal representations from the families of some of those who died. The representations relate to decisions over the provision of legal aid and judicial review of the case. HMRI is not involved in this part of the legal process, but will continue to provide assistance to the Coroner in relation to the circumstances of the incident and wider level crossing issues. A new date is yet to be set for the Inquest.

## Pedestrian fatalities at level crossings

On 3 December 2005, two 14 year-olds were struck and killed by a through train at Elsenham Station miniature warning light foot crossing as they crossed between the platforms to catch a waiting train. An HMRI investigation is ongoing, and assistance is being provided to the Coroner. RAIB is conducting an investigation into the generic issues around station foot crossings.

A further seven pedestrians were struck and killed at crossings in separate incidents during 2005, a significant increase on 2004, but in keeping with the trend over recent years.

## Network Rail strategy on level crossings

Network Rail introduced a new 'Level Crossing Policy and Strategy' in 2002/03, aimed at reducing crossing risk by 15% by the end of 2005/06 financial year. During 2005 the focus of this strategy included: a reduction in the number of level crossings; effective operation and maintenance; a programme of risk assessment to identify further reasonably practicable reduction measures; and ongoing communication with users and other stakeholders to promote the safe use of level crossings. Network Rail's overriding principle is to ensure that no new permanent crossings are introduced other than in exceptional circumstances, and that it pursues a programme of closure of existing crossings, where feasible, and improvements in crossing safety where reasonably practicable.

During 2006 Network Rail will move into phase two of its strategy to reduce level crossing risk, through targeted education, engineering, enabling and enforcement actions.

## HMRI policy on level crossings

Incidents at level crossings still hold the greatest potential for catastrophic (train incident) risk on the national rail network. HMRI continues to be committed to reducing the risks associated with level crossings. HMRI wishes to see further action to reduce the catastrophic risk precursors at crossings and is working with duty holders and stakeholders to achieve that aim.

During 2005, HMRI and HSE's Rail Safety Policy developed a level crossing policy and three-year risk profile topic strategy. These are aimed at securing a reduction in level crossing risk, so far as is reasonably practicable, particularly catastrophic and fatal accidents involving collisions with trains at level crossings, by ensuring that risks are managed properly by dutyholders. Our work was focused on:

- ensuring the railway industry itself is doing everything that is reasonably practicable to ensure that all those affected by level crossings are not exposed to unacceptable risks to their health and safety;
- ensuring there is improved level crossing user awareness;
- working with Government departments, other agencies, duty holders and stakeholders to improve the standards of safety afforded to level crossing users;
- seeking closure rather than level crossings upgrades, where reasonably practicable; and

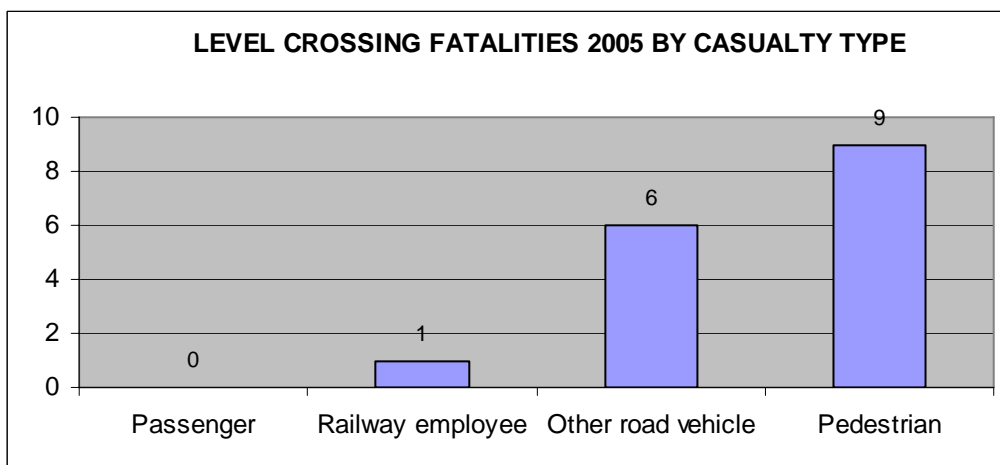
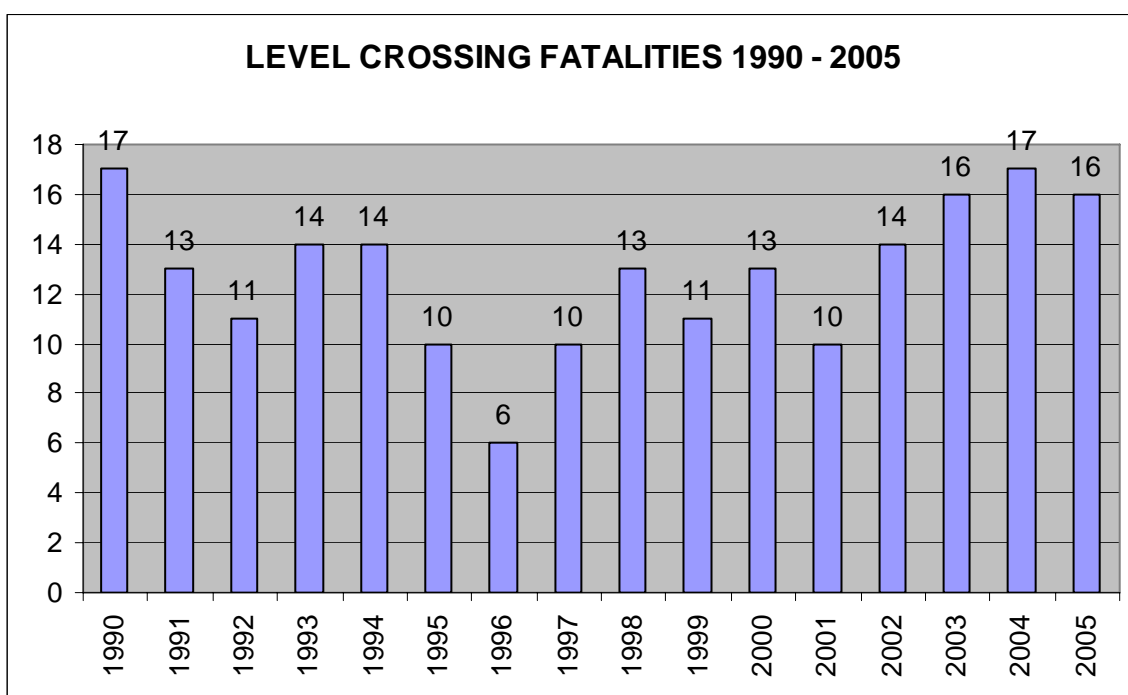
- ensuring the framework of legislation, consultation, standards and guidance facilitates efficient management of level crossing risk.

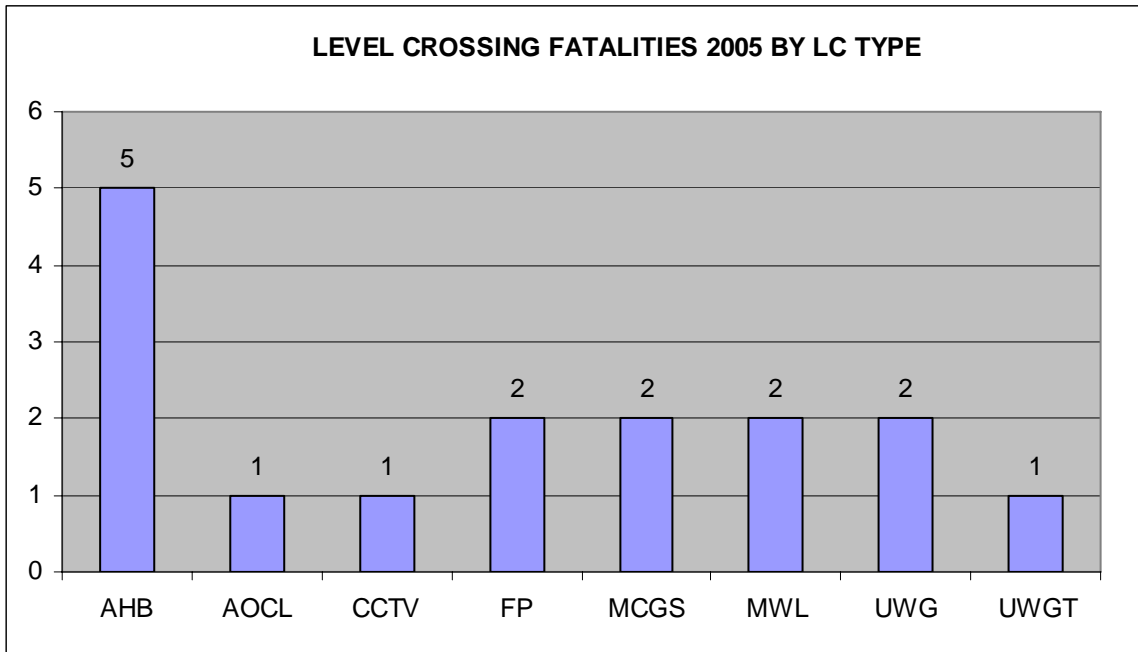
### Enforcement action relating to level crossings

One 'Improvement Notice' was served in relation to level crossings during 2005. The Notice, served on Network Rail, required improvements to Coleshill foot crossing in Warwickshire. The Notice was complied with within the time allowed.

### Scotland

HMRI and SPD work in respect of the debate about public access over 'private level crossings' in Scotland, referred to in our last two annual reports has continued and is ongoing.





Casualties at level crossings 2005 all railways

	Protected									Unprotected			
	Manual				Automatic					Manual			
	Total	MG	MCB with		AHB	ABCL	AOCR	AOCL	MWL	UWC with	UWC with		
			MCB	CCTV							UWC	Tel	OC
Fatalities													
Passenger	0	0	0	0	0	0	0	0	0	0	0	0	0
Railway Staff	1	0	0	0	0	0	0	1	0	0	0	0	0
Occupants of road vehicles (includes pedal cyclists)	6	0	0	0	3	0	0	0	1	1	0	0	1
Pedestrians	9	0	0	1	2	0	0	0	3	1	1	0	1
<b>Total</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>2</b>

Injuries													
Passenger	5	0	0	0	0	0	0	0	5	0	0	0	0
Railway Staff	3	0	0	0	0	0	0	1	1	1	0	0	0
Occupants of road vehicles (includes pedal cyclists)	4	0	0	0	0	0	1	1	0	1	1	0	0
Pedestrians	9	0	2	2	2	0	0	0	1	0	0	0	2
<b>Total</b>	<b>21</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>2</b>

Train incidents and failures at level crossings 2005

	Protected									Unprotected			
	Manual				Automatic					Manual			
	Total	MG	MCB	MCB with CCTV	AHB	ABCL	AOCR	AOCL	UWC with MWL	UWC	UWC with Tel	OC	FP
Train incidents	28	0	3	0	4	1	2	4	2	3	4	3	2
Failures													
Level crossing equipment struck by road vehicle	180	14	36	62	49	4	0	2	3	4	6	0	0
Level crossing obstructed by road vehicle.	8	0	1	3	3	0	0	0	0	0	0	1	0
Train running onto level crossing - no collision	5	0	0	0	2	1	0	1	0	0	1	0	0
General failure of level crossing equipment (includes failure of telephones)	190	3	3	19	42	3	0	4	9	22	82	0	3
Signalling failures at level crossings	2	1	1	0	0	0	0	0	0	0	0	0	0
Total of all failures	385	18	41	84	96	8	0	7	12	26	89	1	3

# Trespass and vandalism

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key facts

- 280 members of the public died as a result of trespass and suicide, of whom 189 were confirmed or suspected suicides;
- Seven children under the age of 16 died while trespassing, up from a historical low of two child trespass deaths during the 2004 report period; and
- 452 (43%) of the 1057 reportable train incidents in 2005 were due to acts of vandalism, continuing the downward trend of recent years.

