



**Economic and Social  
Council**

Distr.  
GENERAL

Informal document No. 14  
20 September 2002

ENGLISH ONLY

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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Ad hoc Meeting of the Multidisciplinary  
Group of Experts on Safety in Tunnels (rail)  
(Second session, 25-26 November 2002,  
agenda item 2)

**QUESTIONNAIRE ON SAFETY IN RAILWAY TUNNELS**

Annexes A, B, C, D

Transmitted by the Government of United Kingdom

Note: Annexes A, B, C and D reproduced in this Informal document were transmitted in conjunction with the reply to the questionnaire by the Government of United Kingdom and should be considered together with the document **TRANS/AC.9/2002/5**

**Annex A**

**Transport and Works Act 1992**

Part II, Chapter II Other safety provisions – General

Section 41 Approval of works, plant and equipment.

(1) For the purpose of securing the safe operation of railways, tramways, trolley vehicle systems and prescribed systems of guided transport, the Secretary of State may make Regulations requiring that his approval be obtained before:

- (a) new works, plant or equipment are first brought into use, or
- (b) works, plant or equipment are first brought into use after alterations have been made to them.

(2) Regulations under this section –

- (a) shall prescribe the cases in which approval is required and the procedure for obtaining it;
- (b) may include provision as to the time when works, plant or equipment are to be treated as first brought into use, including provision for disregarding periods of testing and other periods of use before sufficient information is available for a decision to be made on and application for approval;
- (c) may include provision prohibiting the giving of false information to the Health and Safety Executive.

*“equipment” includes vehicles.*

Section 45 Directions limiting speeds and loads

(1) The Health and Safety Executive may give a direction under this section to any person carrying on an undertaking which includes the provision of transport services on a railway, tramway or other system using any other mode of guided transport.

(2) A direction under this section may impose-

- (a) maximum speeds at which vehicles in use on the system may travel, and
- (b) maximum weights that may be transmitted to the rails (or other structures which support vehicles in use on the system) by any one pair of wheels, or by such other parts of the vehicles as may be specified in the direction.

## **Annex B**

### **Regulations made under the Health and Safety at Work, etc. Act 1974**

#### **The Railway Safety (Miscellaneous Provisions) Regulations 1997**

These Regulations made under HSWA74 consolidate Acts of Parliament, Rules and Regulations dated from 1839 which cover:

- Reg. 3 - unauthorized access (fencing);
- Reg. 4 - means of communication in an emergency (e.g. passenger to driver);
- Reg. 5 - measures to prevent collisions and derailment (collisions between vehicles) and prevention of collisions between vehicles and buffer stops and derailment of vehicles on account of excessive speed or incorrectly set points;
- Reg. 6 - train to have suitable and sufficient brakes;
- Reg. 7 - prevention of accidents to persons at work from moving vehicles.

#### **The Railways (Safety Critical Works) Regulations 1994**

These Regulations set duties on the employer.

“Employers must not allow employees to carry out safety critical work unless:

- (a) the employees are competent and fit to carry out that work;
- (b) a record has been kept of any assessments carried out to determine such competence and fitness; and
- (c) the employee has been issued with a means of identification.”

Assessment of competency can be checked and approved by HMRI. The Regulations also include an Approved Code of Practice on the hours of work of staff undertaking safety critical work on the railways.

#### **Construction (Design and Management) Regulations 1994**

These Regulations give effect to Council Directive 92/57/EC on the implementation of minimum safety and health equipment at temporary or mobile construction sites and cover the design, construction, maintenance and decommissioning of works including the competence of those involved.

#### **The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995**

These include a requirement to report dangerous occurrences on railway systems to HMRI. Dangerous occurrences include:

- (a) accidents to trains;
- (b) accidents and incidents at level crossings;
- (c) accidents involving the permanent way and other works – fracture or buckling of a rail;
- (d) any aircraft or other vehicle landing on or running onto or coming to rest foul of the line or damaging the line;
- (e) the runaway of an escalator, lift or passenger conveyor;
- (f) any fire or severe arcing or fusing which seriously affects the functioning of the signalling equipment;
- (g) any fire affecting services or the closure of a station for 30 more than minutes if below ground or in other cases 1 hour;
- (h) signals passed without authority.

## **Annex C**

### **Safety mission**

The design and construction of new and altered works, plant and equipment should, in so far as is reasonably practicable, ensure the safety of any people who may be affected.

Note: This is an overriding principle that applies to all fixed works, plant and equipment, and to mobile plant and equipment, including trains tramcars and any other vehicles of all guided transport systems.

