COMMISSION DECISION

of 30 May 2002

concerning the technical specification for interoperability relating to the operation subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Council Directive 96/48/EC

(notified under document number C(2002) 1951)

(Text with EEA relevance)

(2002/734/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail network [1], and in particular Article 6(1) thereof,

Whereas:

(1) In accordance with Article 2(c) of Directive 96/48/EC, the trans-European high-speed rail system is subdivided into structural or functional subsystems. These subsystems are described in Annex II to the Directive.

(2) In accordance with Article 5(1) of the Directive, each of the subsystems shall be covered by a technical specification for interoperability (TSI).

(3) In accordance with Article 6(1) of the Directive, draft TSIs shall be drawn up by the joint representative body.

(4) The Committee set up pursuant to Article 21 of Directive 96/48/EC has appointed the European Association for Railway Interoperability (AEIF) as the joint representative body in accordance with Article 2(h) of the Directive.

(5) The AEIF has been given a mandate to draw up a draft TSI for the operation subsystem in accordance with Article 6(1) of the Directive. This mandate was established in accordance with the procedure laid down in Article 21(2) of the Directive.

(6) The AEIF has drawn up the draft TSI, together with an introductory report containing a cost-benefit analysis as provided for in Article 6(3) of the Directive.

(7) The draft TSI has been examined by the representatives of the Member States, in the framework of the Committee set up by the Directive, in the light of the introductory report.

(8) The TSI, which is the subject of this Decision, does not impose the use of specific technologies or technical solutions except where this is strictly necessary for the interoperability of the trans-European high-speed rail network.

(9) The TSI, which is the subject of this Decision, is based on best available expert knowledge at the time of preparation of the corresponding draft. Developments in technology or social requirements may make it necessary to amend or supplement this TSI. Where appropriate, a review or updating procedure will be initiated in accordance with Article 6(2) of Directive 96/48/EC.

(10) In some cases, the TSI, which is the subject of this Decision, allows a choice between different solutions, making it possible to apply definitive or transitional interoperable solutions that are compatible with the existing situation. In addition, Directive 96/48/EC provides for special implementing provisions in certain specific cases. Furthermore, in the cases provided for in Article 7 of the Directive, Member States must be allowed not to apply certain technical specifications. It is therefore necessary that the Member States ensure that an infrastructure register and a rolling stock register are published and updated each year. These registers will set out the main characteristics of the national infrastructure and rolling stock (e.g. the basic parameters) and their concordance with the characteristics prescribed by the applicable TSIs. To this end, the TSI, which is the subject of this Decision, indicates precisely which information must appear in the registers.

(11) The application of the TSI which is the subject of this Decision must take into account specific criteria relating to technical and operational compatibility between the infrastructures and the rolling stock to be placed in service and the network into which they are to be integrated. These compatibility requirements entail a complex technical and economical analysis that is to be done on a case-by-case basis. The analysis should take into account:

[1] OJ L 235, 17.9.1996, p. 6.

— the interfaces between the different subsystems referred to in Directive 96/48/EC,

— the different categories of lines and rolling stock referred to in that Directive, and

— the technical and operational environments of the existing network.

(12) The provisions of this Decision are in conformity with the opinion of the Committee set up by Directive 96/48/EC.

HAS ADOPTED THIS DECISION:

Article 1

The TSI relating to the 'operation' subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC is hereby adopted by the Commission. The TSI is set out in the Annex to this Decision.

The TSI is fully applicable to the infrastructure and rolling stock of the trans-European high-speed rail system as defined in Annex I to Directive 96/48/EC, taking into account the conditions set out in Chapter 7 of the attached TSI.

Article 2

The attached TSI shall enter into force six months after notification of this Decision.

Article 3

This Decision is addressed to the Member States.

Done at Brussels, 30 May 2002.

For the Commission
Loyola DE PALACIO
Vice-President

ANNEX

TECHNICAL SPECIFICATION FOR INTEROPERABILITY RELATING TO THE OPERATION SUBSYSTEM

1. INTRODUCTION

1.1. *TECHNICAL SCOPE*

This TSI concerns the 'operation' subsystem, which is one of the subsystems listed in Annex II(1) to Directive 96/48/EC.