## Summary

2005 saw an increase of 55 accidental trespass deaths (which include suspected suicides) compared with 2004, reversing the downward trend seen between 2000 and 2003.

The number of child deaths caused by trespassing on the railways in 2005 increased to seven, compared with two child deaths in the 2004 report period, the lowest level for over ten years.

Incidents due to vandalism continued to decline, but remain the main cause of all reportable train incidents. Of the 1057 train incidents reported to HMRI, 452 were due to vandalism, and the type of incidents include:

- One collision caused by vandalism (open door collision due to malicious action);
- Three derailments (two of which were on heritage railways);
- 96 cases of fires started deliberately;
- 98 instances of trains running into obstructions on the track; and
- 254 incidents of missile (stone throwing etc) damage to trains.

## Child trespass

In 2005, seven children under 16 years of age died, compared with only two child railway trespass deaths in the 2004 report period. These figures are subject to change as outstanding Coroner's verdicts are returned. The deaths of two young children killed when they and their mother apparently jumped from a railway platform at Southall would be removed from the 2005 trespass figures if the Coroner ruled their deaths to be the result of unlawful killing.

The five remaining deaths all involved 14 and 15 year old children being struck by trains while crossing or playing on the tracks; two boys were killed in Darlington and were found to have been drinking alcohol prior to the incident. In four cases, access to the tracks was obtained via damaged/vandalised lineside fencing.

The increase in child trespass deaths in 2005 is of particular concern and continuing efforts to prevent unauthorised access to the lineside by children, and educating them of the risks, remain a key priority for both the industry and HMRI.

### Adult trespass and suicide

Figures for 2005 show a sharp rise in the numbers of adult trespass deaths from the previous year. In 2005, 208 adult accidental trespass deaths were recorded, of which 124 were suspected suicides. This compares with 158 adult trespass deaths for the 2004 calendar year.

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) figures for confirmed suicides, as determined by findings of Coroners inquests, indicate continuing declines in railway suicides, with 65 confirmed suicides recorded in 2005, compared with 151 for the same period in 1997.

However, it is important to note that the balance between the numbers of deaths recorded as adult trespass (which include suspected suicides) and those recorded as confirmed suicides may change as the findings of outstanding Coroners' inquests are returned. Despite these likely adjustments in final trespass and suicide figures, the continuing upturn in adult trespass deaths in 2005 confirms the need for the industry to continue to focus and coordinate effort to ensure that all reasonably practicable steps are taken to deter adult trespass.

### Incidents due to vandalism

The number of train incidents due to vandalism continued to fall during 2005 (452 compared with 642 in 2004), confirming the gradual downward trend seen over the last eight years. Since 1997 there has been a reduction of over 40% in all reportable vandalism incidents, as a result of a continuing focus by industry partners, including HMRI, on lineside fencing and clearance of lineside materials, as well as on influencing public behaviour.

Despite this continued improvement, vandalism still accounts for almost half of all reportable train incidents. These incidents are of concern because they can lead to damage, injury or train derailments as a result of vandals deliberately obstructing the track. Reducing the potential for major incidents, including those resulting from vandalism, will continue to be a priority for both HMRI and the rail industry.

### Action to combat trespass and vandalism (route crime)

During 2005, HMRI continued to work closely with industry partners at both local and national level to tackle trespass and vandalism which, together with suicide, is known collectively in the railway industry as 'route crime'. HMRI remained actively involved in the work of the National Railway Crime Group (NRCG), the cross-industry body set up to steer the industry's efforts to reduce railway crime.



In direct response to feedback from a three-year programme of planned inspections by HMRI on route crime, a renewed initiative on management of lineside materials was included in the NRCG annual plan for 2005, delivered by Network Rail as part of its 'Safety 365' programme.

HMRI has also been involved in partnership working at local level, via participation in industry-led 'Route Crime Reduction and Mitigation Groups', and also in local education/awareness initiatives to complement the learning materials on the industry's 'Trackoff' website (<http://www.trackoff.org/>).

During 2005, HMRI developed an overall strategy on route crime for 2006-09, as part of its risk-based topic planning process, which has informed HMRI's delivery plan for 2006/07. HMRI's work on route crime will continue to focus on monitoring the industry's progress in managing the risks, with particular focus on the risks to children and derailment risks arising from obstructions placed on the line by vandals. Work to monitor directly risk management by dutyholders, including targeted inspection on lineside security and materials management, is proposed over the next three years in order to deliver HMRI's strategic priorities on route crime.

#### Train incidents due to malicious action 2000 – 2005

	Collisions	Derailments	Running into obstructions	Fires in trains	Other incidents	Missile damage	Total
2000	37 (35)	5	265	182	0	583	1072
2001	30 (28)	2	154	169	1	562	918
2002	14 (12)	4	143	174	0	451	786
2003	25 (24)	4	107	141	0	334	611
2004	12 (12)	6	128	188	0	308	642
Five year average	24 (22)	4	159	171	0	448	806
2005	1 (1)	3	98	96	0	254	452

Figures in brackets refer to open door collisions

#### Train incidents due to malicious action by percentage 2000 – 2005

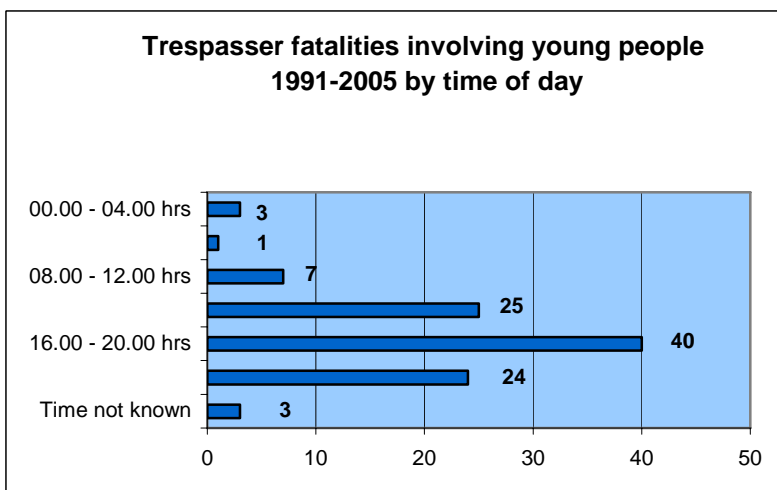
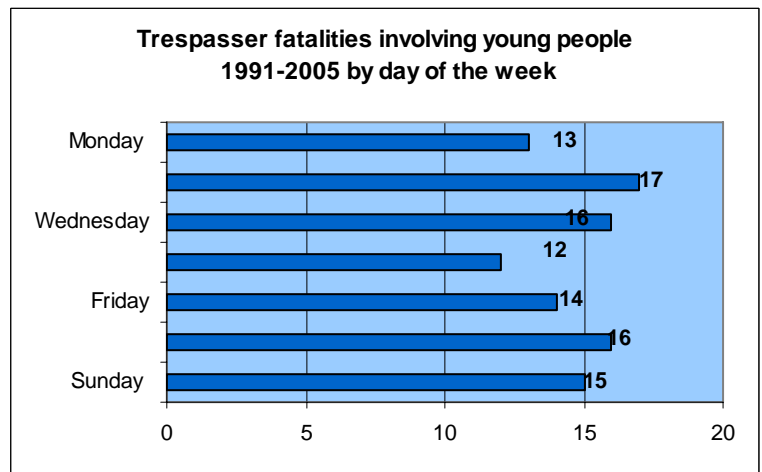
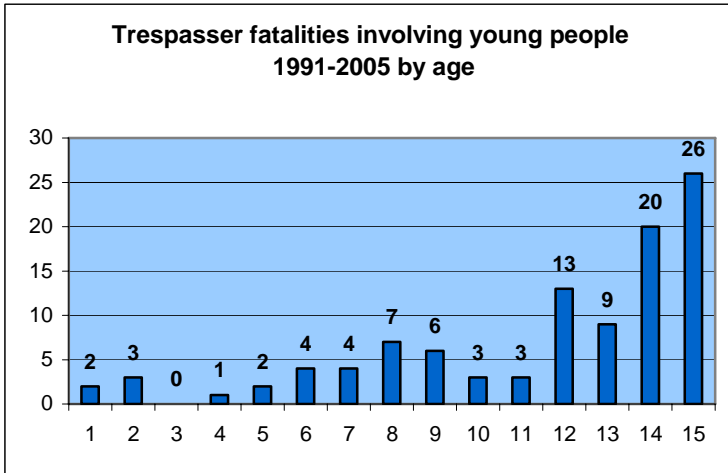
	Total number of train incidents	Train incidents due to malicious action	Percentage
2000	1775	1072	60
2001	1587	918	58
2002	1363	786	58
2003	1237	611	49
2004	1336	642	48
Five year average	1460	806	55
2005	1057	452	43

## Casualties to trespassers, suicides and attempted suicides 2005

	Fatal					Hospital					All
	NR	LUL	Trams	Other	Total	NR	LUL	Trams	Other	Total	Totals
<b>Total all incidents</b>	<b>252 (7)</b>	<b>24 (0)</b>	<b>3 (0)</b>	<b>1 (0)</b>	<b>280 (7)</b>	<b>97 (2)</b>	<b>19 (0)</b>	<b>11 (3)</b>	<b>0 (0)</b>	<b>127 (5)</b>	<b>407 (12)</b>
<b>Movement incidents</b>											
Fall from platform and struck by train	27 (2)	14 (0)	0 (0)	0 (0)	41 (2)	1 (0)	1 (0)	1 (1)	0 (0)	3 (1)	44 (3)
Walking on the line and struck by train	150 (5)	4 (0)	2 (0)	0 (0)	156 (5)	21 (0)	0 (0)	5 (2)	0 (0)	26 (2)	182 (7)
Fall from a train in motion (includes train surfing)	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)	4 (0)
Other movement incident	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	2 (0)	0 (0)	3 (0)	3 (0)
Suicide and attempted suicide	57 (0)	6 (0)	0 (0)	0 (0)	63 (0)	17 (0)	13 (0)	1 (0)	0 (0)	31 (0)	94 (0)
<b>Total movement incidents</b>	<b>236 (7)</b>	<b>24 (0)</b>	<b>2 (0)</b>	<b>0 (0)</b>	<b>262 (7)</b>	<b>42 (0)</b>	<b>14 (0)</b>	<b>9 (3)</b>	<b>0 (0)</b>	<b>65 (3)</b>	<b>327 (10)</b>
<b>Non-movement incidents</b>											
Fall to line from bridge etc	6 (0)	0 (0)	1 (0)	0 (0)	7 (0)	30 (0)	2 (0)	2 (0)	0 (0)	34 (0)	41 (0)
Contact with OLE	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (2)	0 (0)	0 (0)	0 (0)	3 (2)	3 (0)
Contact with live rail	6 (0)	0 (0)	0 (0)	0 (0)	6 (0)	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)	8 (0)
Other non-movement incident	2 (0)	0 (0)	0 (0)	1 (0)	3 (0)	6 (0)	1 (0)	0 (0)	0 (0)	7 (0)	10 (0)
Suicide and attempted suicide	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)	14 (0)	2 (0)	0 (0)	0 (0)	16 (0)	18 (0)
<b>Total non-movement incidents</b>	<b>16 (0)</b>	<b>0 (0)</b>	<b>1 (0)</b>	<b>1 (0)</b>	<b>18 (0)</b>	<b>55 (2)</b>	<b>5 (0)</b>	<b>2 (0)</b>	<b>0 (0)</b>	<b>62 (2)</b>	<b>80 (2)</b>

Figures in brackets refer to injuries to child trespassers aged under 16

Fatality data is provisional and subject to change due to outstanding findings of Coroners' inquests.