### **Factors**

The factors for consideration should include the following, which are applicable to all the safety principles:

- (a) the interactions between the particular works, plant and equipment and other new or existing works plant or equipment on the railway;
- (b) the interactions between the particular works, plant and equipment and those of other railways and other guided transport systems;
- (c) the intended use and the method of operation of the works, plant and equipment and the safety management system employed;
- (d) human factors including the interactions between people and plant and equipment;
- (e) trespass, vandalism and wilful acts;
- (f) the interactions between the railway and its adjacent environment including physical interfaces, noise vibration, and electrical and magnetic interference;
- (g) the reliability and durability of the works, plant and equipment, and the level of maintenance required;
- (h) the arrangements for safe inspection and maintenance throughout the life of the works, plant and equipment, and their decommissioning and disposal;
- (i) the implications in respect of the risk posed when degradation occurs;
- (j) the integrity of safety critical works, plant and equipment;
- (k) the foreseeable climatic conditions;
- (o) the limitation of fire load, ignition sources and fire spread; and
- (m) the arrangements for the mobility impaired.

## **Tunnels and similar structures**

Tunnels and other enclosed spaces should provide a safe environment for people and for safe evacuation.

Note: Tunnels are not necessarily sub-surface. Developments over the railway, deep cuttings or other structures may give rise to situations with similar characteristics to tunnels with respect to limited means of access and egress, means and time to escape to a place of safety, and lack of natural ventilation.

### **Factors**

The factors for consideration should include:

- (a) the length of tunnel, single or double track and cross passages;
- (b) the type and frequency of traffic, and type and length of trains relative to the length of the tunnel;
- (c) the clearances within the tunnel;
- (d) the fire load of the tunnel and equipment within it;
- (e) any smoke and fire detection, and fire-fighting and suppression arrangements;
- (f) the provision of fresh air and the arrangements to control smoke and other emissions;
- (g) the aerodynamic effects generated by trains passing through restricted spaces;
- (h) compatibility with rolling stock for emergency evacuation;
- (i) a safe means of escape to a place of safety in an acceptable time;
- (i) the provision of emergency lighting, communications and route signing;
- (k) the provision of safe access for emergency services;
- (i) the risks of flooding;
- (m) the means of de-energizing any electric traction system;
- (n) the fencing and security arrangements at tunnel portals.

## Annex D

**HSC**  
Health & Safety  
Commission

# Railways (Safety Case) Regulations 2000

## GUIDANCE ON REGULATIONS

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*First published 2000*

ISBN 0 7176 1892 7

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This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

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1. This publication contains Health and Safety Executive (HSE) guidance on the Railways (Safety Case) Regulations 2000.<sup>1</sup> It gives advice on how to comply with the Regulations, and other relevant information.
2. The Regulations are shown in italicized text in this book. They come into force on 31 December 2000. The Railways (Safety Case) Regulations 1994 are replaced by these Regulations and HSE's guide to those Regulations *Railway safety cases*<sup>2</sup> is replaced by this guide.
3. The Regulations are made under the Health and Safety at Work etc. Act 1974<sup>3</sup> (HSWAAct) based on proposals by the Health and Safety Commission (HSC) following consultation with railway operators, employers, trade unions and other interested parties. They are enforced by HSE, and specifically by Her Majesty's Railway Inspectorate (HMRI), a division of HSE.
4. The guidance in this publication is primarily aimed at managers, safety advisers and safety representatives (or other employee representatives) within the staff of 'railway operators' (that is infrastructure controllers, train operators and station operators) and their advisers and contractors. Railway operators are advised also to observe other relevant health and safety legislation and published HSC or HSE guidance. Information on current guidance can be obtained from HSE's InfoLine; see inside back cover for details.

### ***Background***

5. The disastrous train collision and fire at Ladbroke Grove on 5 October 1999, which cost 31 lives, led to a number of investigations and reviews by HSC and Government, in particular the review of Railtrack's Safety and Standards Directorate<sup>4</sup> undertaken by the Department of the Environment, Transport and the Regions. These Regulations implement some key recommendations from that review.

### ***Scope of the Regulations***

6. The Regulations apply to all railway operators, that is infrastructure controllers and train and station operators. They require railway operators to prepare a comprehensive safety case, covering the health and safety of staff and the public, and to secure HSE acceptance of that safety case. The Rail Regulator will not grant a licence to a railway operator without there being an accepted safety case or an exemption in place.
7. Certain railway operations, such as those in industrial sites and harbours, are excluded by the definition of 'railway' in Regulation 2(1) and there is also power for HSE to grant exemptions under Regulation 17 if it is satisfied that health and safety will not be jeopardised by the exemption. Exclusion or exemption from the Regulations in no way absolves a railway operator from the need to comply with its other health and safety obligations.

