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**ECONOMIC COMMISSION FOR EUROPE**

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Ad hoc Multidisciplinary Group of Experts on  
Safety in Tunnels

**REPORT OF THE AD HOC MULTIDISCIPLINARY GROUP OF EXPERTS ON  
SAFETY IN TUNNELS ON ITS FIFTH SESSION**

(17-18 January 2002)

**ATTENDANCE**

1. The Ad hoc Multidisciplinary Group of Experts on Safety in Tunnels held its fifth session in Geneva from 17 to 18 January 2002 under the chairmanship of Mr. Michel Egger (Switzerland). Representatives of the following ECE member States participated: Austria; Belgium; Finland; France; Germany; Italy; Netherlands; Norway; Slovakia; Switzerland; Turkey; and United Kingdom. The UNECE Trans-European North-South Motorway Project (TEM) was represented. The following international organizations participated: International Road Association (PIARC); International Tunnelling Association (ITA); International Road Federation (IRF); International Road Transport Union (IRU); and International Touring Alliance/International Automobile Federation (AIT & FIA). Representatives of the Swiss Touring Club (TCS) and the National Fire Protection Agency (NFPA) of the United States participated as observers.

**ADOPTION OF THE AGENDA**

Documentation: TRANS/AC.7/10.

2. The agenda was adopted.

## **REPORT OF THE FOURTH SESSION**

Documentation: TRANS/AC.7/8.

3. The Ad hoc Multidisciplinary Group of Experts adopted the report of its fourth session (9-11 July 2001). The representative of the IRU expressed his organization's reservation to measures 4.2 (Quantity of fuel carried) and 4.4 (Weight and dimensions of heavy goods vehicles) of TRANS/AC.7/9.

## **OPENING REMARKS BY THE DIRECTOR OF THE TRANSPORT DIVISION**

4. The Director of the Transport Division, Mr. José Capel Ferrer, congratulated the Group of Experts on the adoption of its recommendations (TRANS/AC.7/9). He informed the Group that the recommendations had been annexed to a Declaration on road safety in tunnels in the Alpine region adopted by the Ministers of Transport of Austria, France, Germany, Italy and Switzerland in Zürich on 30 November 2001.

5. Mr. Capel Ferrer requested the Group of Experts to consider the possibility of incorporating the recommendations into a legal instrument on safety in tunnels. Moreover, he raised the question of how the coverage of the recommendations might be extended to other geographical regions and countries including, for example, Australia, Japan and the United States. Finally, he urged the Group of Experts to continue to meet in the future (possibly every two years or more frequently) to review the progress made by ITC subsidiary bodies in incorporating the recommendations into existing legal instruments and to discuss new developments in tunnel safety.

## **REPORT ON THE FIRE IN THE GOTTHARD TUNNEL**

6. The Chairman of the Group of Experts, Mr. Egger, presented information on the fire in the Gotthard tunnel which occurred on 24 October 2001. He noted inter alia, that the Gotthard tunnel was opened in 1980 and that its elevation of only 1000 metres above sea level, combined with double lane access ramps, made it the most attractive crossing of the Alps for road transport between western Germany and the Milan region in Italy. He said there would probably be a national referendum in 2003 on the construction of a second tube for the tunnel.

7. Mr. Egger explained that the fire had resulted from a lateral collision between two trucks when one had, for reasons unknown, crossed into the oncoming carriageway. After the collision, the two trucks totally obstructed the tunnel cross-section, thus impeding passage for fire fighters.

8. The rescue team had arrived on the scene of the accident within 2 minutes. The smoke was contained in a two-kilometre stretch of the tunnel. All the tunnel facilities such as emergency lighting, ventilation, traffic management, etc. functioned as planned and efficiently.

9. The 11 victims were found 1 to 2 kilometres away from the fire. None of them had injuries. All died from toxic smoke inhalation. Some of the victims were found dead at the wheel of their vehicle. It has been ascertained that all the victims had ample time to leave the tunnel through the safety doors before being overcome by toxic smoke. The real tragedy of the Gotthard fire lies in the fact that the victims died because of their false appreciation of the situation and their incorrect behaviour as they waited or tried to turn their vehicles, instead of proceeding immediately to emergency exits.

10. Mr. Egger stressed that information campaigns were required to inform drivers that in the event of a fire they should leave their vehicles and proceed immediately to the nearest emergency exit in the tunnel. Keeping to the speed limits and maintaining an adequate distance between vehicles were essential in order to reduce the risk of accidents in tunnels and also to facilitate access by emergency vehicles. Also, given the restricted widths of many tunnels, increases in the weight and dimensions of heavy goods vehicle should not be permitted.

11. Mr. Egger said that in response to the accident the Swiss Federal Roads Office would be working to improve communication between users of tunnels and the operators, and traffic management systems particularly for heavy goods vehicles. Two-way traffic of heavy goods vehicles in the Gotthard tunnel has been stopped until further notice and an alternating system has been introduced.

