Focus



Safety

Human factors

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- PKP/UIC Safety Seminar, PKP SA Headquarters, Warsaw, 21 November 2012, by Bernard Penners (Infrabel) and Virginie Papillault (UIC)
- Working with Human Factors, by Félix Garcia, RENFE

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Presentation

The Human Factors Working Group is one of the five working groups of the UIC Safety Platform. It brings together railway undertakings and infrastructure managers: CFF-SBB, DB AG, Infrabel, Japan Railways Group, Network Rail, SNCF, Renfe and RSSB.

Missions

- Supports UIC members in integrating Organisational and Human Factors in their safety systems as appropriate tools for enhancing efficiency, safety and reliability
- Benchmarks and shares experience to improve common knowledge and current best practice
- Identifies the possible problems and assesses the risks through in-depth analysis of the Safety, Organisational and Human Factors
- Makes recommendations for UIC members and presents them in widely targeted publications
- Provides the ERA Task Force with strong arguments from UIC members with regard to the intrinsic relationship between Human Factors and Safety matters (CER)
- Provides UIC members with ideas and best practice used in different industry sectors or from the academic environment

Latest studies carried out by the Human Factors Working Group



Project on "Organisational and Human aspects of safety at border crossings"



Study on the "Analysis of the Human, Organisational and Social Dimensions of an incident"

Workshops organised by the Human Factors Working Group



WORKSHOP "SAFETY IN THE RAIL SYSTEM – THE HUMAN FACTORS"

18-19 May 2011

The main goals of the seminar were to provide a general overview of the available and practically-applicable knowledge, illustrate using examples from specific cases, make the link between the ideas presented and railway

safety, provide a basis and sources of reference for further research, note the limits of such approaches' validity or relevance.

The first part placed Human, Organisational and Social Factors in the context of railway safety:

- development of concepts and lessons learned from accidents in the transport, chemical, energy, space and military sectors,
- applying an HOSF approach to an incumbent rail operator.

The second part examined the railways' practical implementation of findings from recent research and experience in the context of understanding the relationships between individuals, organisational arrangements and safety and explored the ways that risk can be controlled.

WORKSHOPS "COMPARATIVE REVIEW OF SAFETY CULTURE"

19 January 2012, 25 April 2012, 11 September 2012

In 2012, UIC launched three seminars on safety culture in the railway sector. A number of railway companies and infrastructure managers were brought together during these events organised by the Human Factors Working Group. The work focused on current best practice in the area of safety culture, and aimed to:

- Identify and characterise the safety culture as practised within railway companies
- Establish the best methods
- Identify the tools enabling a safety culture to be effectively implemented in the railway sector as a whole
- Learn from other areas of industry (nuclear, oil, chemical, air and maritime)

UIC and its members propose a common study in 2013 enabling railway companies and infrastructure managers to empower not only those involved in the safety sector, but all staff in general to develop a common culture.

Current studies

A subject of major importance at the moment is linked to "safety culture".

Another study is dealing with "training and drilling in disrupted situations".



Presentation of the project "organisational and human aspects of safety at border crossings", 19 May 2011, UIC

From left to right: Virginie Papillault, senior advisor, Organisational and Human Factors, UIC, Christian Neveu, chairman of the Human factors working group, Bernard Penners, safety manager, Infrabel, Benoit Dandeville, safety manager for freight, SNCF





Rail non-technical skills training and good practice now available

Ann Mills, RSSB

What are nontechnical skills?

Non-technical skills (NTS) are generic skills that underpin and enhance technical tasks, for example – train driving. These skills could include the ability to take in information, focus, take decisions and communicate with others. NTS play a vital role in safety by helping people anticipate, identify and mitigate errors.

Crew Resource Management, a form of NTS training, was introduced in the aviation industry in the 1970s, and it has since spread to various other safety critical industries such as nuclear, healthcare, and shipping. In more recent years, this form of NTS training has been introduced to rail industries in Australia, USA and Canada. Evaluations of this training suggest that it can reduce safety occurrences attributable to human error.

RSSB's Human Factors team has been researching NTS for the GB rail industry. The aim of this project: **T869 Non-technical skills for rail: development, piloting, and evaluation of a training course**, was to design, produce and pilot a suite of materials for training and reinforcing NTS. Long-term, the vision is for this suite of materials to be adopted and adapted as appropriate by other companies, and for other operational roles, integrating into existing technical training programmes as necessary.

Why are NTS important? ,,

Reviews of incidents and accidents in the industry have shown consistently that where NTS are lacking, the ability to prevent and mitigate errors is compromised, and so contributes to the incident taking place.