### ***Main changes***

8. The most important changes which these Regulations bring about, compared with the 1994 Regulations which they replace, are as follows:

- (a) The function of accepting train and station operators' safety cases and safety case revisions is transferred from the infrastructure controller to HSE.
- (b) Infrastructure controllers have a new duty to obtain and provide HSE with an independent assessment of any proposed revisions to their own safety cases and of any new or revised safety cases of train or station operators using their infrastructure.
- (c) Infrastructure controllers have a new duty to obtain from an independent body an annual audit of the infrastructure controller's own health and safety management systems and those of train and station operators using their infrastructure.
- (d) Infrastructure controllers have new duties to take reasonable steps to ensure that train and station operators using their infrastructure comply with their safety cases and to report instances of non-compliance to HSE.
- (e) Safety cases now have to contain more detailed information than before. For example, there are new requirements for a safety case development plan and train evacuation arrangements, and risk assessment will need to be covered in greater detail.

9. Existing safety cases which were accepted under the 1994 Regulations will need to undergo a 'transitional revision' to bring them fully into line with the 2000 Regulations. The revised safety cases will need to reflect:

- (a) the differences between Schedules 1 and 2 of the 2000 Regulations and the Schedules to the 1994 Regulations;
- (b) this guidance, where it differs from previous guidance; and
- (c) in the case of train and station operators' safety cases, the fact that the acceptance function now rests with HSE, and not with the relevant infrastructure controller.

Deadlines for submitting revised safety cases to HSE for acceptance are given in Regulation 16.

### ***Importance of railway safety cases***

10. A safety case serves two main purposes:

- (a) to give confidence that the operator has the ability, commitment and resources to properly assess and effectively control risks to the health and safety of staff, contractors, passengers and the public; and
- (b) to provide a comprehensive core document, with links to other more specific documents, rules and procedures, against which management and HSE can check that the accepted risk control measures and the health and safety management systems have been properly put into place and continue to operate in the way originally intended.

11. Preparing a safety case and keeping it up to date requires a systematic approach to managing health and safety, which is vital if risks are to be properly and consistently identified, controlled and minimised as the law requires. A systematic approach can also pay dividends by helping operators to eliminate unnecessary duplication of effort and to use resources to their best effect.

12. Safety cases to be sent to HSE for acceptance and other documents required by these Regulations, such as audit reports and periodic safety case reviews, should be sent to:

Safety Case Manager  
HM Railway Inspectorate  
Health and Safety Executive  
Rose Court, 2 Southwark Bridge  
London SE1 9HS  
Tel: 020 7717 6000 (main switchboard)  
E-mail: [safety.cases.ri@hse.gsi.gov.uk](mailto:safety.cases.ri@hse.gsi.gov.uk)

13. Accepted safety cases, audit reports and periodic safety case reviews are used by HMRI to guide them on inspection priorities and as inspection tools. Inspectors have extensive powers of enforcement but they are also able to give advice on suitable ways of complying with legal duties.

14. HMRI has prepared a set of safety case assessment procedures, principles and criteria<sup>6</sup> to promote proper and consistent assessment of safety cases on the part of its staff. These became available on the Internet in draft form on 1 October 2000 and will be developed from time to time.

#### ***Related duties under other health and safety legislation***

15. The Regulations are made under the HSW Act, which places duties on employers and the self-employed to protect the health and safety of both employees and non-employees, including members of the public. Those duties apply to all railway undertakings, including any that are excluded or exempted from all or part of these Regulations. The HSW Act also establishes duties on suppliers, managers, employers and those in control of premises.

16. Railway undertakings are also subject to a range of other health and safety requirements, for example the Management of Health and Safety at Work Regulations 1999<sup>6</sup> which require employers and the self-employed to, among other things, carry out a suitable and sufficient risk assessment. See Annex 1 for details of other relevant publications.

#### ***A brief guide to the Regulations***

17. Before a company can set up as a railway operator, whether as a train operator, station operator or infrastructure controller, it must secure HSE's formal acceptance of a safety case. The safety case must be prepared in consultation with safety representatives, or (where these do not exist) with employee representatives, and be sent to HSE.

18. Before an infrastructure controller submits its safety case (or safety case revision) it must obtain a report from an 'assessment body' - in the case of Railtrack, from Railway Safety. It must send that report, including a recommendation from the 'assessment body' as to whether the safety case should be accepted, to HSE with the safety case.

19. A train or station operator must send its safety case to HSE and also (unless it is the infrastructure controller) to the infrastructure controller. The infrastructure controller must then assess the safety case. The infrastructure controller must also obtain a report from an 'assessment body' which includes a recommendation as to whether the safety case should be accepted and a statement that the safety case is consistent with the infrastructure controller's own health and safety duties (or alternatively the reasons for recommending rejection). The infrastructure controller must then send to HSE:

- (a) the safety case, if it has been revised since the operator sent it to HSE;
- (b) a record of its own assessment of the safety case;
- (c) the assessment body's report;
- (d) the infrastructure controller's recommendation as to whether the safety case should be accepted, with reasons if the recommendation is to reject it; and
- (e) a statement identifying any parts of the safety case which do not affect the performance of the infrastructure controller's health and safety responsibilities, or do so only to a limited extent.

