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RAILWAY SAFETY: RISK ASSESSMENT TECHNIQUES

Transmitted by the Governments of Hungary, Lithuania,
Slovakia, Slovenia, and United Kingdom

HUNGARY

The Board of the national railway company with 95% of Hungary's rail transport adopted the concept and program of safety and security in March 2003. The program is valid for 2003-2005 and extends to 7 fields, like security of objects, fire protection, security in informatics, etc. The field "Safety of operation" contains 13 tasks, among them:

- to develop point system for accidents (in year 2003) and to revise the system of supervision;
- to modernize the regulations for maintenance and operation;
- to settle up-to-date diagnostic devices for vehicles and tracks on the selected line sections;
- to elaborate and apply the provisions of relevant EU legislation (2003-2005);

Implementation of these will involve also risk assessment techniques as appropriate or necessary.

LITHUANIA

The safety procedures and investigation of traffic accidents in the railway transport were approved by the order of the Minister of Transport and Communications in February 2003 (No. 3-79).

SLOVAKIA

In order to introduce preventive measures for assuring the safety of railway transport, amendments of the regulations D 17 - Regulation for reporting and investigating accidents and extraordinary events in railways operation (Predpis pre hlásenie a vyšetrovanie nehodových udalostí a mimoriadností) - were elaborated. The amendments principally changed the point of view as to how such dangerous situations (that could develop into real accidents) occur and who wa to blame. In their preparations, the knowledge acquired through accident investigation was also used, with the objective of preventing their recurrence. The requirements of the Directive of the European Parliament and the Council on the safety of Community Railways was used in developing the philosophy of assessing dangerous situations, thus creating prerequisites for an objective assessment and investigation of risk situations and accidents.

In the field of occupational safety and health protection, the amendment of the directive BOZP-Op16 to Regulation BZ1 - Safety of employees in ZSR conditions has been completed. This regulation was processed in compliance with the European Union legislation for occupational safety and health protection, resuming the provisions of Act of the National Council of the Slovak Republic No. 330/1996 (Coll.) on Occupational Safety and Health Protection, as amended by later legal regulations and their implementation in a comprehensive way. Besides this regulation, the ZSR has already elaborated the "Occupational Safety and Health Protection Policy" (Politika BOZP), containing the basic objectives, intentions and the ZSR's strategy in accident-prevention, improvement of labour conditions and of the working environment, as well as the company's philosophy of labour and employee protection. Within the above-mentioned act and methodical instructions, an "Assessment of Working Risks" (Hodnotenie rizík pri práci) was conducted, and measures were already issued for removal or for making specific risks acceptable in operations.

In implementing new technological measures specialized organizational units submits them to the Occupational Safety and Inspection Section. This Section examines measures very carefully and assesses them in a way – assuring that they comply with the requirements of safe and uninterrupted transport. After having determined the insufficiencies, common solutions considering (above all) the viewpoint of personal safety and safe operation are sought for.

The accident and injury forecast model has not yet been elaborated, because the situations, at which accidents and injuries happen, result from random events that cannot really be forecasted. If it were theoretically possible to forecast the occurrence of those events, it would also be possible to prevent accidents and injuries completely and to achieve a fully-accident and injury-free operation. But with the current state of the human knowledge it is not quite possible.

The ZSR (Inspection Department) is engaged in groups, which deal with safety on the railways (infrastructure), where the so-called “Safety platform” has been established. The

purpose of the safety platform is to solve principle issues of safety improvements regarding railway infrastructure and rolling stock operations. Following the European safety-related directives, through this group, the ZSR is involved in the preparation process.

The ZSR has a relatively low accident rate on its network, due to the well-elaborated safety-related regulations and controls.

Regarding the experience of the Železničná spoločnosť a.s. in implementation of the new technical measures, those are quite good – but they concern mainly new signalling devices of Mirel VZ type and the electronic speeder for the locomotives. Those devices improve safety of railway transport, especially the exclusion of a possible failure of the human factor in operation.

SLOVENIA

New projects are started in the field of Life Cost Cycle and Traffic Control Centre (Strategic projects). Related preventive measures will be included to increase the overall safety of the railway transport.

SWEDEN (information provided by Banverkt)

The Swedish rail sector has during recent years been spared from major accidents involving personal injury. The accidents and near-accidents that have taken place both in Sweden and abroad show, however, that the safety level must be constantly monitored and improved.