# Fires

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This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key facts

- There were a total of 187 reportable train fires, compared with 323 in 2004;
- 168 reportable train fires were on passenger trains, compared with 310 in 2004;
- 19 reportable train fires were on freight trains, compared with 13 in 2004;
- 96 train fires were due to arson, compared with 188 in 2004, and 141 in 2003; and
- There were 112 reportable lineside and station fires, compared with 95 in 2004.

## Lineside and station fires

There were 112 reportable lineside and station fires in the 2005 calendar year. This compares with 95 in 2004. There were no major injuries or fatalities.

It should be noted that while these fires were incidents that affected the operation of the railway, many of them occurred outside the railway boundary. They are reportable events because they led to the railway being disrupted or closed as a precautionary measure.

Of the 23 station fires, seven were at sub-surface stations.

The most serious station incident was at Huntingdon on 11 April 2005 when fire broke out in a coffee kiosk on the platform. Train services were severely disrupted and the fire affected the structure of the station roof and platform.

## Train fires

The 2005 report year figures indicate a decrease in the total numbers of reportable passenger train fires (168) compared with the previous year (310).

As in previous years, the majority of passenger train fires were due to arson (57%), although this has reduced slightly on last year's figure (58%), continuing the downward trend since the peak between 1997 and 1999. Most of these arson incidents continued to occur in the south of England, but the introduction of new trains, with features such as on-board CCTV and better internal layouts, is contributing to reductions in the incidence of vandalism, including arson.

There were 76 train fires caused by technical defects on trains such as traction motor failures, dragging brakes, and heater fires.

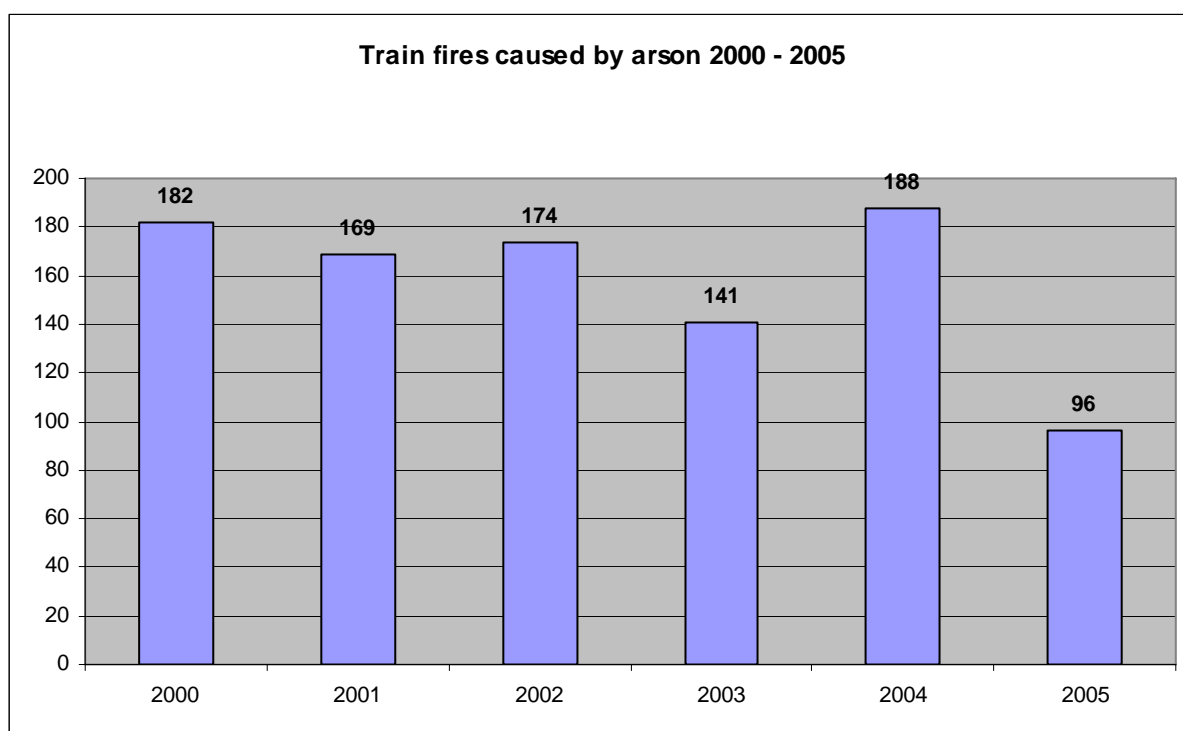
There were two notable passenger train fires in 2005, both involving Virgin Voyager trains:

At Markle level crossing (Lothian) on 1 June 2005, an underfloor engine caught fire, resulting in passengers being evacuated onto the lineside. The vehicle sustained extensive fire damage, but the passenger space was not breached and there were no injuries. The fire brigade was called. There was some delay in getting replacement buses to the scene due to restricted road access and an unrelated road accident.

It is believed arcing from a loose electrical terminal on the starter initiated the fire and flammable oils and residues in the area became involved. Steps have been taken to ensure the security of connections along with depot procedures to ensure flammable materials are not allowed to accumulate in the engine area. Emergency arrangements have been reviewed and amended in the light of problems encountered.

At Starcross (Devon) on 15 December 2005 a Voyager came to a stand in the station after a report of smoke on board the train. About 75 passengers were evacuated onto the platform. The fire started in an underfloor engine and entered the exhaust system, eventually reaching roof height. It did not breach the passenger space and there were no injuries. Matters concerning design and maintenance of these vehicles are being pursued by HMRI.

There were no serious freight train fires, the majority of incidents resulting from diesel locomotives overheating while hauling freight trains.



# Failures of rolling stock and infrastructure

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key facts

- 318 rail breaks were reported on NRCI during 2005. This figure continues a trend of major improvement from 1999 when 939 breaks were recorded;
- 57 track buckles were reported on NRCI and two on other rail infrastructures during 2005; and
- 2034 bridge strikes were reported on NRCI in 2005.

## Summary

There were 2034 reported bridge strikes on NRCI in 2005. This is consistent with the previous two years, appearing to stabilise a previously increasing trend.

'Rail over road' (underline) bridge strikes continue to make up approximately 92.5% of all bridge strike reports, with the remaining strikes on 'road over rail' (overline) bridges.

There were 57 track buckles reported on NRCI in 2005. This is largely consistent with the number of buckles in the previous seven years when correlations with seasonal ambient temperatures are taken into account.

## Rolling stock failures

There continues to be a number of incidents concerning trains becoming uncoupled while in service, the majority of which are associated with 'diesel multiple units' (DMUs). These are not direct coupler failures, but are associated with defects within the control system. These defects are mainly due to initial designs compounded by maintenance issues.

The freight industry has not been without its challenges in respect of couplers, where several conventional couplings have failed and investigations into these are on going.

Progress has been made with improvements to 'selective door opening' (SDO) systems, although HMRI's ultimate aim continues to be the achievement of an operational match between platform and train.

Issues surrounding on-track plant, particularly concerning braking systems, continue to cause concern and require monitoring.

On London Underground, services on the Northern Line were heavily disrupted for some weeks as a consequence of the operational and engineering response to concerns over the effectiveness of the tripcock train protection system when passing a signal at danger at low speeds. Design and maintenance issues were addressed to arrive at a position where normal services could be restored.

Services on the Jubilee Line were suspended between Christmas Day and 29 December in order to convert the train fleet from six to seven cars, by incorporating newly built trailer cars into the 59 existing ten-year old train sets. The closure was planned in order to permit the infrastructure, which includes platform edge doors at some stations, to be reconfigured to suit the longer train formations.

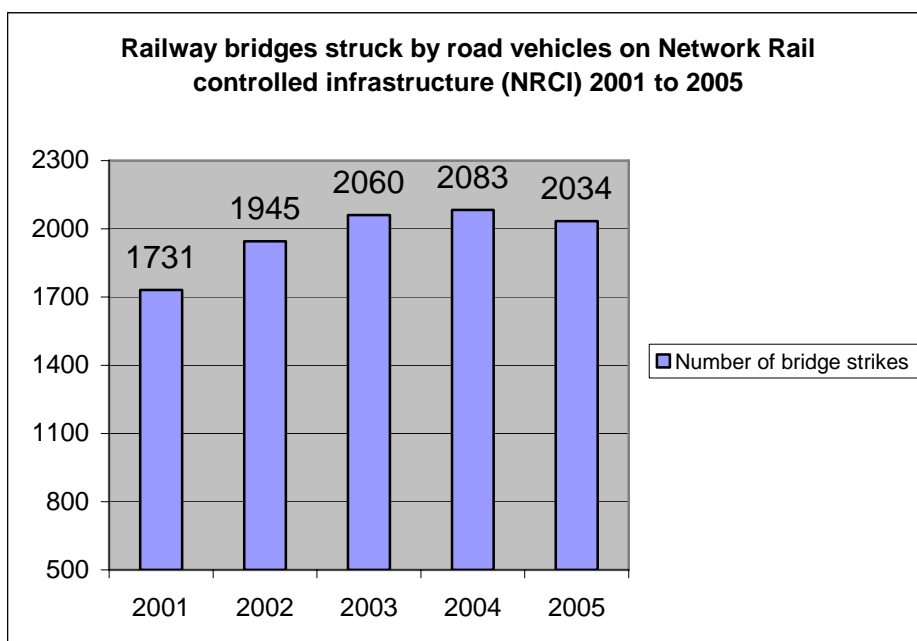
### Slam-door stock

All mainline normal service Mark1 slam-door rolling stock has now been withdrawn, with the exception of one DMU unit operated by Chiltern trains and an EMU operated by South West Trains (SET) on the Lymington branch. For these trains, other safety mitigation measures have been developed and are in operation. In addition, charter trains have received exemptions from the regulations through the use of other risk control measures.

