

1 October 2009

Rail industry safety performance ten years on from Ladbroke Grove

The rail industry's safety performance has progressively advanced to a point where the likelihood of a passenger being involved in a train accident is now at an historical low. Statistics issued by RSSB firmly establish rail as the safest form of land transport in Britain whilst clearly identifying the remaining risk that needs to be managed. The figures demonstrate that the investment by industry and government in technology, training, research and their ongoing commitment to safety have paid off, and are continuing to pay off.

RSSB's Chief Executive Len Porter said:

'While we remember the events at Ladbroke Grove ten years ago, and their tragic impact on many passengers, rail staff, and their families, it is a pertinent moment to reflect on what has changed since then, and how the industry's safety performance has significantly moved forward.

'Nobody is complacent and the industry knows there are still risks to manage, but it has much greater knowledge and understanding of risk, increasingly smart technology and hardware, and the tools to monitor, research, analyse and manage those risks.'

Passenger safety – the risk to passengers from train accidents has reduced by more than 80% - from an estimated 2.45 fatalities per 10 billion passenger kilometres in 2000 to 0.45 fatalities per 10 billion passenger kilometres in 2008 (see editors' note 4). During the same period, passenger traffic has increased by about 25%. The risk from signals passed at danger (SPADs) has reduced by more than 85% since 2001. In the last four years there has been one train accident in which one passenger lost their life (the derailment at Grayrigg in February 2007).

The headline changes that have contributed to improved safety are:

- Improvements in rolling stock with superior crashworthiness which offer better protection to passengers in the rare event of an accident.
- Installation of the Train Protection and Warning System (TPWS) alongside other initiatives such as improved training and competence management, monitoring, and better briefing support for drivers. This has meant that there are fewer trains passing red signals, and that there is far less potential for serious consequences – altogether a more than 85 per cent reduction in SPAD risk, and there have been no fatalities arising from a SPAD incident since Ladbroke Grove 10 years ago.
- More comprehensive knowledge and understanding of the human factors involved in train driving, signalling, and safety critical communication have been gained.
- Modern safety management systems (SMS) introduced across the industry supported by an industry safety risk model and information management system. SMSs include a duty on companies to cooperate on safety.

RSSB's Director of Policy, Research and Risk, Anson Jack said:

'The last ten years have seen greater recognition and appreciation by the industry of a systems-approach to the railway. While RSSB provides the industry with data, risk modelling, analysis and research to support safe decisions, the real improvements have come through the commitment of individual companies to safety, combined with sustained investment in modern equipment and infrastructure made possible through the long term funding from government.'

A report summarising improvements in passenger and staff safety in train accidents will be published by RSSB during October (see editors' notes).

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For further information please contact the RSSB press office on 020 3142 5330/1/2, email pressoffice@rssb.co.uk .

