



Rail Safety & Standards Board

INFORMATION BULLETIN

World Congress of Railway Research 2006

The 7th World Congress of Railway Research (WCRR) took place in early June when 750 people from 42 countries gathered in Montréal to discuss and share research into railway issues. A small delegation from RSSB, led by Len Porter, CEO, attended to present the range and depth of the industry-wide research programme managed by RSSB on behalf of the rail industry and government. It also enabled learning about research being undertaken in the rest of the world.

WCRR always provides a superb opportunity for networking and the 36 delegates from GB - from railway management, academia and the supply industry - were able to take advantage of the excellent attendance of technical experts and senior managers worldwide to develop contacts and potential collaboration partners. RSSB made the most of this from its exhibition stand and hosted a steady stream of delegates keen to find out about the research programme and about RSSB as a whole.

Away from the exhibition stand, RSSB was involved in the technical programme: chairing sessions, presenting papers on recent industry research, and sharing knowledge with other researchers. Key relationships were established that will facilitate closer links with other research programmes.

As a showcase event, WCRR presents an opportunity to improve the international perception of the state of the railway industry in Britain and the strength of our technical know-how. The British delegation was able to advance this perception in many ways. In a keynote address, Len Porter presented an overview of the British approach to sustainability which is being led by RSSB, with significant support from the research programme. This demonstrated how the British rail industry has a planned approach to sustainability and a route map to deliver it, and it was very well received. Andrew

McNaughton of Network Rail gave a rousing speech in the opening session, portraying the developments that have taken place in Britain over the last few years and noting the support that Network Rail is receiving from the RSSB-managed research programme. Indeed, Network Rail won the best paper prize in the Vehicle-Track System category for their paper describing a long term programme of work on a system approach to rolling contact fatigue, to which research from the RSSB managed programme has contributed.

Feedback from the delegates was extremely positive and many described the R&D programme as leading edge. In particular, they were impressed by the way that R&D is managed, the way that industry works together to deliver R&D, and by the way that research output is made so readily available.



*Len Porter giving his plenary address
(Photographer Benoit Desjardins)*

For more information about RSSB at the World Congress of Railway Research contact **Tanya McCallum, research analyst** on **020 7554 4622** or email tanya.mccallum@rssb.co.uk



Standards News

Implementation of the Railways and Other Guided Transport Systems Regulations

The new Railways and Other Guided Transport Systems Regulations 2006 (ROGS) implement the Railway Safety Directive in Great Britain and mark a significant change in the way elements of the network are managed.

The Office of Rail Regulation is co-ordinating the range of work associated with this transition. Within that work, a number of working groups have been established under the Industry Standards Coordination Committee (ISCC) to determine what changes, if any, need to be made to Railway Group Standards in order for the industry to implement the requirements of the ROGS Regulations when they take effect on 01 October. The subjects covered by these groups include route acceptance, certification of rolling stock, and safety verification of both rolling stock and infrastructure.

RSSB is involved in and facilitating these working groups, and will be ensuring that any necessary changes to Railway Group Standards are implemented to the timescales agreed within the ISCC.

For more details contact **Anson Jack, director, standards** on **020 7904 7703** or email anson.jack@rssb.co.uk

New Technical Specifications for Interoperability Approved

Technical Specifications for Interoperability (TSIs) continue to be developed by the European railway community. The Railways (Interoperability) Regulations 2006 mean that these TSIs will increasingly apply to the British mainline network as major projects are developed and implemented.

Five revised High Speed and two new Conventional Rail TSIs were approved at the Article 21 Committee meeting on 21 June 2006, as follows:

- High Speed – Control, Command and signalling
- High Speed – Energy
- High Speed – Infrastructure
- High Speed – Operations
- High Speed – Rolling Stock
- Conventional Rail – Persons of Reduced Mobility
- Conventional Rail – Safety in Railway Tunnels

These TSIs will now be translated into each of the languages of the European Union before they are published in the Official Journal, a process that typically

takes a minimum of 12 months to complete. The approval of these TSIs marks the end of the work of the AEIF; all current and future work on TSIs will be undertaken by the European Railway Agency.