### **CONSIDERATION OF THE NEED TO AMEND THE RECOMMENDATIONS OF THE GROUP OF EXPERTS IN LIGHT OF THE GOTTHARD TUNNEL FIRE**

Documentation: TRANS/AC.7/9; TRANS/AC.7/2002/1.

12. The Group of Experts discussed the position of fuel tanks on vehicles and agreed that unusually, the impact in the accident in the Gotthard had been from the side. It was agreed that the positioning of fuel tanks might be pursued by the World Forum for Harmonization of Vehicle Regulations (WP.29).

13. The possibility of introducing internationally harmonized evacuation procedures in the event of a fire in a tunnel was discussed. It was agreed that the use of the sign showing the little green man running and the lighting of emergency exits should be standardized as soon as possible and that the use of sirens, flashing lights, etc. should be further discussed in the Working Party on Road Traffic Safety (WP.1).

14. The Group of Experts emphasized the importance of improving the training of and information given to drivers so as to make them aware of the correct behaviour in the case of an incident in a tunnel.

15. The representative of the European Commission informed delegates that the Commission intended to organize a road user campaign on correct behaviour in tunnels.

16. The Group of Experts questioned whether any research studies assessing the risk of single tube bidirectional tunnels compared with two tube tunnels had been conducted and recommended that, if not, such a study should be done at the pan-European level by the European Commission.

17. The delegation of Italy proposed that the next UNECE Road Safety Week to be held in 2004 be devoted to safety in tunnels.

18. The Group of Experts discussed the question of allowing U turns by vehicles in tunnels in the case of an emergency, but in light of the chaos caused by such behaviour in the case of the Gotthard fire, it decided to maintain its recommendation that U turns be prohibited in tunnels unless drivers are directly instructed to do so by a policeman or an emergency service officer.

19. In light of the information which had emerged regarding the driver responsible for the accident in the Gotthard tunnel, the Group of Experts agreed to add a recommendation to its report on access to the profession of transport operator using as a basis text proposed by the IRU: "The rules on access to the profession of road transport operator and their implementation should be reinforced and harmonized in terms of professional qualifications, financial standing and good repute". It was also agreed that the question of harmonization of insurance coverage should be looked into. The Group of Experts requested the secretariat to prepare an addendum to TRANS/AC.7/9 on access to the profession of transport operator.

20. A list of other proposed measures which appeared as annex 2 to the Declaration of Ministers of Transport adopted in Zurich on 30 November 2001, is reproduced as an annex to the present report.

21. In conclusion, except for the few above-mentioned additions, the Group of Experts found that its final report dated 10 December 2001 covered all aspects relevant for improving safety in road tunnels. The accident in the Gotthard tunnel had shown once again the importance of self-rescue and that the correct behaviour of road users is the key for avoiding loss of human lives in the case of a fire in a tunnel.

## **OTHER ISSUES**

22. The Group of Experts reviewed the text of a draft resolution on safety in tunnels which would be submitted for adoption by the 64<sup>th</sup> session of the Inland Transport Committee (18-21 February 2002).

23. The Group of Experts decided to hold its next meeting on 21-22 January 2003. Among other issues mentioned were the results of research on smoke velocity and layering in tunnels done by Herriot Watt University in the United Kingdom and research being conducted in the Netherlands on automatic sprinkler systems. The delegate of the Netherlands offered to make the results of that research available to the Group of Experts when ready.

24. The delegation of Switzerland was requested to send the final report on the Gotthard fire to PIARC, ITA and the UNECE.

#### **REPORT ON THE MEETING**

25. The Group of Experts agreed that the report of the meeting would be prepared by the secretariat and transmitted to all members of the Group.

#### **TECHNICAL VISIT TO THE MONT BLANC TUNNEL**

26. On 18 January 2002, the Group of Experts conducted a technical visit to the Mont Blanc tunnel (France/Italy). A presentation was made by Italian and French representatives of the management company, the Groupement Européen d'Intérêt Economique (GEIE), on the new safety features in the tunnel.

27. The Group of Experts expressed its appreciation to GEIE and to its Director, Mr. Berthier, for organizing the technical visit and for its hospitality.

Annex

**Other proposed measures (list which appeared as Annex 2 to the declaration adopted by Ministers of Transport on 30 November 2001 in Zurich)**

Users

- Reduction of the alcohol limit allowed for professional drivers (0.2%)
- Reinforcing of provisions relating to working hours and training of professional drivers
- Harmonization of provisions for employed drivers and owner drivers
- Centralized register of driving offences

Infrastructure

- Limited access for certain categories of vehicles depending on the equipment and structures in the tunnel and other technical parameters (e.g. dimensions/weight, steep slopes and /or insufficient space for turning on Alpine roads)

Vehicles

- protection against underrun in case of collision from behind
  - protection against underrun in case of frontal collision
  - side protection (including protection of fuel tanks)
  - speed limiters
  - presence of an extinguishing device on board heavy vehicles
  - minimum standard for gaseous emissions (e.g. Euro 2 or 3)
  - minimum power by tonne (total weight)
  - indicator of tyre pressure
  - air conditioning
  - unlimited civil liability insurance
  - research on adequate standards for synthetic components used in vehicle construction.
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