Editors' Notes

1. The Ladbroke Grove rail crash happened at 08:11 hrs, 5 October 1999 and involved a collision between a Thames 'Turbo' train and a Great Western high speed train. 29 passengers and both the train drivers lost their lives. The government set up three inquiries into; the accident, train protection systems, and the arrangements for safety regulation.
2. The last decade has seen many changes in the structure and framework for safety in the railways. Ownership and responsibility for the national railway infrastructure transferred from Railtrack to Network Rail in 2002. An independent Rail Accident Investigation Branch was established by the Railways and Transport Safety Act 2003, and its role defined by the Railways (Accident Investigation and Reporting) Regulations in 2005. The European Railway Agency was also created in 2005. The role of safety regulator was transferred from the Health and Safety Executive (HSE) to the Office of Rail Regulation (ORR) in 2006. RSSB was established in 2003.
3. RSSB builds industry-wide consensus and facilitates the resolution of difficult cross-industry issues. It provides knowledge, analysis, a substantial level of technical expertise and powerful information and risk management tools. This delivers a unique mix to the industry across a whole range of subject areas – with the aim of:
 - Where reasonably practicable, continuously improving the level of safety in the rail industry
 - Driving out unnecessary cost
 - Improving business performance
4. The risk to passengers from train accidents has reduced from an estimated 2.45 fatalities per 10 billion passenger kilometres in 2000 to 0.45 fatalities per 10 billion passenger kilometres in 2008. Roughly half of the reduction in risk to passengers arises from reductions in the frequency of hazardous events, and the other half is from reductions in the consequences when they do happen. These figures take into account train-on-train collisions, derailments, and collisions with road vehicles on level crossings (where almost all of the risk is outside the industry's direct control and down to motorists' and pedestrians' behaviour), and other types of accident.
5. New legislation has introduced significant EU requirements relating to interoperability and safety management systems (SMS). The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) require all mainline transport undertakings to develop a formalised SMS, including a duty to cooperate, and obtain acceptance of it by the ORR. RSSB facilitates a cross-industry national programme to support the development of SMS and share good practice.
6. RSSB supports the industry in managing system safety through an auditable trail from data to taking decisions affecting safety. The data side includes the collection, analysis and sharing of information about safety related events – including analysis through the Safety Management Information System (SMIS) and publications such as the Annual Safety Performance Report (ASPR). It also includes the development of the industry's Safety Risk Model and a Precursor Indicator Model that looks specifically at the risk from train accidents, and the SPAD risk ranking methodology, which looks specifically at the risk from SPADs.
7. RSSB supports a cross-industry national programme on operational safety through the Operations Focus Group (OFG). It helps monitor industry performance in relation to operational safety – which includes issues such as SPADs - and recommends changes to priorities and strategies – which includes supporting effective campaigns –

including the 'RED' series - and sponsoring relevant research and development as a client group.

8. RSSB manages the rail industry's research and development (R&D) programme, which is funded by the Department for Transport. Research into railway operations has helped boost the industry's knowledge base on key risk areas including SPADs, safety critical communications and abnormal and degraded working. Engineering research has investigated a wide range of options for improving the crashworthiness of rolling stock and increasing survivability – including the benefits of all-laminated glass to contain passengers. Research into management aspects of the railway have ensured high level safety decision making is grounded in an up-to-date understanding of risk, and helped inform modern approaches to competence management and workforce development.
9. The rail industry has benefited from a far greater knowledge base on the role of human factors in managing risk, particularly in relation to the role of the train driver, the signaller and safety critical communication. RSSB's research and technical experts have developed a range of cross-industry resources to manage issues such as in-cab ergonomics, risk-triggered commentary driving, situation awareness, fatigue, the effects of lifestyle on safety, and safety culture.
10. Individual rail companies are ultimately responsible for the delivery of appropriate levels of safety in keeping with their SMS. However, because there are many companies, safe operation is supported by agreed interface standards. These are known as Railway Group Standards (RGSs) and are managed on behalf of the industry by RSSB. They cover engineering and operations interfaces and include the national Rule Book. Changes to RGSs are informed by a combination of operational experience, data analysis, and research and development.
11. The industry learns from all accidents and events through the collation and analysis of data and by considering accident investigation reports and the recommendations that flow from them. RSSB facilitates many cross industry activities – including those outlined in notes 7, 8, 9 and 10, that help to assimilate this knowledge and identify reasonably practicable measures that can further improve safety. A report on improvements in the safety of passengers and staff involved in train accidents produced by RSSB, will summarise the last 10 years safety performance as it affects passengers and staff and be published in October. It will be downloadable from the RSSB website.
12. No one is complacent about safety performance. While risk has been reduced (in the case of SPAD risk by more than 85% since 2001), there is still some risk remaining and industry is always reviewing whether there are further steps it can take to manage it. Long term developments will support this – for example, the introduction of designated High Speed lines such as HS1, which have state-of-the-art signalling and protection built in. Network Rail is leading the implementation of the European Rail Traffic Management System (ERTMS) whose first deployment is scheduled in 2010, and a national programme stretching to the middle of the 21st century, and RSSB supports it through the development of relevant new operating rules and standards.