



**XXIVth WORLD
ROAD CONGRESS**
Mexico City 2011

WG5 OUTPUTS : ROAD TUNNELS MANUAL & ROAD TUNNELS DICTIONARY

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THE TECHNICAL REPORTS FROM THE PREVIOUS CYCLES

1. 1995 : The First Road Tunnel
2. 1995 : Classification of Tunnels
3. 1996 : Road Tunnels: Emissions, Environment, Ventilation
4. 1996 : Road Safety in Tunnels
5. 1999 : Road Tunnels: reduction of Operating Costs
6. 1999 : Fire and Smoke Control in Road Tunnels
7. 2000 : Pollution by Nitrogen Dioxide in Road Tunnels
8. 2002 : Cross Section Geometry in Unidirectional Tunnels
9. 2003 : Traffic Incident Management Systems used in Road Tunnels
10. 2004 : Road Tunnels: Vehicle Emissions and Air Demand for Ventilation
11. 2004 : Good Practice for the Operation and Maintenance of Road Tunnels
12. 2004 : Cross Section Design for Bidirectional Road Tunnels
13. 2007 : Systems and equipment for fire and smoke control in road tunnels
14. 2007 : Guide for organising, recruiting and training road tunnels operating staff
15. 2007 : Integrated approach to road tunnel safety
16. 2008 : Risk analysis for road tunnels
17. 2008 : Management of the operator-emergency teams interface in road tunnels
18. 2008 : A Guide To Optimising The Air Quality Impact Upon The Environment
19. 2008 : An assessment of fixed fire fighting systems
20. 2008 : Recommendations to owners and operators of urban tunnels
21. 2008 : Human factors and tunnel safety regarding users
22. 2009 : Tools for tunnel safety management
23. 2011 : Road tunnels : Operational strategies for ventilation
24. 2011 : Direction Signing on a Route incorporating Tunnels



THE TECHNICAL REPORTS FROM THE ACTUAL CYCLE

WG1 : Road tunnel operations

- 1. Recommendations for strategic tunnel safety management**
- 2. Best practice for road tunnel Emergency exercises**
- 3. Recommendations on management of maintenance and technical inspect.**
- 4. Life cycle aspects of tunnel equipments**

WG2 : Road Tunnel safety

- 5. Current practice for risk evaluation in road tunnels**
- 6. Improving safety in existing tunnels**