### Bridge strikes

There were 2034 reported bridge strikes in 2005 on NRCI. 19 further bridge strikes occurred on other railway infrastructures; London Underground (seven), Tramways (six) and Minor railways (six).

The figures for the national network represent a small reduction from the 2083 bridge strikes reported in 2004. The figures are in fact broadly similar to the previous two years, appearing to stabilise a previously increasing trend, as the following graph illustrates:





The following chart provides a regional breakdown of where bridge strikes have occurred, and a measure of their seriousness (which includes factors such as the type of bridge and the size and location of the road vehicle's impact).

#### Railway bridges struck by road vehicles 2005

Underline - 2005	Unspecified	Not serious	Potentially serious	Serious	Total
Western	3	290	10	1	304
London North Eastern	0	418	4	2	424
London North West	33	367	7	1	408
Scotland	4	143	1	1	149
South East	2	591	2	4	599
<b>Total underline</b>	<b>42</b>	<b>1809</b>	<b>24</b>	<b>9</b>	<b>1884</b>
Overline - 2005	Unspecified	Not serious	Potentially serious	Serious	Total
Western	1	34	8	1	44
London North Eastern	0	23	2	1	26
London North West	2	12	6	0	20
Scotland	2	15	0	1	18
South East	0	36	4	2	42
<b>Total overline</b>	<b>5</b>	<b>120</b>	<b>20</b>	<b>5</b>	<b>150</b>

Source: Rail Safety & Standards Board

Rail over road (underline) bridge strikes continue to make up approximately 92.5% of all bridge strike reports, a similar proportion as in previous years. Of all the bridge strikes, 14 were considered serious and 44 potentially serious, collectively representing a reduction of 15% over the previous year's figures. The figures also indicate that overline road over rail bridge strikes are ten times more likely to result in a serious or potentially serious bridge strike than on underline bridges.

ORR continues its support for the DfT's Bridge Strike Prevention Group, which is working on a number of fronts with stakeholders from the public and private sectors to reduce the incidence of

bridge strikes. Further details are available at:

[http://www.dft.gov.uk/stellent/groups/dft\\_roads/documents/page/dft\\_roads\\_038298.hcsp](http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_038298.hcsp)

## Road-rail interface

There were 28 reportable vehicle incursions onto Britain's railway infrastructure in 2005; six of these vehicles were subsequently struck by trains, compared with five in 2004. The overall trend in reportable vehicle incursions has been downward since 2000.

During 2005, HMRI developed an overall strategy to reduce vehicle incursion risk for the period 2006 to 2009, as part of its risk-based topic planning process. The risk ranking and mitigation process detailed in the DfT's *Managing the accidental obstruction of the railway by road vehicles* (2003) continues to be employed by the railway industry and highways authorities with HMRI support. HMRI's work on vehicle incursion will continue to focus on monitoring the industry's progress in managing the associated derailment risk, including progress in meeting the agreed timetable for reducing the vehicle incursion risk, as set out in the DfT report.

## Rail breaks

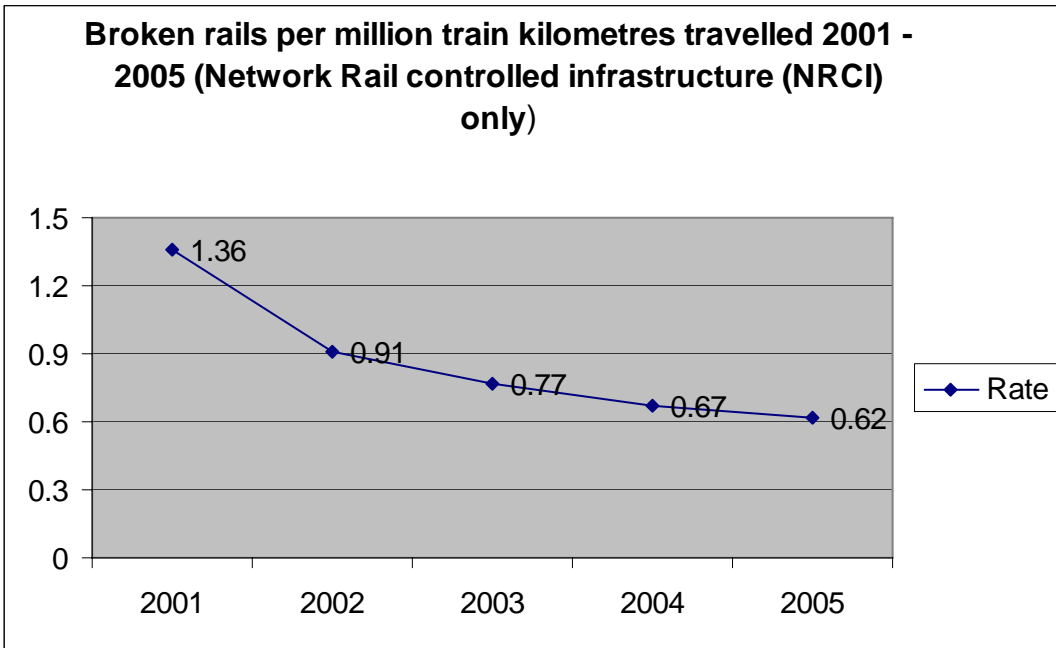
The following table provides data on all rail breaks during 2005 compared with previous years.

### Broken rails all railways 2001 - 2005

Year	Network Rail	LUL	Other Railways	Total
2001	658	29	0	687
2002	444	26	1	471
2003	380	32	0	412
2004	333	51	5	389
2005	318	45	4	367

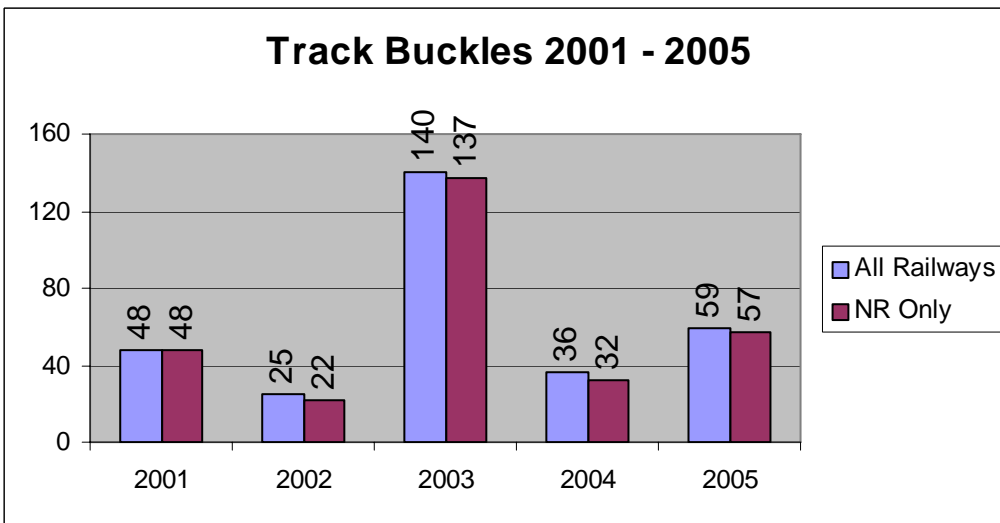
Improvements continue in the reduction of rail breaks on NRCI. As noted in last year's report, not only are the numbers of rail breaks reduced, there has also been a proportionately greater improvement made to reduce the numbers of rail breaks associated with higher risk (Source: RSSB).

The following chart shows the reducing number of rail breaks expressed as a proportion of train kilometres travelled on NRCI:



**Train buckles**

57 track buckles were reported on NRCI and two on other rail infrastructures during 2005. Comparison with previous years' figures is shown in the following graph:



There is a strong correlation between high ambient temperature and the number of track buckles recorded. However, HMRI acknowledges the improved procedures Network rail has in place for monitoring the effects of high ambient temperatures on its infrastructure. Figures for 2005, while higher than those for 2004, are broadly consistent with previous years. The 2005 figures are significantly lower than the figures of 135 and 137 experienced during the long hot summers of 1995 and 2003.

## Train incidents and failures of rolling stock and permanent way 2005

CATEGORY	All Railways					
	2004	2005	NR	LUL	TRAMS	OTHER
<b>Train incidents total</b>	<b>1336</b>	<b>1057</b>	<b>808</b>	<b>34</b>	<b>193 (154)</b>	<b>22</b>
Collisions between						
Passenger trains or parts thereof	16	7	5	0	2	0
Passenger trains and freight trains or light locomotives	1	3	2	0	1	0
Freight locomotives or other moving vehicles	4	5	4	0	1	0
Trains and vehicles standing foul of the line	0	1	1	0	0	0
Trains and buffer stops or vehicles standing at buffer stops	7	5	2	1	1	1
Trains and projections from other trains or vehicles on parallel lines	32	6	4	2	0	0
<b>Total collisions</b>	<b>60</b>	<b>27</b>	<b>18</b>	<b>3</b>	<b>5</b>	<b>1</b>
Derailments						
Of passenger trains	26	26	8	0	5	13
Of freight trains	36	38	29	4	1	4
<b>Total derailments</b>	<b>62</b>	<b>64</b>	<b>37</b>	<b>4</b>	<b>6</b>	<b>17</b>
Trains running into						
a) gates or vehicles or animals at level crossings	29	27	26	0	0	1
b) animals on the line	73	101	101	0	0	0
c) other obstacles	421	179	167	10	173 (154)	2
<b>Total running into obstruction</b>	<b>523</b>	<b>480</b>	<b>294</b>	<b>10</b>	<b>173 (154)</b>	<b>3</b>
Fires in trains						
a) passenger trains	310	168	152	15	0	1
b) freight trains	13	19	19	0	0	0
<b>Total fires on trains</b>	<b>323</b>	<b>187</b>	<b>171</b>	<b>15</b>	<b>0</b>	<b>1</b>
Other incidents	0	0	0	0	0	0
<b>Total other incidents</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Missile damage to train windows including drivers windscreen	368	299	288	2	9	0
<b>Total missile damage to train windows including drivers windscreen</b>	<b>368</b>	<b>299</b>	<b>288</b>	<b>2</b>	<b>9</b>	<b>0</b>
<b>Failures of rolling stock and permanent way etc total</b>	<b>1385</b>	<b>1485</b>	<b>1300</b>	<b>140</b>	<b>15</b>	<b>30</b>
Failures of locomotives and multiple unit trains						
a) diesel	138	105	105	0	0	0
b) electric	116	78	61	9	1	7
c) steam	1	0	0	0	0	0
General failures of rolling stock	41	34	29	1	1	3
Failure of wheels or tyres	9	15	15	0	0	0
Failure of axles (includes bearing failures)	13	1	1	0	0	0
Failure of coupling apparatus						
a) passenger trains	15	5	2	0	0	3
b) freight trains	1	0	0	0	0	0
<b>Total rolling stock failures</b>	<b>334</b>	<b>238</b>	<b>213</b>	<b>10</b>	<b>2</b>	<b>13</b>
Failure of structures						

CATEGORY	All Railways					
	2004	2005	NR	LUL	TRAMS	OTHER
a) tunnels, bridges, viaducts, culverts etc	26	74	54	18	0	2
b) damage to bridges by motor vehicles & ships	79	77	58	7	6	6
Failure of track						
a) broken rails	389	367	318	45	3	1
b) track buckles	36	59	57	2	0	0
Flooding of permanent way, landslips, obstructions of the permanent way etc	357	349	312	32	1	4
Fires at passenger stations, signal boxes, lineside	95	112	85	24	1	2
Failures of overhead line equipment	15	14	11	0	1	2
Miscellaneous failures	54	195	192	2	1	0
<b>Total failures of permanent way and structures</b>	<b>1051</b>	<b>1247</b>	<b>1087</b>	<b>130</b>	<b>13</b>	<b>17</b>

The figures in brackets under 'Trams' are the number of collisions involving a tram and a road vehicle reported on a monthly basis.