A total of three driver pilot courses and two manager pilot courses were run as part of the project. Trainers from Northern Rail and Arriva Trains Wales delivered each course to staff from within their own companies. The courses were positively received by participants. Ratings and comments on the course suggested that the training was perceived to be useful, and provided tools to enhance competence and safety within the industry.

Evaluation of the pilot training courses for drivers and their managers (based on a sample of 29 drivers and 12 managers) demonstrated significant improvements in non-technical skills (based on selfreports and manager ratings of drivers on the job). Significant improvements were demonstrated across managerial skills (as perceived by managers themselves), specifically the understanding of NTS and relevance to the driver role, and knowledge of what should be documented and why. Improvements were also seen in attitudes to safety, and in safety culture ratings, although these did not reach significance. Over the course of the project, an increasing number of companies have



begun to formally consider NTS and explore how NTS can be integrated into training and competence measurement.

The Rail Industry Skills Forum, which sponsored this work, has recommended this important research to railway companies in Great Britain and it was showcased at a launch event in June 2012. Northern Rail said they are 'committed to working to embed the principle of nontechnical skills and human factors in the competence management system'. RSSB is now offering train the trainer courses, hosting industry forums for companies introducing NTS into their competence management systems and continuing to review the role of NTS in GB incidents and accidents.

The course material and related guidance is available from SPARK. You can register and access SPARK at www.spark.rssb.co.uk.

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Safety: progress through in-the-field experience

Christian Neveu, SNCF

Safety management in industrial settings is conventionally based on a top-down approach. The rules defined by those in charge are to be applied and observed by operators in the field. Non-observance of these rules is considered to be error or rule-breaking.

This model of safety management has, incontestably, brought about improvements over time. However, it is observable that in spite of managerial entreaties, there remain discrepancies between theory and practice as regards the application of procedures.

What can be done in order to progress to the next level in our ongoing efforts to achieve a better safety record?

SNCF is developing a more balanced safety management approach, promoting a convergence between top-down managerial instructions (which remain necessary) and greater involvement of operators in safety. This approach is characterised by greater consideration of in-the-field experience which is often neglected by safety experts. Another aim is to increase the knowledge on the «everyday successful performance. How can we learn from what goes right?" (Hollnagel 2012)

The implementation of some experimental programmes and research is proving promising.

One of these experimental programmes consists in enabling the expression of "successes in safety activities" by operators in the field. What is asked is not the report of an act of bravery but quite simply daily basic actions that allow safe railway operations. Some types of "success" in safety: a right way of implementing a safety procedure in a particular or disrupted context, an appropriate response to the failure of technical equipment or to a weakness/lack of procedure etc.



Initial output indicates progress in the perception of risk and safe behaviour.

This safety strategy also has positive effects in terms of system design and management.

Boosting operator involvement in safety management enables system designers and managers to draw on useful practical knowledge of the way systems work in reality.

It also represents an effective spur to safer behaviour, since rules established, discussed and validated by work teams themselves are more strictly complied with than rules imposed from the top down.

Lastly, it is an effective way for managers to express their gratefulness towards the staff.

The challenge we face is however hard because it may go against the existing safety model and culture which are based on the strictly compliance with the rules and the predominance of the experts.

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PKP/UIC Safety Seminar PKP SA Headquarters, Warsaw 21 November 2012

Bernard Penners (Infrabel) and Virginie Papillault (UIC)

A couple of severe incidents occurred on the Polish railway network in 2011 and 2012. With the aim of improving safety, UIC Director General, Mr Loubinoux and CEO of Polish State Railways (PKP), Dr

Karnowski decided to organise a seminar on railway safety issues with particular focus on human factors and safety management systems. This seminar was supported by the UIC Safety Platform and namely the Human Factors Working Group and System Safety Management Group.

The event was jointly organised by PKP & UIC and took place on 21 November 2012 at PKP SA Headquarters in Warsaw. The main objective of this seminar was to improve the railway safety approach of PKP to benchmark the Organisational and Human Factors safety measures that were taken in some European countries to prevent severe accidents. The seminar brought together senior European experts in railway safety including the top

Representing the UIC Human Factors Working Group, Virginie Papillault and Bernard Penners jointly presented the role of human factors in safety management. In her introduction, Ms Papillault recalled the crucial elements underpinning the approach to organisational and human factors.

Mr Penners then presented Infrabel's "safety culture" programme, which was launched following the tragic accident in Buizingen on 15 February 2010.

