



**Economic and Social
Council**

Distr.
GENERAL

TRANS/AC.9/2
13 August 2002

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Ad hoc Multidisciplinary Group of Experts
on Safety in Tunnels (rail)

**REPORT OF THE AD HOC MULTIDISCIPLINARY GROUP OF EXPERTS ON
SAFETY IN TUNNELS (RAIL) ON ITS FIRST SESSION
(27-28 June 2002)**

ATTENDANCE

1. The Ad hoc Multidisciplinary Group of Experts on Safety in Tunnels (Rail) held its first session in Geneva on 27 and 28 June 2002. Representatives of the following UNECE member countries participated: Austria; Finland, France, Germany, Italy, Netherlands, Portugal, Russian Federation, Slovakia, Spain, Switzerland, and the United Kingdom. The International Union of Railways (UIC) and the UNECE Trans-European Railways Project Manager also participated.

OPENING OF THE SESSION

2. The Director of the UNECE Transport Division welcomed the participants to the first session of the Ad hoc Multidisciplinary Group of Experts on Safety in Tunnels (Rail) and noted that this was, in fact, a sixth meeting of the Group established by the Inland Transport Committee. He reminded them that the first five meetings had dealt with safety in road tunnels and had resulted, in December 2001, in the Recommendations of the Group on Safety in Road Tunnels. He further stressed that the major contribution the Ad hoc Multidisciplinary Group of Experts could make to the improvement of safety in rail tunnels was through the development of a comprehensive catalogue of measures based on the best national practices and establishment of commonly agreed recommendations regarding the various aspects of safety in rail tunnels. He noted that the existing international legal instruments developed by the Inland Transport Committee (ITC), which deals with these issues, might contain insufficient provisions for ensuring a high level of safety in rail tunnels and that the recommendations prepared by the Ad hoc Group might serve as a sound basis for the subsequent amendment of those legal instruments by the appropriate ITC subsidiary bodies.

3. The Director invited participants to use, to the extent possible, the work carried out in other fora and asked Governments and organizations concerned to continue taking an active part in the work of the Ad hoc Group. He added that the results of this undertaking were expected to be reported in 2004 to the ITC, which would subsequently ask its subsidiary bodies to identify those recommendations which could be made legally binding through their introduction in the various UNECE Transport Agreements and Conventions concerned.

ADOPTION OF THE AGENDA

Documentation: TRANS/AC.9/1.

4. The agenda was adopted without change.

ELECTION OF OFFICERS

5. The Ad hoc Group elected Mr. G. Fudger (United Kingdom) as Chairman and Mr. K.-J. Bieger (Germany) as Vice-Chairman.

TERMS OF REFERENCE AND MANDATE

Documentation: TRANS/AC.9/2002/1; TRANS/SC.2/196; ECE/TRANS/139.

6. The Ad hoc Multidisciplinary Group reviewed the Draft Terms of Reference and Mandate and adopted them as reproduced in annex 1 to this report.

REVIEW OF DOCUMENTATION REGARDING SAFETY IN TUNNELS

Documentation: TRANS/SC.2/1999/20; Informal document No.1; Informal document No. 2; Informal document No. 3; Informal document No. 4; Informal document No.5; Informal document No. 6.

7. The Ad hoc Group noted the documents made available by the secretariat and agreed to start considering in detail the updated version of Informal document No. 4 which was made available by UIC during the meeting.

8. The Group had a preliminary exchange of views about objectives, scope and general aspects of safety in rail tunnels. Aware of the fact that, in spite of all measures, absolute safety could not be achieved and that safety in tunnels should not be separated from the safety standards and procedures applicable to the rest of rail networks, the participants agreed that the main objective of recommendations should be to ensure that railway tunnels provide a safe environment for passengers, operators and freight through a combination of infrastructural, operational and rolling stock measures.

9. Participants further agreed that the scope of future recommendations should cover all types of railway tunnels on railway lines addressing tunnels longer than 1,000 m and used for all types of traffic – passenger trains as well as freight trains, including also combined traffic. The recommendations for safety measures should primarily focus on new tunnels, although

appropriate reference will have to be made to existing tunnels bearing in mind restrictions imposed by their physical properties. For very long railway tunnels, the recommendations might be used as a basis for improvement implying also additional safety measures. The Group also agreed that underground platforms and underground railways/subways in city areas would not be considered for the time being.