2005 'Miscellaneous failures' include failures of telephones at level crossings that in previous years have been under reported.

#### Train incidents, failures, injuries, numbers of staff and operating statistics 2005

Category	Totals
Train incidents	1057
Failures of rolling stock and infrastructure	1485
Total fatalities	313
Total injuries	5266
Railway staff employed (estimated)	133,000
Passenger train kilometres operated (millions):	
Network Rail	464.6
Eurostar	1.5
Metropolitan railways	51.5
Tramways	9.1
Heritage	6.7
Total	533.4
Freight train kilometres operated (millions)	49.5
Passenger journeys (millions):	
Network Rail	1078
Eurostar	9.7
Metropolitan railways	1066
Tramways	68.3
Heritage	13.7
Total	2235.7



# Health and safety of rail employees

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## Key facts

- A total of six workforce fatalities were reported to HMRI in 2005;
- There were 282 assaults on staff on the rail network during the 2005 calendar year, notifiable under RIDDOR;
- RIDDOR returns on major and minor injuries showed no significant year-on-year change;
- HMRI continues to be concerned at the level of risk to railway employees, particularly trackside workers, and is networking with industry to tackle the issue; and
- HMRI continued to work with the rail industry and other sectors during 2005 to tackle the issue of staff assaults.

## Summary

There were six fatal injuries to railway employees during 2005. This compares with a total of ten for 2004, but that period included two incidents with multiple fatalities at Tebay (four) and Hednesford (two).

A number of the fatal incidents occurred in 'red zone working' (where train movements continue) and are indicative of the limitations of the improvements introduced by the industry with the implementation of 'risk minimisation' (RIMINI).

Inadequate planning of work has been a feature of fatal and major workforce incidents, and featured in HMRI's intervention work, along with aspects of possession discipline, control of road-rail vehicles (RRVs), and obstacles to green zone (where workers are protected from train movements) maximisation.

Of the 282 RIDDOR-reportable staff assaults reported, 255 were minor injuries and 27 recorded as major injuries. This compares favourably with figures for 2004, where a total of 303 injuries were reported, with 260 minor injuries and 43 major injuries.

During 2005 HMRI introduced a new internal role of 'Topic Strategist', and began drawing up strategies to enable more effective planning of its interventions across a range of topic areas. Work was started in 2005 and a topic strategy was developed on railway employee safety.

## Fatalities

The workforce fatalities during 2005 were:

- In January 2005 a shunter at Old Oak Common was caught between vehicles during shunting operations at a siding;
- In April 2005 a lookout was struck by a train at Newbridge Junction;
- Also in April 2005, at Edgeley Junction, a driver was struck by a train while walking along the track to change from one end of the train to the other;
- In June 2005 a handsignaller was struck by a train at Acton while undertaking duties in relation to a possession;
- In July 2005 the driver of a train on the Romney, Hythe and Dymchurch Railway was killed when her locomotive was derailed at Battery Road level crossing, after being struck by a road vehicle. This was the second such fatality at a level crossing on this railway in recent years; and
- In October 2005 a worker involved in the installation of ATWS equipment was struck by a train at Trafford Park.

HMRI also investigated the deaths of two workers at Swanscombe Tunnel during Channel Tunnel Rail Link (CTRL) works, but as the site was a railway 'under construction' the fatalities are not counted as part of the rail industry total, but recorded as construction fatalities.

The fatal incidents of 2005 are illustrative of several recent trends. One is the changing nature of the risks to traincrews - with the fitting of TPWS on the mainline railway, the likelihood of train incidents following SPADs has decreased significantly. Recent train incidents, such as Ufton and Great Heck, have involved road vehicle incursion on to the running line. The fatality on the Romney, Hythe and Dymchurch Railway illustrates the growing problem of level crossing user abuse for all sectors of the rail industry.

Track workers remain the most 'at risk' of fatal injury. This is largely due to the environment in which these employees operate, a fact emphasised by the incidents to a shunter and train driver that occurred when they were exposed to the risks from train movements. The trackside location is the most hazardous for all groups of railway employees.

The two previous HMRI annual reports noted that there were no 'RIMINI-preventable' fatalities. This is not so this year. There were two deaths during red zone working, and two where employees were inadequately protected from an adjoining line that was open to traffic.

Many of the incidents investigated by HMRI reveal inadequacies in processes for planning and implementing safe systems of work during engineering possessions. Current inspection programmes are examining these areas. HMRI work in 2005 concentrated on possession arrangements and the control of vehicle movements, particularly RRVs. This was in response to concerns arising from



incidents in the previous two years, and mirrors work undertaken by RSSB on behalf of the industry. HMRI will monitor changes to rules and procedures coming out of industry reviews and intended to address these risks.

## Track worker safety

Three of the six fatal incidents to railway staff in 2005 related to track workers. This is in line with recent years, when this group of workers has tended to account for at least half of all workforce deaths.

There were 332 major injuries reported to HMRI under RIDDOR. This compares with 402 in 2004 and 338 in 2003. There were 1947 minor injuries in 2005, about the same as in 2004. Analysis shows that track workers comprise a significant proportion of the most common injury categories: harm arising from slips, trips and falls; manual handling; and being struck/trapped/contact injury (not train movement). The risks to track workers are not confined to the sometimes fatal hazards of vehicle movements and traction current.

HMRI inspection work in 2005 concentrated on the risks to workers within engineering possessions. Incidents since the implementation in 2002 of RIMINI on NRCI have highlighted the dangers to staff that are still present when normal traffic has been suspended. Industry groups, led by RSSB have been researching improvements in these areas and HMRI will monitor any recommendations arising.

Current work is examining the prevalence of red zone working, and investigating near-miss incidents in order to identify shortcomings in planning safe systems of work. Fatal incidents in 2005 revealed that RIMINI has not eliminated the risks from red zone working with human lookouts. HMRI's own figures for near-miss incidents involving track workers indicate that 87 out of a total of 109 took place in red zones.

HMRI's delivery plan is looking at a range of track worker health and safety issues in addition to those previously mentioned. This includes inspection of some of the causes of musculo-skeletal disorders.

HMRI also continued to collaborate with industry throughout 2005 in relation to workforce safety issues, mainly through membership of the RSSB-led Track Safety Strategy Group.

During 2005, HMRI's own internal Track Worker Safety Committee widened its scope to become the Railway Employee Safety Group, in line with the areas covered by HMRI's topic strategist for Employee Safety. However, there continues to be a regular forum devoted specifically to track worker safety, in recognition of the particular risks to which that sector of the workforce is exposed.

## Employee representatives

HMRI inspectors routinely contact workplace health and safety representatives during their interventions. In addition, there are regular liaison meetings where HMRI explains its planned work, gives feedback on inspection findings, and listens to staff concerns.

During 2005 there were a number of open days and seminars for staff representatives around the country. These allow ideas to be exchanged, guidance to be given and possible future areas of work

to be identified. A number of current HMRI work activities have been influenced by information received directly from staff representatives.

## Depots

The fatal injury to a shunter at Old Oak Common in January 2005 highlights the hazardous nature of this work. Shunters comprise a relatively small proportion of the workforce, but the normalised rate of fatal and major injuries experienced by them is very high. HMRI's field teams and Railway Operations National Expertise Team have been monitoring proposed changes to shunting practices suggested by duty holders, and have provided guidance to inspectors on good practice.

Inspectors investigated a number of incidents at depots in 2005, and this has led to some updated inspection programmes. These have a particular focus on electrical hazards and setting up safe systems of work, and safe control of shunting movements.