It should also copy items (c) (d) and (e) to the applicant.

20. The infrastructure controller must not permit access to a train or station operator until HSE has formally accepted the operator's safety case and the operator has given the infrastructure controller a written undertaking to comply with any reasonable request made by the infrastructure controller on grounds of health or safety (Regulation 4).

21. In assessing the submitted safety case HSE may need to seek further information or to discuss matters with the applicant. The length of time between receipt of the safety case and HSE's decision will vary depending on the complexity of the safety case and how well developed it is when first submitted. As soon as a final decision has been taken, the applicant will be notified in writing. HSE must give reasons for refusing to accept a safety case. An infrastructure controller or train and station operator whose safety case has been rejected, or has not been accepted within a reasonable time, may appeal to the Secretary of State (Regulation 15).

22. Railway operators must revise their safety cases whenever it is appropriate (Regulation 7). 'Material' revisions must be accepted by HSE before being implemented. The procedures that apply to safety cases, including the duty to consult safety representatives, also apply to material revisions, to revisions directed by HSE (Regulation 8) and to 'transitional' revisions which apply to safety cases accepted under the 1994 Regulations so that they conform with the 2000

Regulations (Regulation 16). Operators must carry out a thorough review of their safety cases at least every three years, or at other times as HSE may direct (Regulation 6).

23. Railway operators must follow the procedures and arrangements described in their own safety case (Regulation 10). Infrastructure controllers must take all reasonable steps to ensure that train and station operators using their infrastructure comply with the infrastructure controller's own safety case (Regulation 12) and notify HSE of instances where operators fail to comply with it or with other reasonable requests by the infrastructure controller (Regulation 13).

24. Infrastructure controllers must obtain an annual audit by the assessment body of the infrastructure controller's, and train and station operators', health and safety management systems. Reports of these audits, and other audits undertaken by railway operators, must be sent to HSE and to other affected operators (Regulation 9 and 14(2)).

25. Railway operators and contractors must cooperate with other railway operators, and the assessment body must cooperate with railway operators and receive their cooperation (Regulation 11). The purpose of the cooperation is to enable the operator to comply with the Regulations and to enable the assessment body to carry out its functions under the Regulations.

26. Railway operators must keep their accepted safety cases and all revisions for as long as they are current and other documents (reports of three-yearly reviews and audit reports) for five years. Infrastructure controllers must also keep a record of their assessment of each train and station operator's safety case for five years (Regulation 14).

27. HSE may exempt any operator, or type of operator, from any or all of the Regulations by certificate (Regulation 17).

Table I Key duties and functions under the Regulations

Train and station operators	<p>Must submit their safety cases and material revisions to HSE and the infrastructure controller.</p> <p>Must undertake a thorough review of the safety case at least every three years (or when directed by HSE).</p>
Infrastructure controllers	<p>Must submit their safety cases and proposed revisions to HSE for acceptance.</p> <p>Must obtain an independent assessment from an ‘assessment body’ and send it to HSE with the safety case.</p> <p>Must undertake a thorough review of the safety case at least every three years (or when directed by HSE) and submit proposed material revisions to HSE.</p> <p>Must assess train and station operators’ safety cases and also obtain an independent assessment of these from an ‘assessment body’. Must send their own and the assessment body’s assessments and recommendations to HSE.</p> <p>Must ensure that an assessment body undertakes annual audits of their own, and train and station operators’, health and safety management systems.</p> <p>Must take all reasonable steps to ensure that train and station operators comply with their own safety cases, and notify HSE of any failures on the part of operators to comply with the controller’s safety case or with other reasonable safety requests from the controllers.</p>
Assessment body	<p>Assess the infrastructure controllers’ and train and station operators’ safety cases and undertake annual audits of their health and safety management systems.</p>
HSE	<p>Must formally accept (or reject, stating reasons) all safety cases required to be submitted under the Regulations.</p> <p>May direct infrastructure controllers or operators to propose a revision of their safety case.</p> <p>May direct an infrastructure controller to make a recommendation on an operator’s safety case within a specified reasonable period.</p> <p>May grant individual or generic exemptions, with or without time limit or conditions.</p>
Secretary of State	<p>Determines appeals from infrastructure controllers or operators where HSE rejects a safety case/revision, or fails to come to a decision within a reasonable time, or directs that a revision be prepared to a safety case.</p> <p>May appoint a person to decide the matter on their behalf.</p>