RSSB staff working together with colleagues in industry have been heavily involved in the drafting and economic evaluation of these TSIs, and in briefing the government representative on the Article 21 Committee regarding the industry view of the draft TSIs.

For more details contact **Adam Milligan, head of systems coordination** on **020 7904 7629** or email adam.milligan@rssb.co.uk

Railway Group Standards template revised to take account of recent legislation

The changes introduced by the Railways (Interoperability) Regulations 2006 and the Railways and Other Guided Transport Systems (Safety) Regulations 2006 require the use of a new terminology in Railway Group Standards and related documents - infrastructure manager and railway undertaking in place of infrastructure controller, station operator and train operator; and safety certificates and safety authorisations in place of the acceptance of a Railway Safety Case.

The templates for Railway Group Standards and related documents have therefore been revised, with input from Industry Standards Co-ordination Committee, to use the new terminology. The sequence of sections has been revised to give greater emphasis to the requirements set out in the document, with 'administrative' elements being placed at the back of the document.

Those parts of the current template (particularly Part 1) that try to explain who has to comply with RGS and why are completely deleted, as this is authoritatively set out in other documents such as statements of national regulatory provisions, licence conditions, regulations and the Railway Group Standards Code.

It is intended to adopt the new templates from 1 July 2006. This means that on some occasions the documents issued for consultation or approved by Standards Committee will be put into the new template after consultation or approval. Although documents will not look the same, the technical content (requirements) will not be affected by this process.

For more details contact **Adam Milligan, head of systems coordination** on **020 7904 7629** or email adam.milligan@rssb.co.uk

Publications and Withdrawals in the RGS Catalogue

Nine items have been authorised for publication or withdrawal in the August 2006 Catalogue, as follows:

- a) One new Railway Group Standard – GM/RT2491 Design Requirements for Driver's Reminder Appliance (DRA) – Ratifies the rapid response standards GK/RT0091 issue 2, and supersedes it.



- b) Two new web-based forms related to Signals Passed at Danger. The SPAD forms contained in GO/RT3252 issue 5 have been reviewed and updated in line with the upgraded version of SMIS, due to go live on 02 October 2006. The web-based forms will replace those in the RGS. All previous versions of these forms will be withdrawn from 30 September 2006.:
- GO/RT3252/A, issue 2
 - GO/RT3252/B, issue 2
- c) 6 Withdrawals:
- GK/RT0091, Issue 2 – Driver's Reminder Appliance (superseded by GM/RT2491)
 - GC/RT5151 – Safe Asset management - Embankments and Cuttings
 - GC/RT5152 – Mineral Extraction and Landfill – Managing the Risk
 - GO/RT3411 – Exceptional Weather Conditions – Managing the Risks
 - GI/GN7611 – Guidance on Provision, risk assessment and review of level crossings
 - GI/RT7011 – Provision, Risk Assessment and Review of Level Crossings

For more details contact **Marie Marks, head of standards management** on **020 7904 7588** or email marie.marks@rssb.co.uk

ERTMS – Management arrangements for the development of RGS

The ERTMS programme has been established to develop and lead the national implementation plan for ERTMS and to deliver the core building blocks necessary to achieve the plan. A key building block is the development of the required content of GB ERTMS standards.

Recently the principle of the process for managing the development of any relevant Railway Group Standards (RGS) was agreed. This process sees the ERTMS programme itself undertaking the development of the relevant RGS to the point at which the proposal constitutes a fully drafted standard, with all consequential changes identified and drafted, with a well developed and convincing impact assessment. In addition, evidence will be presented of full and appropriate cross industry consultation and agreement with at least the same level of rigour and representation as normally applied to RGS. It is expected that a cross-industry Review Group or Review Groups, with ERTMS, engineering and operational subject matter experts, will oversee the development of the standard. The existing ERTMS Operational Review Group fulfils part of this

role. Once this development work is complete, no further development work or consultation should be needed before the proposal and draft standard is submitted to the relevant Standards Committee for approval.