## Assaults on staff

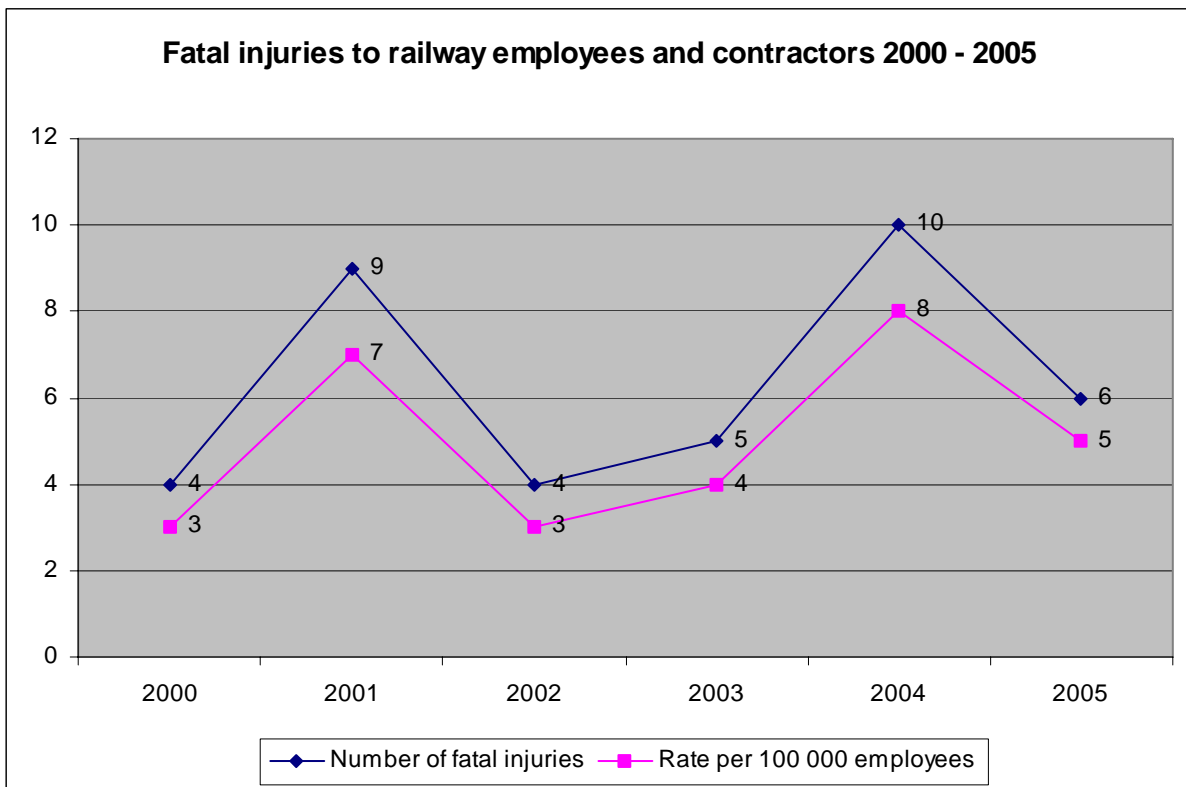
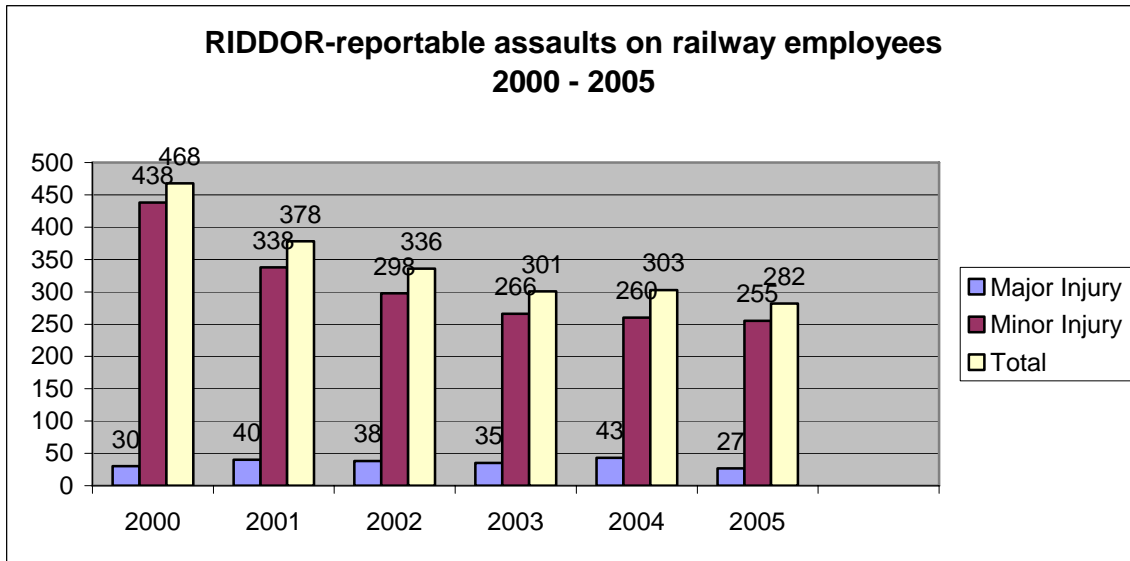
A total of 282 RIDDOR-reportable staff assaults were reported to HMRI in 2005, of which 27 were major injuries and 255 were minor injuries. This compares favourably with figures for 2004 in which a total of 303 injuries were reported, 260 of which were minor injuries and 43 of which were major. Railway Group members are required to report additional categories of information (relating to incidents which are not reportable under RIDDOR) to RSSB, and analysis of this data shows a steady increase in the number of reported incidents. It is assumed that this is due to the better reporting of assaults, rather than to a real increase in the number of incidents. The downward trend in RIDDOR-reportable incidents would confirm this, and also suggests that those incidents with more serious injury outcomes appear to be reducing. This should not give rise to complacency within the industry, since the psychological impact of staff assaults is unlikely to have significantly reduced, if at all, as RIDDOR-reportable assaults represent only a small proportion of the total number of assaults reported. The reduction in RIDDOR-reportable incidents, however, could be due to the success of the many risk reduction measures recently put in place by the industry.

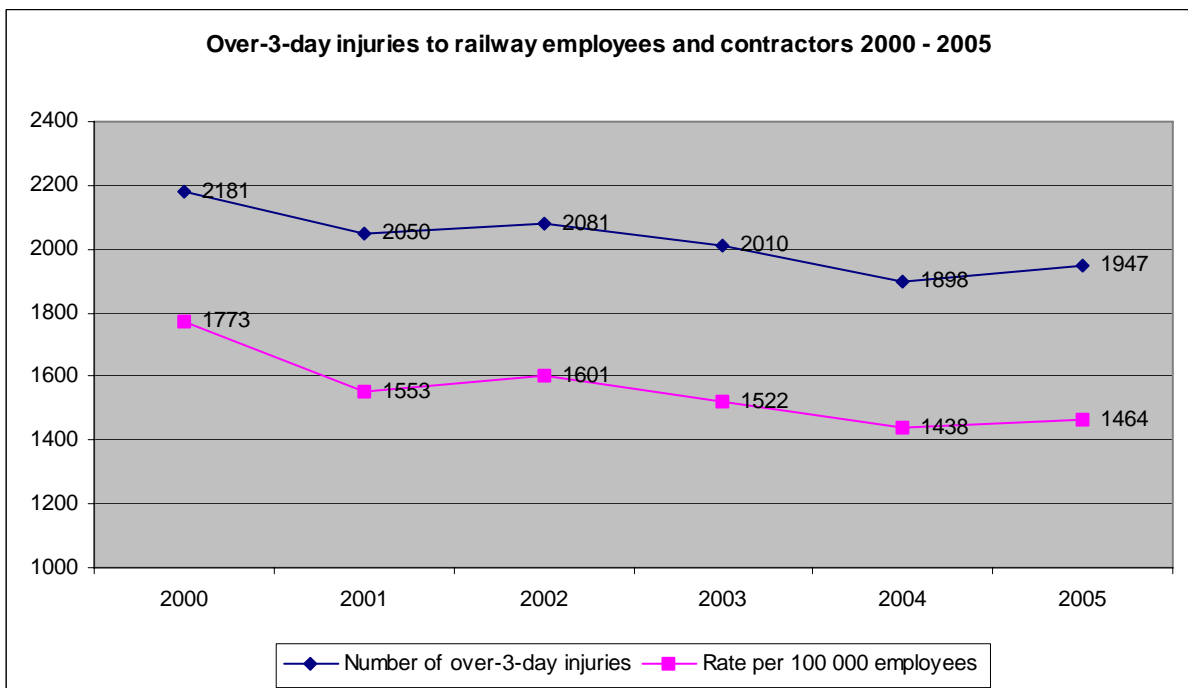
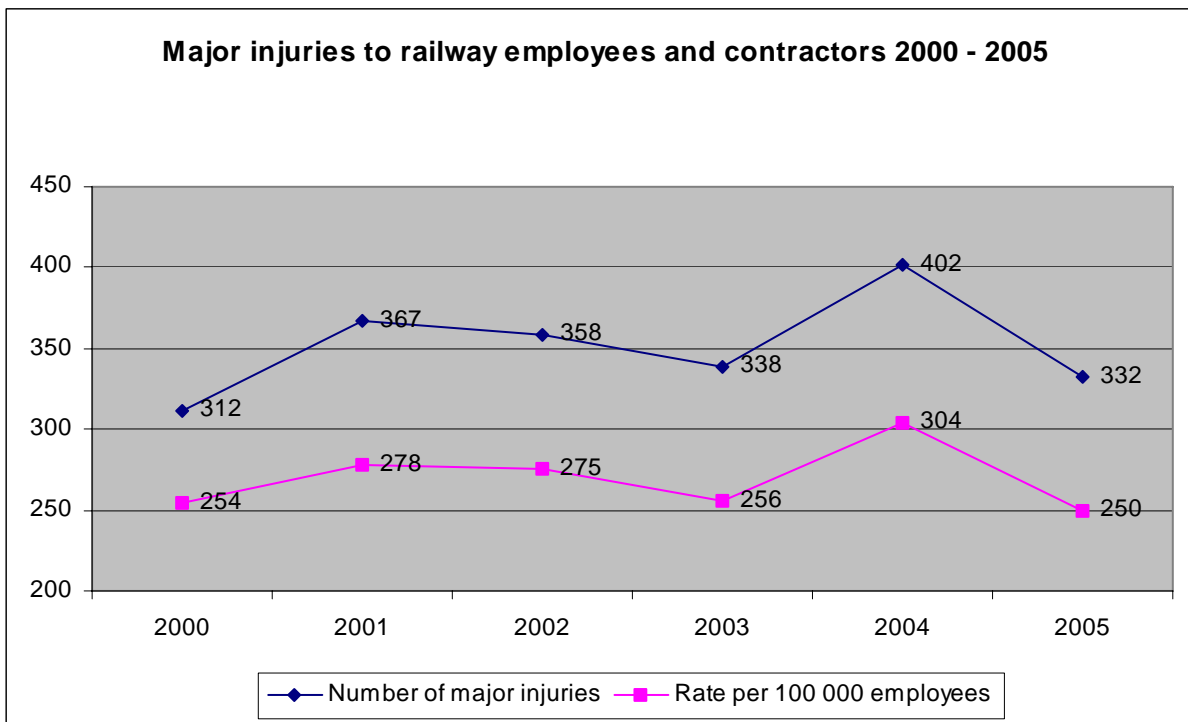
Throughout 2005, HMRI continued to work with the rail industry in tackling the issue of staff assaults. This has included our further participation in the RSSB-led Rail Personal Security Group (RPSG), which ran a year-long media campaign aimed at discouraging rail users from assaulting or abusing railway staff. The campaign concluded in November 2005 and a survey by MORI concluded that it had succeeded in raising public awareness of staff assaults.

Staff training was identified by the RPSG as a priority issue for 2005 and two projects were undertaken to address this. The first of these, a research project conducted for the RPSG by Crime Concern, was aimed at assessing current good practice in conflict avoidance training. This project was concluded in the latter part of 2005, and a full report will be published in 2006. The second project involved the production of a scenario-based staff training DVD, also dealing with conflict avoidance. This project had been planned for some time, and the contract for production of the DVD was awarded in December 2005.

HMRI also continues to collaborate with other industry sectors in relation to issues of staff assault, through membership of and active participation in the HSE-led 'Partnership on Work Related Violence'"(previously known as the inter-departmental Committee on Violence to Staff). The objective of this group is to reduce work-related violence through the development, promotion and dissemination of information and good practice between key sectors. HMRI has so far contributed towards this objective by setting up and chairing the 'Public Transport Sector Group'.

Additional information on staff assaults can be found on the ORR website at <http://www.rail-reg.gov.uk/server/show/ConWebDoc.7801>





# Underground railways

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## Key facts

- 28 people were fatally injured on LUL infrastructure in 2005;
- There were no employee fatalities on LUL or Glasgow Subway infrastructures in 2005;
- Reliability problems were encountered with LUL Northern Line train tripcocks;
- HMRI provided advice and assistance to LUL after the 7 July bombings; and
- Upgrading of Glasgow Subway's train management system is underway, also its tunnel lighting and power cables.

## London Underground Limited

### Public private partnership (PPP)

The PPP regime has resulted in organisational changes within LUL and the infrastructure maintenance companies (infracos) which were intended to bring about improvements. LUL has sought to improve the process by which it assures itself that the infracos are fulfilling their PPP roles to the appropriate standards.

Problems with Northern Line train tripcocks called for close cooperation between LUL, the infraeco and the train maintenance company in order to resolve several technical issues. Although ultimately resolved, this, together with some other events, identified some contractual issues around PPP and PFI contracts that may need to be addressed in the future.