Ms Papillault concluded the presentation by giving a concrete example of integrating human factors as part of the safety management system. This example from SNCF involves the continuous monitoring system in force, which is implemented by the line managers. management of Polish Railways led by PKP SA CEO Dr Jakub Karnowski. The governmental authority representatives – among others – were represented by Dr Andrzej Massel, Vice Minister for Transport, and Dr Jakub Majewski, Vice President of the Office of Rail Transport.

For UIC's part, Mr Jean-Pierre Loubinoux – Director General of UIC HQ, representatives of the Safety Platform from Austria, Belgium, Germany, France and Switzerland gave speeches, as well as UIC Safety Unit staff: Mr Peter Gerhardt – Head of Unit, and Virginie Papillault – Expert on human factors in safety. The seminar was moderated by Mr Marcin Zaremba – Deputy Director of Market Research Department at PKP SA and Mr Jerzy Wisniewski – Director of the UIC Fundamental Values Department.



From left to right: Prof. M. Sitarz – Silesian Polytechnics; A. Pawlowski – member of the PKP PLK Board; J-P. Loubinoux – Director General UIC; A. Massel – Vice Minister of Transport; J. Karnowski – PKP CEO; J. Majewski – Vice President of the Office for Railway Transport

Having taken into consideration that the issues of railway safety and security are of ultimate significance for PKP management, UIC declared it would deploy further efforts in order to support PKP in its safety improvement undertakings as a follow-up to the seminar. The availability of UIC's high-level experts and UIC's close relationship with several international organisations and institutions should be helpful in jointly obtaining the expected results.



Participants in the seminar and UIC experts



Working with Human Factors

Félix Garcia, RENFE

Every day, safety at every level grows in importance across all sectors of developed societies, and as society progresses, it becomes less tolerant of shortcomings in safety standards. One of humanity's aspirations is to develop in a safe environment. Abraham M. Maslow classified safety as one of the most basic requirements in his hierarchy of personal needs, just behind physiological concerns, believing the need for safety to be stronger than the need for love.

An organisation's customer image owes much to customer perceptions, with safety as an essential part of that quality – albeit hidden and overlooked until it becomes noticeable through its absence. The customer-perceived quality, in turn, becomes the main feature that distinguishes the business from other organisations, and ultimately determines its own survival. This perceived image, along with the features distinguishing it from other organisations, are created by the individuals operating the company's systems, with their beliefs, principles and working habits – in other words their culture.

Safety in the railways is primarily based on the dynamic interplay between four key elements: machinery, tracks, standards and people. Historically, efforts to improve railway safety have focussed on the first three elements and less on the human operator - despite the importance of this component in the system. So much so, that we are faced with the paradox that as safety systems become more technically advanced in order to avoid human error and its consequences, not only does human error not disappear, but in some advanced systems it even increases. It would seem that ever-growing technological demands, the absence of human involvement in the design of systems and lack of information about inherent and external risks, are what cause these errors.

However, human operators are always the central and most important factor in safety systems, as despite being the sources of human error when it comes to decisionmaking or technical operations, they help make systems exceptionally reliable, and are capable of supervising and correcting previous technical and organisational errors in order to avoid greater consequences. The human operator is the only one who can make mistakes, but also the only one who can correct errors in the safety chain and report any errors made, while also being able to ensure that the system is versatile enough to adapt to constant changes in the physical, organisational and political environment.

"To say that accidents are due to human error or failure is not so much wrong as unhelpful, as it does not lead to any constructive action" Trevor Kletz

Investing time and money to improve the most versatile element of the safety system and the working environment not only gives a business credibility and sustainability in the long-term through the image it conveys to society, but also offers a competitive edge and better adaptation to change through continuous improvements focusing on employees and knowledge management. This serves to create a safety culture that is projected from within the organisation towards the exterior, enriching society and having a positive impact on the organisation itself through its own working environment.

If an organisation's greatest asset lies in the knowledge and know-how of the employees who constitute it as a collective undertaking, when it comes to operational safety the organisation's education, training, attitudes towards safety and employee involvement are what set it apart and underpin its survival.

We are not seeking to justify here, as such, the need to research and work on Human Factors in order to improve our safety management systems, and consequently railway safety standards.

It does seem necessary, however, to reflect on the values (economic, social, corporate image, etc.) of Human Factors in railway organisations and on the return on investment, primarily in times of crisis such as the present where investing in technical systems becomes difficult, and where, at the same time, it is necessary to maintain high quality and safety standards as the essential basis for railways to remain competitive businesses.

They say that knowledge of human factors is hugely important to people, and I confirm that knowledge and experience of people is of crucial importance to the future of human factors.