WG3 : Influence users' behaviour in tunnels

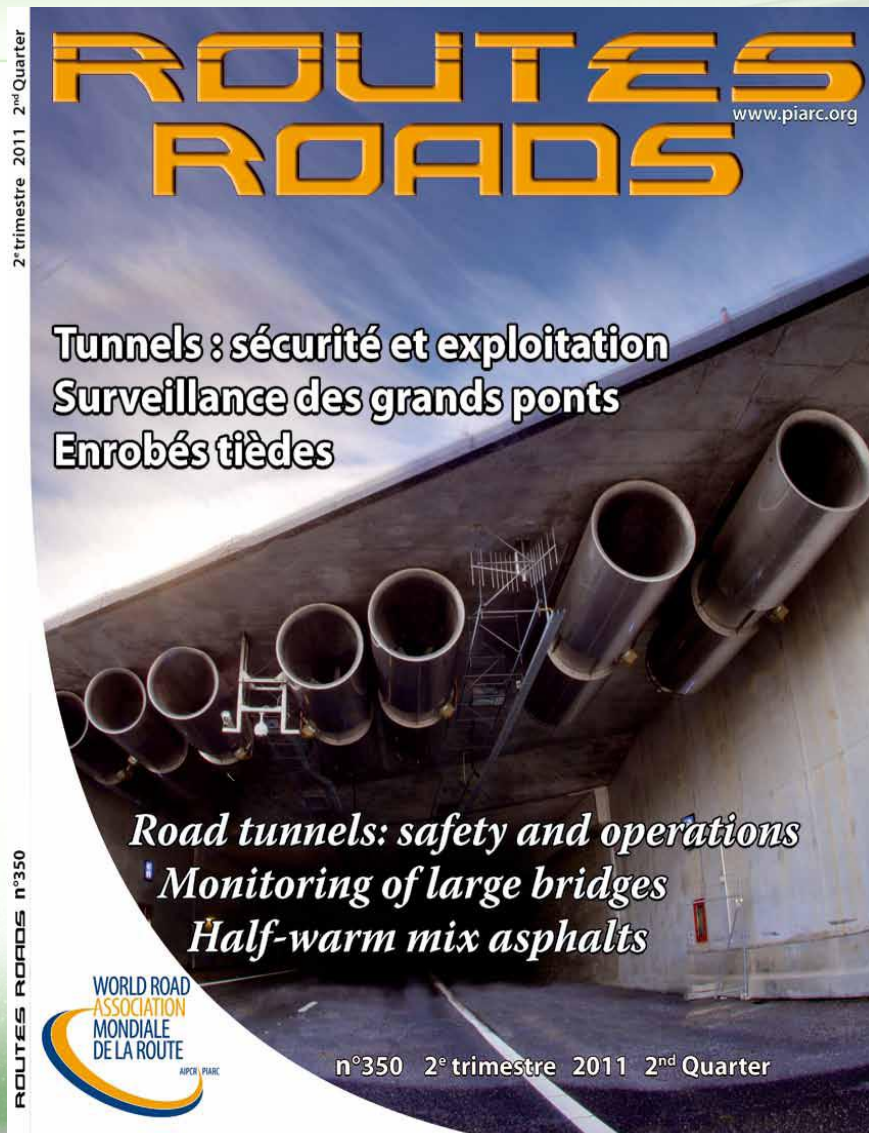
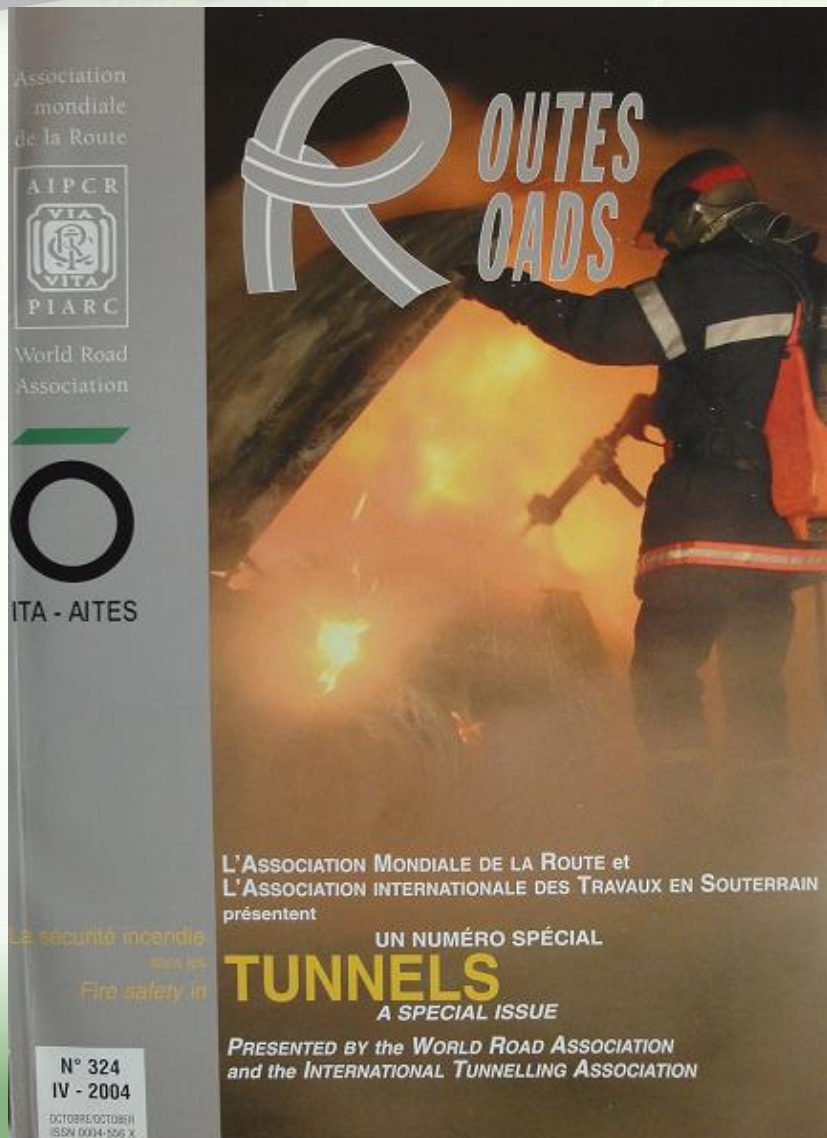
- 7. Recommendations regarding road tunnels drivers' training and information**

WG4 : Air Quality, Fire and Ventilation

- 8. Road tunnels: Vehicle emissions and air demand for ventilation**
- 9. Design fire characteristics for road tunnels**



THE ROUTES/ROADS ARTICLES



THE AIPCR/OECD QRA Model

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AIPCR
ASSOCIATION MONDIALE DE LA ROUTE
WORLD ROAD ASSOCIATION
 "Echanger connaissances et techniques sur les routes et le transport routier."