### Planned inspection activity

HMRI began a new programme of inspections during 2005, looking at the following:

- Platform/train interface: this intervention considered LUL's arrangements for controlling risks to passengers boarding and alighting trains. It looked at staff training, management issues and monitoring systems associated with the topic. It will be completed in 2006;
- Track maintenance: HMRI has continued to monitor LUL and infraeco management of broken rails and has examined the evolving responses to issues arising from the Camden and White City derailment investigations. Major inspections were carried out in the areas of compliance recovery; managing and prioritising workbanks; competence management systems for track workers;

- SPADs: this intervention has monitored progress with improving signal reliability, driver behaviour and the quality of SPAD investigations;
- Emergency planning: a series of inspections considered LUL staff compliance with their procedures for dealing with operational incidents. Work was also carried out on possible heat stress issues for passengers held in deep tunnels for long periods of time. Work on these topics will continue, and on issues arising from the 7 July bombings;
- Control of contractor and employee safety: HMRI undertook a programme of visits looking at track renewals and other engineering work. These considered site management arrangements, precautions relating to moving trains and on-track plant, and various occupational risks to engineering workers; and
- Safety culture and safety-critical communications: this intervention focused on the Bakerloo Line and looked at openness in communications and management related to health and safety, as well as compliance with safety-critical communications standards.

## Investigations

HMRI investigated a range of complaints from employees, contractors and members of the public. These included issues such as the management and subsequent investigation of operational incidents on the District Line; worker safety issues in depots; a number of platform/train interface incidents; storage of material in deep tunnels; line control procedures on the Northern Line; and train despatch equipment on the Piccadilly Line.

HMRI inspectors have also investigated a number of accidents and operational incidents. These include fatal incidents to passengers at Acton Town and Moorgate; a runaway train at Aldgate; electric shocks to emergency personnel from traction current at King's Cross; liaison with BTP following possible suicides; a SPAD at East Finchley; escalator failures at Waterloo; and an incident involving a child on an escalator at Baker Street. HMRI also closely monitored the response of LUL and the infraco to tripcock problems on Northern Line trains.

## Enforcement action

LUL received an improvement notice requiring them to identify sites where traction current arrangements could lead to rails inadvertently becoming live.

## Other work

Work continued investigating the Chancery Lane derailment of January 2003, and the Hammersmith derailment of June 2004. The investigation on Chancery Lane has subsequently been concluded and a report produced in early 2006; HMRI has decided not to take any formal action.

HMRI inspectors continue to devote time and resources to educational and advisory work. Inspectors attended LUL and infraco safety conferences, and hosted two events for trade union safety representatives.

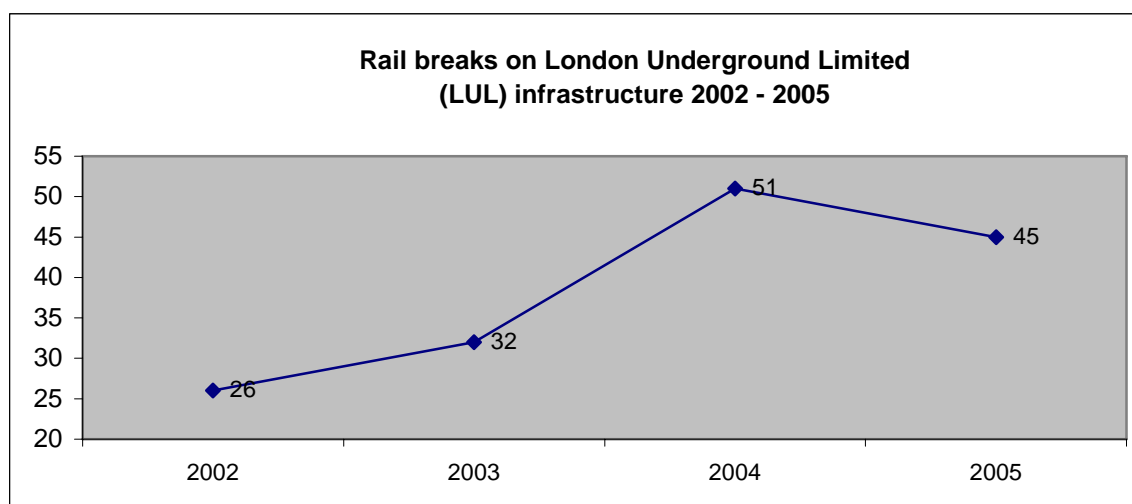
LUL submitted a three year review of its railway safety case. HMRI accepted this in November 2005.

**Fatalities on London Underground Limited (LUL) 1990 – 2005**

Year	Passenger	Railway Employee	Other member of the public	Trespasser	Suicide	Total
1990	7	6	0	20	13	46
1991	3	0	0	23	10	36
1992	1	1	0	9	13	24
1993	8	0	0	13	19	40
1994	5	2	0	9	21	37
1995	0	0	0	8	18	26
1996	9	0	0	17	8	34
1997	4	0	0	7	17	28
1998	2	1	0	6	15	24
1999	5	0	0	12	9	26
2000	3	0	0	13	3	19
2001	5	0	0	14	8	27
2002	4	0	0	11	8	23
2003	2	0	0	22	4	28
2004	1	0	0	18	1	20
2005	4	0	0	18	6	28

Notes:

- a) of the 18 trespasser fatalities in 2005, 16 are suspected suicides
- b) the victims of the terrorist attack on LUL infrastructure on 7 July 2005 are not included
- c) 2005 data figures are provisional



### **Glasgow Subway – Strathclyde Partnership for Transport (SPT) (pka Strathclyde Passenger Transport)**

Upgrading of the tunnel lighting and power cables continued in 2005 but remained incomplete at the year-end; cable joint manufacturing problems having prolonged the installation work. Completed sections demonstrate superior illumination of the tunnels for track inspection work and for potential train passenger evacuation.

Work on the new pressure sensitive 'Pressline' system was also affected by the cable joint manufacturing problems, and this project was also incomplete at the end of the year. The new system enables the traction current in the tunnel to be discharged by operation from the train cab in the event of an emergency, and the retention of the tunnel lighting. Consent to test the new system was given by HMRI in March 2005.

SPT also gained HMRI approval in September 2005 for a glazed platform-edge screen at the non-active side of Buchanan Street station's island platform. The screen has proved to be effective in influencing safe use of this platform by passengers.

In 2005, work also commenced on an upgrade of the Subway train management system. This system provides the control room functions for train operation and traction supply distribution. Along with the upgrade, SPT also proposes to introduce a new passenger information system with LED displays at platform and concourse level. The Subway expects to seek HMRI consent to migrate to the new system in 2006.

During 2005 a small number of RIDDOR-reportable incidents were notified to HMRI, and a selection of these were investigated by local field inspectors.



# Light rapid transit

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key facts

- In December 2005, the Docklands Airport extension opened for public service;
- Initial research findings of wheel/rail interface were published; and
- There was continued HMRI advice and assistance to proposed new and existing tramway schemes.

## Summary

The first phase of a research programme to examine the relationship between tramway wheels and rails has been concluded. HMRI will continue to work with the industry and in particular the Confederation of Passenger Transport, to assist in the development of standards and participate in the various industry initiatives to produce tramway specific standards.

We continue to liaise with light transport schemes that are at the tender procurement stage, conducting advance works or are in operation.

## Advice, scrutiny and inspection

HMRI continues to provide advice to the promoters of a number of 'Rapid Transit' schemes. In particular HMRI has given advice to the promoters of tram systems in London, Liverpool, Newcastle-Upon-Tyne, West Midlands, Nottingham and Edinburgh.

A number of proposed 'people-mover' systems have received scrutiny over the year and HMRI will continue to provide guidance and advice to a number of 'ultra light' systems that are at the early stages of development. HMRI continues its involvement in the Approvals process for the automated track transit system for Heathrow Terminal 5.

A joint HMRI and industry research initiative on tramcar derailments and wheel/rail interface issues has been ongoing throughout the year, and the findings of phase one of the research have been published and made available to all of the tramway and light railway operators. HMRI intends to make this report available on ORR's website in due course.

HMRI has been actively encouraging the industry to develop standards that are specifically applicable to tramways and light railways. HMRI has been involved with the steering group of UKTram, an organisation representing a wide range of stakeholders from the industry, which is supported by the DfT.. Changes to the legislative framework governing the permissioning of tramways and light

railways will make the need for standards even more essential, and HMRI will continue to support and encourage this work.

Throughout the year HMRI has assisted several tramway operators to produce standardised inspection and maintenance procedures including those unique to grooved rails.

### Docklands Light Railway

HMRI has worked closely with Docklands Light Railway Ltd, Serco Docklands and CARE on the statutory approvals for the Docklands Light Railway City Airport extension that opened in December 2005. Work has now started on an extension to Woolwich, and the expansion to a three car operation on the North London Line to Stratford.

### Manchester Metrolink

HMRI has continued to provide advice on the proposed Manchester Metrolink extensions.

### Nottingham

HMRI has supported a number of technical modifications to the tramcars that achieve safety and operational improvements.

Advice and guidance has been provided to the promoters of two extensions to the Nottingham Express Transit system.

### Midland Metro

HMRI continues to scrutinise the design of two extensions to the Midland Metro from Birmingham City centre to the Merry Hill area. Ongoing discussions are being held concerning several other extensions to this network.

### Edinburgh

HMRI has provided advice to both the Scottish Executive and Transport Initiatives Edinburgh in relation to the design and operation of the proposed tramway system, linking the Airport to the City and the Waterfront. An Act of Parliament is expected to receive assent in 2006.

### Tramway incidents 2003 – 2005

	2003	2004	2005
Blackpool Transport Services	12 (11)	10 (8)	23 (19)
Croydon Tramway	22 (22)	25 (23)	28 (25)
Midland Metro	17 (5)	20 (12)	11 (5)
Nottingham Tram Consortium	2 (0)	37 (34)	37 (36)

	<b>2003</b>	<b>2004</b>	<b>2005</b>
Serco Manchester Metrolink	27 (17)	36 (26)	38 (21)
South Yorkshire Supertram	56 (51)	62 (59)	56 (48)
<b>Total</b>	<b>135 (106)</b>	<b>190 (162)</b>	<b>193 (154)</b>

Most tramway incidents are a result of collisions between trams and road vehicles, and the data for these collisions are shown in brackets. These incidents are reported in the form of monthly bulk returns.



# Minor railways

European regulations on the reporting of rail transport statistics have resulted in a change to our Annual Report on Railway Safety, from financial year to calendar year.

This 2005 Annual Report on Railway Safety covers the period 1 January 2005 to 31 December 2005. For ease of comparison, historical data included in this report have in most instances been adjusted to also cover calendar year reporting periods.

## Key facts

- The driver of a miniature train was killed when their locomotive struck a car on a level crossing and derailed; and
- There were 44 incidents on minor railways reported under RIDDOR Regulations.