10. It was also agreed that recommendations should only address the safety aspects of railway traffic in tunnels and should not include security considerations as these generally lie within the purview of national authorities responsible for security (Ministries of Interior, police) and, in some cases, specific railway regulations. The Group felt that tunnel safety provisions would also be of importance in case of terrorist types of incidents because the objectives would remain the same – safety for passengers and operators and their safe evacuation.

11. In the ensuing discussion, the participants raised a number of general aspects related to safety in tunnels. It was noted that there exist a multitude of standards and regulations which do not specifically relate to tunnels but have a strong impact on safety in tunnels (e.g. fire standards for rolling stock, interoperability standards, training of crews, etc.). It was also noted that there exist a variety of approaches to tunnel safety. In some countries, the approach is based on an explicit risk assessment while, in others, safety measures are defined independently of a tunnel specific risk assessment.

12. Furthermore, it was noted that three main types of accidents occurring in tunnels might be distinguished: derailment, collision and fire. Other types of accidents, typical for open track (e.g. collisions at railway crossings, collisions with obstacles on track, derailment due to natural hazards) are generally not possible in tunnels. Due to this fact and to simpler operational conditions, the frequency of accidents in tunnels per train-kilometre is lower than on open tracks or in railway stations. Contrary to the open track, accidents involving fire are of a major concern, and due to the enclosure in a tunnel, these accidents may have the potential of catastrophic consequences. Smoke and heat may not only be lethal for passengers and operators but could also complicate the self-rescue and impede the access for rescue services. As fire in trains is a major and specific risk for tunnels, and due to its potential to evolve into a catastrophe, the recommendations should focus on this accident type but will not exclude, where appropriate, reference to other possible types of accidents in tunnels.

13. The Group also discussed various existing incident management strategies and approaches to the organization and control of safety in tunnels. In the case of some tunnels, it was possible to set up a safety control centre for each tunnel, while in other countries with a very large number of tunnels this type of organizational set up was technically not possible nor economically viable and therefore safety control centres were established for a group of tunnels or were assigned to regular train traffic control centres.

14. It was also felt that a comprehensive approach to safety should incorporate not only particular safety measures but must also include regular maintenance of infrastructure and equipment, evacuation procedures, training of operators and rescue and fire units. In some countries, such an approach allowed a reduction of the number of accidents, quick response by fire and rescue teams and an increase of overall safety.

15. In conclusion, the Group identified the following major areas where recommendations for increasing safety in tunnels would be considered: (i) infrastructure, (ii) rolling stock and (iii) operations. In each of these areas a combination of recommendations should be proposed covering preventive measures (although they are not specific to tunnels but have an effect on the whole railway system), measures to reduce the effects of accidents and measures aimed at facilitating the escape and rescue.

WORK PLAN

Documentation: TRANS/AC.9/2002/2.

16. The Ad hoc Group adopted its work plan as contained in annex 2 to this report.

17. The Ad hoc Group agreed on the following tentative date for its forthcoming session:

Second session: 25-26 November 2002

DRAFT QUESTIONNAIRE ON SAFETY IN RAIL TUNNELS

Documentation: TRANS/AC.9/2002/3.

18. The Ad hoc Group reviewed the draft questionnaire prepared by the secretariat and suggested some modifications. It agreed that only part A of the questionnaire should be circulated. Replies to the questionnaire should also contain illustrations of existing safety measures for representative tunnels as to whether they are used for passenger or freight traffic or a combination of both. The Group asked the secretariat to circulate the amended questionnaire as soon as possible to all UNECE member Governments and to ask them to provide to the secretariat the requested data and information.

19. The Ad hoc Group adopted the questionnaire as contained in annex 3 to this report.

OTHER ISSUES

20. With reference to the dates of the second session (25-26 November 2002) and subsequently, to the short deadline for the preparation of documents for translation, it was suggested that the deadline for submission of replies to the questionnaire should be strictly respected. Due to its significance for all member countries and its importance for the future successful work, the Group also requested the secretariat to make every possible effort to ensure the Russian translation of the UIC document "Safety in Railway Tunnels".

REPORT

21. As agreed by the Ad hoc Multidisciplinary Group, this report was prepared by the secretariat after the session in consultation with the Chairman.