It is intended that the combination of RSSB personnel and others from the industry, and the application of the general processes and procedures that RSSB use for standards development, will enable acceptable standards proposals to be submitted to the formal RSSB process having been agreed in principle by the industry.

RSSB is working within the ERTMS Programme and through its standards units to ensure all relevant rules and standards are in place for the implementation of ERTMS.

For more details contact **Natalia Boniface, project manager, new systems** on **020 7904 7967** or email natalia.boniface@rssb.co.uk

Got an issue with a Railway Group Standard? Call the **RSSB Enquiry Desk** on **020 7904 7518** or email enquirydesk@rssb.co.uk.

If that doesn't sort out the issue – let me know, **Anson Jack director, standards**, on **020 7904 7518**.

Risk Management Forum

This year's Risk Management Forum took place at the University of Nottingham's Jubilee Campus on 28 and 29 June.



The event, which was attended by 210 delegates from across the industry, focused on the practical management of human behaviours – a theme that RSSB's 2005 Annual Safety Performance Report (ASPR) highlighted as a major source of risk.

Professor James Reason's keynote address challenged his audience by suggesting that the pendulum of culpability had swung too far towards the system at the expense of the person. The subsequent presentations widened the debate, covering topics from human performance to energy efficient driving, sleep apnoea,



cab ergonomics and workforce supervisory skills.

Three workshops were also presented, dealing with fatigue issues, human reliability assessment and RSSB's *How Safe is Safe Enough?* These were well-attended and stimulated much discussion. There were also a range of exhibitions, covering human factors, CIRAS, as well as a further chance to see the main headlines from the ASPR.

Day 2 finished with a speech by Paul Thomas of British Nuclear Fuels (a non-executive director of RSSB), in which he suggested that people achieve high levels of performance when encouraged and reinforced by leaders, peers and subordinates. The next Risk Management Forum will be on 11/12 July 2007.

For more information contact **Colin Dennis, head of risk and safety management** on 020 7904 7499 or email colin.dennis@rssb.co.uk

Climate Change and Coastal Railway Lines

RSSB is starting an investigation in to how climate change might affect rail services that run adjacent to British coastal and estuarine areas. With the support of Network Rail and the Environment Agency, this study will examine the sea defences in the estuaries of the rivers Exe and Teign, and along the Dawlish coastline, which sits between the two river mouths. This area of Devon is served by the Great Western main line and the Exmouth branch line.

Using Network Rail data for the area, this research project will examine how often, and to what extent, these rail lines were subjected to disruption caused by sea conditions. The project will then use climate change predictions to determine how the level or severity of disruption might be increased by such factors as rising sea levels, more frequent or more intense storms, or stronger winds. The project aims to make predictions for climate change effects in the 2020s, 2050s and 2080s.

One of the objectives of this project is to investigate what level or type of enhancements might be needed to existing coastal defences in the area in order to mitigate the potential effects of climate change. This model could then also be applied to other coastal and estuarine areas where rail lines are at risk of being affected by extreme sea conditions.

For more information contact **Huw Parry-Jones, research manager** on 020 7554 4610 or email huw.parry-jones@rssb.co.uk

Award-Winning Sulphur Free Diesel Research



Left to right: Steve Mills (RSSB), Ian Papworth (ATOC), Margaret Adams (RSSB), Bryan Donnelly (ATOC) Guss Brett (Bombardier Transportation) and Chris Green representing the Rail Industry Forum.

Research led by ATOC and RSSB under the R & D programme, on behalf of train operators, Rolling Stock Companies and Network Rail into the use of sulphur free diesel on railway vehicles has won the Bombardier award for Innovation in Sustainable Development at the Railway Forum/Modern Railways Railway Innovation Awards 2006.