## Summary

In 2005, there were 44 incidents on minor railways reported under RIDDOR Regulations:

- three fatalities, including one suspected suicide and one platform fall;
- nine serious injuries;
- 29 minor injuries; and
- three reportable operational failures.

HMRI continues to work with the Heritage Railway Association's Safety Committee.

## Incidents

A passenger train driver was killed in a derailment following a collision with a car at Battery Road automatic open crossing, on the Romney, Hythe and Dymchurch Miniature Railway. HMRI has investigated the incident and provided assistance to the Coroner. The Inquest recorded a verdict of accidental death.

At Minehead station, a visitor using a battery-powered wheelchair misjudged a manoeuvre and fell from the platform onto the track. The visitor was taken to hospital but died later from their injuries.

A suspected suicide victim was discovered in the waiting shelter at Rhydyronen station. The death is not being treated as suspicious.

At Dalfaber level crossing, a car driver received serious injuries when their vehicle was struck by a passenger train and pushed down the track for 100 metres.

At Spout House Bridge, a young boy suffered cuts and bruises when he fell from a carriage that had an incorrectly functioning door catch.

At Castle Hedingham station, a volunteer guard suffered a fractured leg when they fell down steps while moving some boxes.

At Rothley, a member of staff sustained a leg injury when the wooden beam they were carrying fell on them.

At Haworth, a film production employee suffered neck burns when a hot cinder from a locomotive became lodged in the hood of their kagool.

# Acronyms 2005

ABCL	automatic barrier crossing, locally monitored
AHB	automatic half barrier
AOCL	automatic open crossing, locally monitored
AOCR	automatic open crossing, remotely monitored
ATO	automatic train operation
ATOC	Association of Train Operating Companies
ATP	automatic train protection
ATWS	automatic train warning system
AWS	automatic warning system
BTP	British Transport Police
CCTV	closed circuit television
CPS	Crown Prosecution Service
CTRL	Channel Tunnel Rail Link
CTSA	Channel Tunnel Safety Authority
DfT	Department for Transport
DLR	Docklands Light Railway (Serco Docklands)
DMU	diesel multiple unit
EMU	electrical multiple unit
ERTMS	European rail traffic management system
ETCS	European train control system
EWS	English, Welsh and Scottish Railway
FP	footpath (level crossing)
GSM-R	Global system for mobile telecommunications - railways
HGV	heavy goods vehicle
HMRI	Her Majesty's Railway Inspectorate
HSC	Health and Safety Commission
HSE	Health and Safety Executive
HSTRC	high-speed track recording coach

HSW Act	Health and Safety at Work etc Act 1974
IMC	infrastructure maintenance company
IN	improvement notice
LC	level crossing
LRT	light rapid transit
LUL	London Underground Limited
MCB	manually controlled barrier (operated by a railway employee)
MG	manual gate (operated by a railway employee including those operated by trainmen)
MWL	miniature warning lights
NEP	National ERTMS Programme
NR	Network Rail
NRCG	National Railway Crime Group
NRCI	Network Rail Controlled Infrastructure
OC	open crossing
OLE	overhead line equipment
ORR	Office of Rail Regulation
PN	prohibition notice
PPP	public private partnership
RAIB	Rail Accident Investigation Branch
RIAC	Rail Industry Advisory Committee
RICO	Railway Inspectorate contact officer
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
RIMINI	risk minimisation
ROGS	Railways and Other Guided Transport Systems (Safety) Regulations
ROSCO	rolling stock company
RPSG	Rail Personal Security Group (RSSB)
RRV	road-rail vehicle
RSC	railway safety case
RSCWR	Railway (Safety Critical Work) Regulations 1994
RSPG	railway safety principles and guidance
RSR	Railway Safety Regulations 1999



RSSB	Railway Safety and Standards Board
SC	South Central
SE	South East
SFB	station foot and barrow level crossing
SMIS	Safety Management Information System (RSSB)
SPAD	signal passed at danger
SPT	Strathclyde Partnership for Transport (pka Strathclyde Glasgow Passenger Transport)
SRA	Strategic Rail Authority (no longer exists – most functions transferred to DfT)
SWT	South West Trains
TET	tunnel emergency telephone
TOC	train operating company
TPWS	train protection and warning system
UWC employee	user-worked crossing with either gates or lifting barriers not manned by a railway employee



# Annex: Selected statistics for England, Scotland and Wales



## Train incidents 2005 by country and by county

Country	County	Collision	Derailment	Running into obstruction	Fire on board train	Missile damage to train windows	Total
England	Avon			6		1	7
	Bedfordshire			8	2	3	13
	Berkshire	1	2	4	2	7	16
	Buckinghamshire		1	3		10	14
	Cambridgeshire			5	2	2	9
	Cheshire			4	2	16	22
	Cleveland		1	2	1		4
	Cornwall		2	3	2	1	8
	Cumbria		1	6	2	3	12
	Derbyshire		1	7	1	5	14
	Devon			9	4	2	15
	Dorset			4	2		6
	Durham			2	2	3	7
	Essex			9	4	4	17
	Gloucestershire			2	1	2	6
	Greater London	9	8	64	71	27	179
	Greater Manchester	1	5	34	4	40	84
	Hampshire			9	2	10	21
	Herefordshire			2	1	1	4
	Hertfordshire		1	6		6	13
	Humberside		1	3		3	7
	Kent	4	7	13	21	6	51
	Lancashire	2	2	21	3	8	36
	Leicestershire			5	1	5	11
	Lincolnshire	1		2		3	3
	Merseyside		2	6	10	6	24
	Norfolk		1	6	1	1	9
	Northamptonshire			1		1	1
	Northumberland			2		4	6
	Nottinghamshire		1	39	2	3	45
	Oxfordshire			4	1	9	14
	Rutland					1	1
	Shropshire			3		1	4
	Somerset			3		1	4
	Staffordshire			3		3	6
	Suffolk		1	2		2	5
	Surrey	1	2	20	8	6	37
	East Sussex			4	4	1	9
	West Sussex	2		3	4	5	14
	Tyne and Wear			3	2	7	12
	Warwickshire	2		3	2	7	14
	West Midlands	1	2	10	1	27	41
	Wiltshire		1	4		5	5
	Worcestershire			4		2	6
	North Yorkshire		1	10		5	16
	South Yorkshire	2	5	57		16	80
	West Yorkshire		2	13	9	13	37
<b>Total</b>		<b>26</b>	<b>51</b>	<b>433</b>	<b>174</b>	<b>285</b>	<b>969</b>
Scotland	Aberdeenshire				1		1
	Angus		1				1
	Argyll & Bute		1				1
	East Ayrshire			2			2
	North Ayrshire						0
	South Ayrshire			1			1
	City of Edinburgh				1		1
	City of Glasgow		3	1	1		5
	Dundee			3	3		6
	Dunfries & Galloway			4			4
	East Dumbartonshire						0
	West Dumbartonshire						0
	Falkirk						0
	Fife			2			2
	Highland		1	5			6
	Inverclyde						0
	Moray			2	1		3
	North Lanarkshire			1	1	1	3
	South Lanarkshire			1	2		3
	West Lothian			1	1		2
	Perth & Kinross			1	1		2
Renfrewshire			2			2	
Stirling						0	
Tayside			1			1	
<b>Total</b>		<b>0</b>	<b>6</b>	<b>27</b>	<b>12</b>	<b>1</b>	<b>46</b>
Wales	Bridgend				1		1
	Caerphilly	1					1
	Cardiff			1		1	2
	Carmathenshire		1	5			6
	Ceredigion						0
	Conwy					1	1
	Denbighshire						0
	Dyfed			1			1
	Flintshire					1	1
	Gwynedd		4	3			7
	Monmouthshire			1			1
	Newport			1		4	5
	Neath Port Talbot						0
	Pembrokeshire			2			2
	Powys			4			4
	Rhondda Cynon Taff		1			1	2
	Swansea						0
	South Glamorgan		1			2	3
Vale Glamorgan			2		3	5	
Wrexham						0	
<b>Total</b>		<b>1</b>	<b>7</b>	<b>20</b>	<b>1</b>	<b>13</b>	<b>42</b>
<b>All totals</b>		<b>27</b>	<b>64</b>	<b>480</b>	<b>187</b>	<b>299</b>	<b>1057</b>

## Train incidents due to vandalism 2005 by country and by county

Country	County	Collision	Derailment	Running into obstruction	Fire on board train	Missile damage to train windows	Total	
<b>England</b>	Avon			3		1	4	
	Bedfordshire			3		2	5	
	Berkshire			2	1	3	6	
	Buckinghamshire			1		9	10	
	Cambridgeshire			1		1	2	
	Cheshire			1		15	16	
	Cleveland			1			1	
	Cornwall			2		1	3	
	Cumbria					3	3	
	Derbyshire			3	1	4	8	
	Devon			3		1	4	
	Dorset					1	1	
	Durham				1	1	3	
	Essex					2	3	
	Gloucestershire			1			1	
	Greater London	1		14	56	24	95	
	Greater Manchester			9	1	39	49	
	Hampshire			4	1	5	10	
	Herefordshire					1	1	
	Hertfordshire				2	1	4	
	Humberside						3	
	Kent			2	5	12	24	
	Lancashire						6	
	Leicestershire			3			5	
	Lincolnshire			1			1	
	Merseyside			4		2	6	
	Northamptonshire						0	
	Norfolk				2		2	
	Northumberland						4	
	Nottinghamshire			1			2	
	Oxfordshire			1			4	
	Shropshire						1	
	Somerset						1	
	Staffordshire			1			1	
	Suffolk			1			1	
	Surrey			9		5	6	
	East Sussex			1	1	1	3	
	West Sussex					2	2	
	Tyne and Wear			2			7	
	Warwickshire						6	
	West Midlands			2	1		26	
	Wiltshire						0	
	Worcestershire						2	
	North Yorkshire			2			3	
	South Yorkshire			4			15	
	West Yorkshire			2		2	13	
	<b>Total</b>		<b>1</b>	<b>2</b>	<b>91</b>	<b>90</b>	<b>240</b>	<b>424</b>
<b>Scotland</b>	Aberdeenshire				1		1	
	East Ayrshire						0	
	North Ayrshire						0	
	South Ayrshire						0	
	City of Glasgow			2	2		4	
	Dundee				1		1	
	Dunfries & Galloway						0	
	West Dumbartonshire						0	
	Fife			1			1	
	Inverclyde						0	
	North Lanarkshire					1	1	
	Lothian			1			1	
	Renfrewshire						0	
	South Lanarkshire					1	1	
	Stirling						0	
	<b>Total</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>10</b>
	<b>Wales</b>	Bridgend				1		1
Cardiff				1		1	2	
Cardiff							0	
Cardiff							0	
Cardiff							0	
Cardiff						1	1	
Cardiff							0	
Cardiff						1	1	
Cardiff				1			1	
Cardiff							0	
Cardiff						4	4	
Cardiff				1			1	
Cardiff							0	
Cardiff				1		1	2	
Cardiff							0	
<b>Total</b>			<b>0</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>13</b>	<b>18</b>
<b>All totals</b>		<b>1</b>	<b>3</b>	<b>98</b>	<b>96</b>	<b>254</b>	<b>452</b>	



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