Annex 1

TERMS OF REFERENCE OF THE MULTIDISCIPLINARY GROUP OF EXPERTS ON SAFETY IN TUNNELS (RAIL)

- To make an inventory of all long road and rail tunnels in the ECE region on the basis of a reference length (e.g. 1,000 metres or longer) for rail tunnels to be determined by the working group;
- To prepare a list of all serious fires and, if possible, major traffic accidents that have occurred in European tunnels in the last 40 years (if possible) indicating their causes (if known) and collect the most relevant findings for all these major accidents (if known);
- To obtain, if possible, information on safety provisions in tunnel management systems;
- To collect existing tunnel safety documentation (regulations, reports, recommendations, conclusions, ...), within the European Union and relevant international organizations (UIC, OSZhD, CER, ECMT, OTIF, etc.) and draw up a list of ongoing work within these organizations;
- To prepare recommendations for improving safety in tunnels to be built in the future;
- To prepare in a coordinated manner, in the form of recommendations and/or proposals for amendments to existing legal instruments, minimum safety provisions for the operation, maintenance, repair, upgrading, rehabilitation and refurbishment of tunnels of various types and lengths, and traffic conditions in these tunnels particularly as regards: signs, rolling stock, dangerous goods, driver training;
- The above recommendations and/or amendments should, inter alia, minimize the risk of accidents in tunnels and maximize at the same time the economic efficiency of tunnel construction and operations.

It is proposed that the Multidisciplinary Group of Experts on Safety in Tunnels should be composed of representatives of SC.2, WP.15 as well as relevant international governmental and non-governmental organizations and experts in tunnel matters appointed by the States members of the United Nations Economic Commission for Europe.

The Group of Experts is expected to start its work in June 2002 and terminate in the autumn of 2003 with the submission of the above recommendations which will be dealt with by the relevant subsidiary bodies of the Inland Transport Committee.

Annex 2**WORK PLAN OF THE AD HOC MULTIDISCIPLINARY GROUP OF EXPERTS
ON SAFETY IN TUNNELS (RAIL)**

Activity	Dates/Deadlines	Objectives, Actions and Outputs
First session of the Ad hoc Multidisciplinary Group of Experts (rail)	27-28 June 2002	Consideration of TOR and documents; Preparation of work plan and questionnaire; Discussion on specific tunnel safety issues
56 th session of the Working Party on Rail Transport	16-18 October 2002	Consideration of first results
Second session of the Ad hoc Multidisciplinary Group of Experts (rail)	25-26 November 2002	Discussion on specific tunnel safety issues (cont'd)
65 th session of the Inland Transport Committee	18-20 February 2003	Consideration of interim report
Third session of the Ad hoc Multidisciplinary Group of Experts (rail)	March 2003 (tentatively 27-28)	Consideration of responses to questionnaire and development of first draft recommendations on safety in tunnels
Fourth session of the Ad hoc Multidisciplinary Group of Experts (rail)	June 2003 (tentatively 26-27)	Finalization of recommendations on safety in tunnels
66 th session of the Inland Transport Committee	February 2004	Review of exercise on tunnel safety and possible holding of a round table on safety in rail tunnels with presentations by members of the Ad hoc Group
Fifth meeting of the Ad hoc Multidisciplinary Group of Experts (rail)	March 2004 (tentatively 18-19)	Review of work done by ITC subsidiary bodies and recommendations for future work, if necessary

Annex 3

UNECE Multidisciplinary Group of Experts on Safety in Tunnels (rail) (AC.9)

QUESTIONNAIRE ON SAFETY IN TUNNELS

REGULATIONS AND GENERAL DATA ON RAIL TUNNEL SAFETY

1. Are there any legislation, regulations, recommendations on safety in rail tunnels in your country (dealing with geometry, infrastructure, equipment, signalling, operation, traffic, train operator education and training, etc.)? If yes, please give details and provide all documents.
2. Do you consider the above texts sufficient? If not, please give details.
3. Is your authority considering any changes in the above texts? If yes, please give details and provide the current drafts.
4. Is there any specific methodology for risk assessment and risk management for tunnels in your country? If yes, please provide details.
5. Does your country classify rail tunnels, or envisage doing so in future, by the risk of accident associated with them? If yes, please provide details and documents.
6. Please provide any existing data and statistics on fires, accidents, breakdowns in rail tunnels in your country.

EXPLANATORY NOTES

The present questionnaire on safety in rail tunnels was approved by the Ad hoc Multidisciplinary Group of Experts on Safety in Tunnels (rail) at its first session on 27-28 June 2002. This questionnaire is also available in MS-EXCEL format on the Internet at the following address: <http://www.unece.org/trans/main/ac.9/2002.3.doc>.

REGULATIONS AND GENERAL DATA ON RAIL TUNNEL SAFETY

The questionnaire requests information on your country's national legislation, regulations and general information on rail tunnel safety. In addition to the answers provided under items 1 to 5, you may wish to send any other information you may deem appropriate, preferably in English or French.