The results will lead to the introduction of Sulphur Free Diesel to help enable Britain's rail industry to meet new European Union environmental obligations. It will also enable the railways to consolidate their already significant advantage against much more environmentally damaging forms of transport, namely road and air.

The research included extensive desk top analyses, test bed trials and in service trials to investigate the impact of introducing sulphur free diesel across Britain's rail network. This forms the basis of a full trial of sulphur free diesel on the rail network. The test bed work has ensured that the performance of the engines are suitable for the service trials, and the trials which are now ongoing are looking at the long term effects of introducing sulphur free diesel across all diesel trains.

Rail travel produces less than 1% of total UK emissions of CO₂ compared to 21% from road transport. The environmental advantage of rail is even more apparent on busy transport corridors where CO₂ emissions per passenger kilometre from cars can be more than six times higher than those from trains on the same route and by air, eight times higher.

For more information contact **Margaret Adams, research manager** on 020 7554 4613 or by email at margaret.adams@rssb.co.uk



Level Crossing Special Topic Report

Level crossings date back to the seventeenth century. They remain a hazardous element of the railway and were addressed in RSSB's latest Safety Performance Report, issued in June.

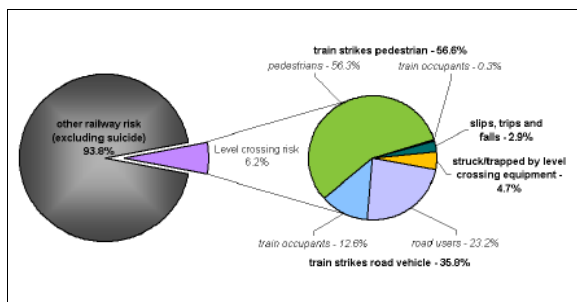
Since the last edition (July 2005), the most significant level crossing event took place at Elsenham station footpath crossing on 3 December 2005. While attempting to cross the line to catch a train on the Down platform, two young girls did not react to warnings which resulted in them stepping into the path of a through train.

The current special topic report shows that there have been no train occupant fatalities or major injuries since November 2004. Last year (2005) was also the first since 1999 where no derailment occurred from trains striking road vehicles at the interface. However, the annual total of these strikes has remained constant, at 16.

The report also shows that near miss and misuse incidents have increased. There were 13 accidental fatalities (excluding suicides and suspected suicides) in 2005: three were road vehicle occupants, ten were pedestrians.

The chart portrays level crossing risk as a proportion of all railway risk (as per the Safety Risk Model). Note that (excluding suicide) level crossings comprise approximately 6% of the total. The right-hand pie indicates that most of this comes from pedestrians being struck (57%). The risk from train collisions with road vehicles is 35%, while the remainder is made up of persons being struck/trapped by crossing equipment (5%), and slips, trips and falls at level crossings (3%).

While the risk from level crossing collisions has shown a slight improvement over the last five years, user behaviour continues to contribute 95% of the total risk.



Although level crossings are the largest source of train accident risk on the mainline railway in Great Britain, the accident rate (when viewed on a per crossing basis), shows that Britain's railways experience significantly fewer accidents per crossing than their European neighbours.

For further information, contact **Adrian Smith, safety intelligence analyst** on **020 7904 7521** or email adrian.smith@rssb.co.uk

Understanding Human Factors – a guide for the railway industry

Aimed at the non-specialist, this comprehensive guide to Human Factors has been developed to answer one question: 'What practical advice can a human factors approach offer to railway staff without needing them to be experts in the field?'

This 250 page guide is designed as a 'dip in' reference for managers, supervisors, trainers, and health and safety staff. Looking at the subject from a railway employee's perspective, the guide deals with human factors issues affecting the areas of:

- Conditions
- Culture
- Design
- Staffing
- Training

One of the main intentions of the guide is to provide non-experts with enough knowledge to incorporate human factors considerations into their projects at the planning stage, rather than later on, when changes may prove more costly or less effective.