Accueil > [Comités techniques](#) > [C3.3 Exploitation tunnels](#) > [Modèle EQR](#)

[Mots-clés](#)

- A propos de l'AIPCR
- Plan stratégique
- Comités techniques
- Projets
- Publications
- Membres
- Evénements
- Réseau mondial (RMÉ)
- Comités nationaux
- Terminologie
- Administrations routières
- Liens
- CONGRÈS PARIS 2007

Transport des marchandises dangereuses dans les tunnels routiers : le modèle EQR

- Quels sont les [buts du modèle EQR](#) ?
- [Résultats](#)
- [Présentation](#) du logiciel EQR
- [Exemples](#) d'applications au Royaume-Uni, en France et en Autriche
- [Publications](#)
- [Bon de commande](#)
- [Conditions d'utilisation et avertissement](#)
- [Assistance à l'utilisation et formation](#)
- [Foire aux questions](#)

Dans le cadre du **projet ERS2** (1997-2001), l'**AIPCR** et l'**OCDE** ont développé conjointement un modèle quantitatif d'évaluation des risques (**modèle EQR**) pour évaluer les risques du transport des marchandises dangereuses à travers les tunnels routiers.

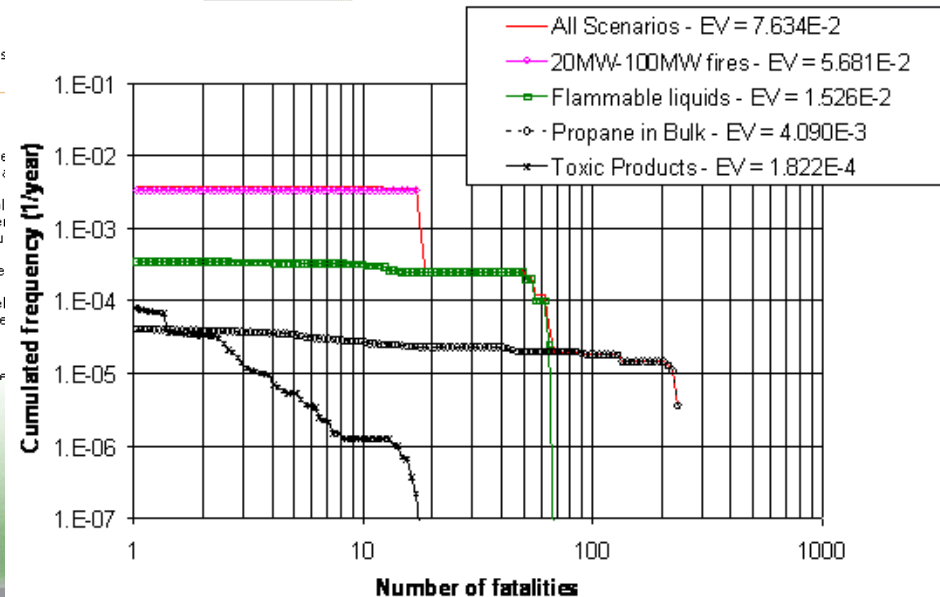
Depuis, le logiciel a été appliqué à un large éventail de tunnels dans plus

Quels sont les buts du modèle EQR ?

Le logiciel permet à l'utilisateur :

- de comparer les risques dus au transport de marchandises dangereuses différents itinéraires ; par exemple, par un tunnel ou par un itinéraire libre ;
- d'évaluer les aspects liés à la réglementation des tunnels ; par exemple, le modèle EQR peut être employé pour étayer la décision de choisir le groupement de marchandises dangereuses ADR le plus approprié, spécifiquement pour routier ;
- de comparer les risques le long d'un itinéraire avec des critères d'accès risques de personne et sociétal ;
- d'évaluer des options relatives aux équipements d'un tunnel ; le modèle, par exemple, peut être utilisé pour comparer l'efficacité de la modification de l'entre les issues de secours.