According to Railway Inspectorate statistics, the total number of people killed and seriously injured on the railways, underground and light-rail systems amounted over the period 1998–2000 to 72, 65 and 68 (50 according to preliminary figures for 2001). In addition, suicides and attempted suicides in rail traffic led to a further 67, 74 and 65 people, respectively, dying or being seriously injured over the same period.

Measures taken to reduce the number of accidents at level crossings have for many years had the greatest effect on accident trends. The outcome of these accidents, however, is affected by the size and number of road vehicles involved, which means that accident figures may vary significantly from year to year. Since 1988, level crossing accidents have decreased in number from some 100% to approximately 30. The number of people killed and seriously injured in connection with level crossing accidents in 2001 amounted preliminarily to seven persons.

The structural change that the rail sector is undergoing emphasises the need for the ongoing development of safety management and the establishment of unambiguous limits of responsibility. In conjunction with the exposure of Banverket's profit centres to competition, a special risk analysis is being made to guarantee the safety level.

The Railway Inspectorate issues safety standards for the railways, underground and light-rail systems, and at the same time supervises standards and investigates accidents and near-accidents in traffic. In addition, the Inspectorate reviews permits in accordance with the Railway Safety Act for track infrastructure, rail traffic or special traffic control. The authority also

reviews licences and safety certificates for transport operators and approves vehicles and track infrastructure, and provides names for stations and halts on the railways.

During 2001, the Railway Inspectorate issued new regulations for health checks that have been harmonized with other Scandinavian countries. A number of major inspections were conducted during the year and it was found that there are special problems for a purchaser of vehicle maintenance to monitor and check on sub-suppliers. Attention was drawn to the lack of quality in the maintenance of X2 trains, and the Inspectorate is following the action plan that was adopted.

Nowadays, it is most frequently the case that railway vehicles are approved at their place of manufacture. The transport operator then only needs to report to the Railway Inspectorate if and when a certain type-approved vehicle is put into service. At the same time, transport operators must show that they can take traffic safety-related responsibility for the vehicle when it is in operation.

Consequently, the previous requirement that only the transport operator can seek approval for vehicles has ceased to apply. This is only one example of how the limits of responsibility for rail safety has shifted during recent years. Further changes can be expected, as legislation is gradually adapted to new EU directives.

UNITED KINGDOM

The Railway Safety Case Regulations 2000 require railway operators (infrastructure managers, train operators and station operators) to prepare a 'safety case', containing evidence about their health and safety management system, organization, policies and objectives, and details of the risk assessments (both qualitative and quantitative), which they have undertaken. The safety case must be accepted by the Health and Safety Executive (HSE) before the railway operator is permitted to operate. Material changes to the safety case, for example following changes to the nature of the operation or the introduction of new rolling stock or equipment, must also be accepted by HSE. Where a material change necessitates a new or changed risk assessment, this should be included in the safety case. Detailed 'safety case acceptance criteria' including criteria for risk assessment are published on HSE's website http://www.hse.gov.uk/railways/rsc.htm.

In December 2001, HSE published ‘Reducing Risks, Protecting People’, which sets out in detail how risks from work activities in Britain are regulated. It explains how, in consultation with industry and other stakeholders, HSE decides whether risks from work activities are unacceptable, tolerable or negligible, and how different factors - ethical, social, economic, technical etc - are taken into account. It affirms the importance of quantitative and qualitative risk assessment in HSE's decision-making process, and the central role played by accepted 'good practice' when determining the control measures that should be put in place to address hazards.

The Rail Safety and Standards Board, a rail industry body established on 1 April 2003, provides leadership for the rail industry in the development of long-term safety strategy. It undertakes work and research in a number of areas including risk assessment, where it aims to improve the industry's understanding of risk and techniques for measuring risk. As part of a broader Risk Management Strategy, RSSB maintains a Safety Risk Model. Version 3 of this

model - a mathematical representation of 122 hazardous events, which could lead directly to injury or fatality on the mainline railway - was issued in March 2003. It is used by the industry to assist in the preparation of risk assessments, to assess the impact of possible risk controls, to inform decisions on safety priorities, and to help improve safety performance in the most efficient way.

The main regulations, which govern railway safety in Britain, are currently under review. These cover railway safety cases, the approval of new and altered works and equipment, and staff competence and fitness. The review will take account of the recommendations of railway accident inquiries, experience of the operation of the regulations, and European developments and is likely to lead to revised regulations in early 2005.

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