If you just want to 'dip in' to specific parts of this comprehensive repository of knowledge and good practice you can download a PDF version from the RSSB website. www.rssb.co.uk/humanf_understanding.asp

Managing Health Effectively

RSSB hosted a seminar on 26 June to outline the detail from two research projects recently concluded by RSSB. The two projects were designed to find out what was already known about good practice in occupational health and to take a view on what the rail industry might consider doing to enhance its current position. Some of the key points included better staff health and fewer days lost to absence, both of which will help the industry provide a better service to its customers.



Two products came out of the research projects, a suite of *Occupational Health Guidance Notes* to help companies to get the best value out of their Occupational Health resources and a toolkit that is designed to help line managers take on some of the responsibility for managing Occupational Health on a day-to-day basis.

Both products are available on the RSSB website (www.rssb.co.uk) and are also available as a binder/CD ROM pack from the RSSB enquiry desk (tel 020 7904 7518 email enquirydesk@rssb.co.uk). Please note stocks are limited with copies of the pack being provided on a first come first served basis.

For more details on the projects contact **Michael Woods, head of operations research** on **020 7554 4604** or email michael.woods@rssb.co.uk

Train Horns – progress with cross industry review

During June progress was made in the cross industry review of train horns, and a number of significant work streams are now under way to evaluate the possible solutions. At the same time a number of problem areas have been resolved under Network Rail's review of 'Whistle Boards' which has led to some Whistle Boards being removed.

The potential solutions which have been identified include:

- Introduction of Broadband Horns which are more directional
- Reducing the noise levels of train horns
- A night time 'ban' on the routine use of horns at footpath crossings
- Reducing the number of locations horns are sounded

During June the Noise Abatement Society encouraged all of its stakeholders who are inconvenienced by train horns to write or e-mail to Anson Jack at RSSB. A significant number of complaints were received as a result.

At the end of June a summary of the various work streams, and outline timetable for their completion was published on the RSSB website. It also set out the relationship between the work being undertaken and the decisions that will be made later in the year.

If you want to know any more about the work being done on Train Horns you can find the communications on the

RSSB web site at www.rssb.co.uk/comrelations.asp or contact **Anson Jack, director, standards** on **020 7904 7703** or e-mail anson.jack@rssb.co.uk

Spotlight

Network Modelling Framework

The Railways Act (2005) requires the Secretary of State and Scottish Ministers to send the Office of Rail Regulation (ORR) a high-level output specification (HLOS) and a funding statement as part of the access charges review.

The specification and funding statements will ensure the industry has clear information about the strategic outputs that the Government wants the railway to deliver in exchange for the public funds it is prepared to make available. The HLOS will be published in July 2007 to cover the period 2009-2014, together with a high-level strategy for the issues that cannot be included in the HLOS. The HLOS will cover safety, reliability and capacity.

The HLOS will be based on the Department for Transport's (DfT) Network Modelling Framework (NMF), which will bring together and establish links between industry models related to demand, train operating costs, infrastructure costs, performance and safety. Models linked by the NMF must be driven by common assumptions and must be able to 'talk' to one another. The functionality of the NMF must be able to provide a 2009-2014 baseline position, and must be able to analyse changes in the areas highlighted above. It should also be able to take into account exogenous factors (such as demographic changes, fuel costs and so on).

RSSB has been leading a research project to develop the safety module of the NMF. This is designed to assess the safety implications of changes to the infrastructure and operational performance of the railway. The safety element is modelled using an adapted version of the RSSB Safety Risk Model. The new model will be able to give broad indications of the safety impacts relating to infrastructure changes (two-track, four-track, fewer level crossings, etc) and operational performance (numbers of trains, train speed, passenger loadings, etc). It will not be possible to use the model for assessing safety projects in their own right or for demonstrating that the safety risk is as low as reasonably practicable.

Version 1 of the completed module was successfully delivered to the DfT at the end of May for integration into the wider NMF. A further version, including a number of refinements, will be provided at the end of July.

To find out more contact Colin Dennis, head of risk and safety intelligence on 020 7904 7499 or email colin.dennis@rssb.co.uk