Le logiciel peut être utilisé pour effectuer une analyse de risque telle que



THE ROAD TUNNELS MANUAL : TABLE OF CONTENTS

Part I : General aspects

1. Strategic issues
2. Safety
3. Human factors regarding tunnel safety
4. Operations and maintenance
5. Environmental issues linked with operations

Part II : Tunnel features related to operation and safety

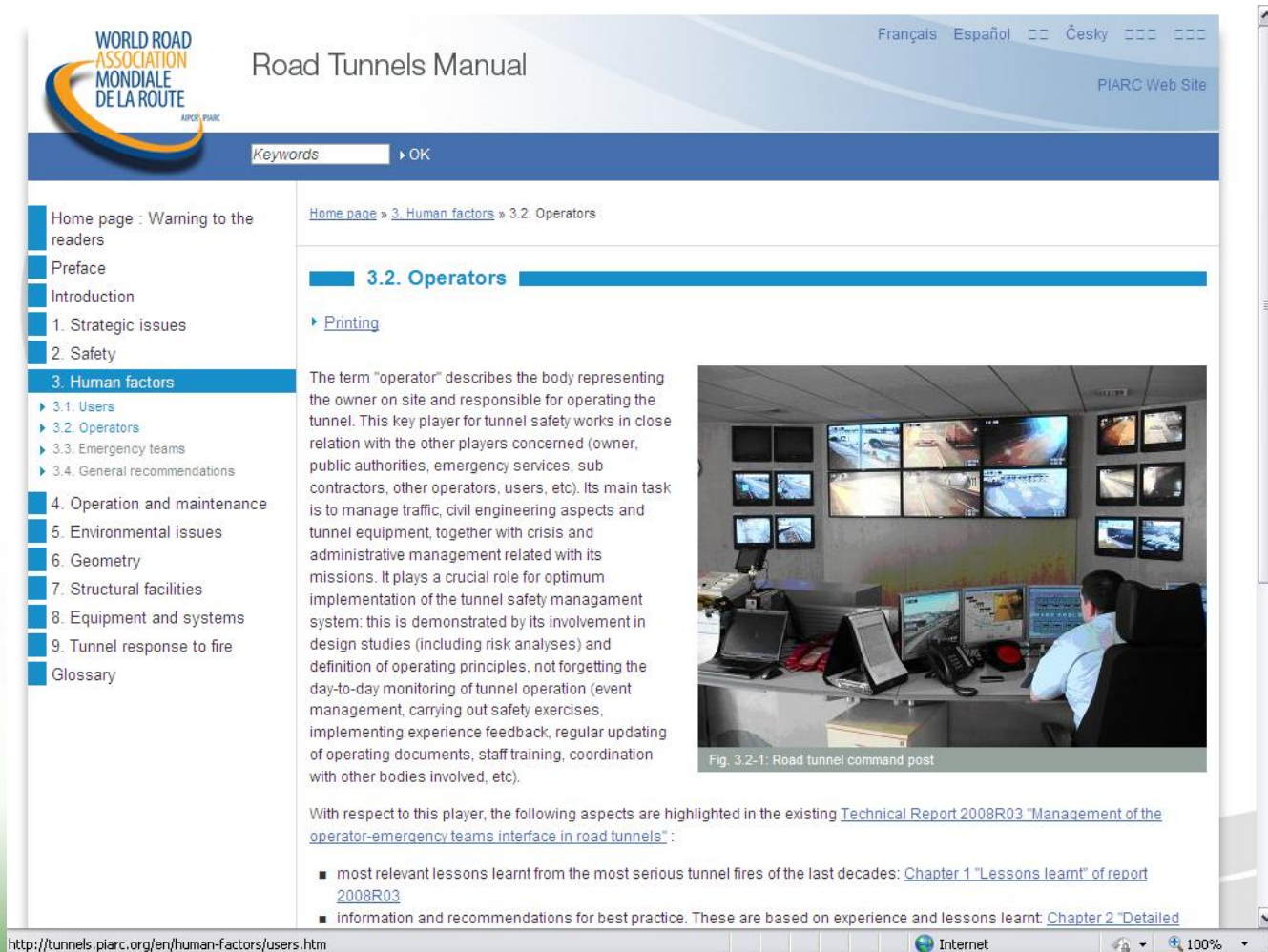
6. Geometry
7. Structural facilities related to operation and safety
8. Equipment and systems
9. Tunnel response to fire

Glossary



THE ROAD TUNNELS MANUAL WEBSITE

www.piarc.org



The screenshot displays the website interface for the Road Tunnels Manual. At the top left is the logo for the World Road Association (WORLD ROAD ASSOCIATION MONDIALE DE LA ROUTE) with the acronym AIPCR, PIARC. The main title 'Road Tunnels Manual' is centered at the top. On the right, there are language selection options: Français, Español, and Česky. Below the title is a search bar with the text 'Keywords' and an 'OK' button. A vertical navigation menu on the left lists various sections, with '3. Human factors' highlighted. The main content area shows the breadcrumb trail 'Home page » 3. Human factors » 3.2. Operators'. The section title '3.2. Operators' is prominently displayed. Below it is a 'Printing' link. The main text defines the role of an operator in tunnel management. To the right of the text is a photograph of a control room with multiple monitors displaying camera feeds of a tunnel. Below the photo is the caption 'Fig. 3.2-1: Road tunnel command post'. At the bottom of the text, there are references to a technical report and a list of key lessons learned.

World Road Association
MONDIALE DE LA ROUTE
AIPCR, PIARC

Road Tunnels Manual

Français Español Česky

PIARC Web Site

Keywords OK

Home page : Warning to the readers
Preface
Introduction
1. Strategic issues
2. Safety
3. Human factors
 ▶ 3.1. Users
 ▶ 3.2. Operators
 ▶ 3.3. Emergency teams
 ▶ 3.4. General recommendations
4. Operation and maintenance
5. Environmental issues
6. Geometry
7. Structural facilities
8. Equipment and systems
9. Tunnel response to fire
Glossary

Home page » 3. Human factors » 3.2. Operators

3.2. Operators

▶ [Printing](#)

The term "operator" describes the body representing the owner on site and responsible for operating the tunnel. This key player for tunnel safety works in close relation with the other players concerned (owner, public authorities, emergency services, sub contractors, other operators, users, etc). Its main task is to manage traffic, civil engineering aspects and tunnel equipment, together with crisis and administrative management related with its missions. It plays a crucial role for optimum implementation of the tunnel safety management system: this is demonstrated by its involvement in design studies (including risk analyses) and definition of operating principles, not forgetting the day-to-day monitoring of tunnel operation (event management, carrying out safety exercises, implementing experience feedback, regular updating of operating documents, staff training, coordination with other bodies involved, etc).


With respect to this player, the following aspects are highlighted in the existing [Technical Report 2008R03 "Management of the operator-emergency teams interface in road tunnels"](#) :

- most relevant lessons learnt from the most serious tunnel fires of the last decades: [Chapter 1 "Lessons learnt" of report 2008R03](#)
- information and recommendations for best practice. These are based on experience and lessons learnt: [Chapter 2 "Detailed](#)

Fig. 3.2-1: Road tunnel command post

<http://tunnels.piarc.org/en/human-factors/users.htm>

Internet 100%



ROAD TUNNELS DICTIONARY

- **At the end of this cycle : 140 terms and definitions**
- **Translation in 19 languages**
- **Actually available in French, English, Spanish, Greek, Italian, Korean and Slovene**
- **Soon, also available in Czech, Chinese, Danish, Dutch, Farsi, Finnish, German, Hungarian, Japanese, Norwegian, Portuguese and Swedish.**



ROAD TUNNELS DICTIONARY

www.piarc.org

WORLD ROAD ASSOCIATION MONDIALE DE LA ROUTE 1909-2009 PIARC

Terminology

Français 
Español 

Quick search English  OK [PIARC web site](#)

- Term search
- Search per theme
- Help
- Contact
- Editors

Term

boiling liquid expanding vapour explosion
Dictionary : [Road tunnel operations](#) / English (01/0030)
Theme : [Road tunnel operations](#)
Definition : The abrupt release of expanding vapour and boiling liquid following a catastrophic failure of a vessel containing a pressurized liquefied gas.
Note: the event may result in fireballs, blast, projectiles and possible toxic vapour cloud.
Abbreviation : BLEVE

BLEVE
Dictionary : [Road tunnel operations](#) / French (01/0030)
Theme : [Exploitation des tunnels routiers](#)
Definition : Emission brutale de liquide en ébullition et de vapeur en expansion à la suite de la rupture catastrophique d'un réservoir contenant un gaz liquéfié sous pression.
Remarque: l'incident peut conduire à des boules de feu, à une explosion, à des projectiles et éventuellement à un nuage de vapeur(s) toxique(s).

BLEVE
Dictionary : [Road tunnel operations](#) / Spanish (01/0030)
Theme : [Explotación de túneles de carretera](#)
Definition : Liberación repentina de líquido en ebullición o vapores en expansión como consecuencia de la rotura catastrófica de un recipiente que contiene gas líquido a presión.
Nota: el suceso puede dar lugar a bolas de fuego, explosión, proyectiles y, eventualmente, a nubes de vapores tóxicos.
Abbreviation : BLEVE
Synonyms : expansión explosiva del vapor de un líquido en ebullición

Done Internet 100%



Thank you for your attention !

Merci pour votre attention !

¡ Gracias por su atención !