This TSI is part of a set of six TSIs, which cover all the eight subsystems defined in the Directive. The specifications concerning the 'users' and 'environment' subsystems, which are necessary to ensure interoperability of the trans-European high-speed rail system in compliance with the essential requirements, are set out in the TSIs concerned.

More information about the operation subsystem is given in Chapter 2.

1.2. *GEOGRAPHICAL SCOPE*

The geographical scope of this TSI is the trans-European high-speed rail system as described in Annex I to Directive 96/48/EC.

Reference shall be made in particular to the lines of the trans-European rail network described in Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network or in any update to the same Decision as a result of the revision provided for in Article 21 of that Decision.

1.3. *CONTENT OF THIS TSI*

In accordance with Article 5(3) of and with Annex I(1)(b) to Directive 96/48/EC, this TSI:

(a) specifies the essential requirements for the 'operation' subsystem and its interfaces (Chapter 3);

(b) establishes the basic parameters described in Annex II(3) to that Directive, which are necessary to meet the essential requirements (Chapter 4);

(c) establishes the conditions to be complied with to achieve the specified performances for each of the following categories of line (Chapter 4):

— category I: specially built high-speed lines equipped for speeds generally equal to or greater than 250 km/h,

— category II: specially upgraded high-speed lines equipped for speeds of the order of 200 km/h,

— category III: specially upgraded high-speed lines which have special features as a result of topographical, relief or town-planning constraints, on which the speed must be adapted to each case.

(d) establishes implementing provisions in certain specific cases (Chapter 7);

(e) determines the interoperability constituents and interfaces which must be covered by European specifications, including European standards, which are needed in order to achieve interoperability within the trans-European high-speed rail system while meeting the essential requirements (Chapter 5);

(f) states, in each case under consideration, which of the modules defined in Decision 93/465/EEC or, where appropriate, which specific procedures are to be used in order to assess either the conformity or the suitability for use of the interoperability constituents, as well as 'EC' verification of the subsystems (Chapter 6).

2. SUBSYSTEM DEFINITION AND SCOPE OF APPLICATION

The operation subsystem of the trans-European high-speed rail system comprises all the elements which allow the overall implementation and functionality of the system within the scope of railway operations, once the technical and functional elements of the other subsystems have been defined.

The operation of a railway system is governed by rules and regulations drawn up by the infrastructure managers that must also be implemented by the railway undertakings.

The initial start up of operation on a railway network requires qualified staff who apply the procedures defined in a manner consistent with the overall safety system of the network.

The following main functions relating to operating safety should be distinguished for operational implementation of the system:

— train driving,

— on-board staff,

— ground-based traffic management.

Besides these, there are organisations that handle the design and updating of the processes, the procedures and the necessary documentation.

For each of the above functions, personnel involved shall be identified and listed in the necessary documents.

The procedures shall be published in a regulatory document.

To achieve interoperability, the stated documentation shall be adapted to address the sole needs of interoperability, taking into account the human factors essential for dependable and efficient application of procedures.

The ideal solution would be to standardise or harmonise the operating rules of all the railways on the relevant routes.

However, even if this difficult ideal were achieved, it might actually defeat the overall 'safety coherence' of a network and thereby impede the safe running of other trains on the same routes, which would be contrary to the Directive.

Consequently, the requirement set out in essential requirement 2.7.1 of the Directive to align the network operating rules can apply only to harmonisation of the structure of the documents so that the driver, for instance, can follow the specific rules of each infrastructure manager along the route safely and effectively.

Conversely, any procedures directly relating to the operation of a new, common system implemented on the interoperable network must be standardised.

As far as qualification of the staff involved and in particular drivers, such qualification contributes substantially to maintaining a high level of safety and must therefore be organised in a uniform way in order to achieve the same level of safety on all the infrastructure networks which may be operated on.

Moreover, when carrying out these procedures, it is necessary for all the different members of staff to understand one another without any hesitation whatsoever, even in emergency situations; which makes it necessary to define the rules to be complied with in matters of communication and, in particular, the use of languages.

Operating safety also requires consistent checking of the system, through verifications and feedback of experience from the field.

The scope of application may be defined as the use of one or more routes as specified in the train service provided, by a designated set of rolling stock and specified members of staff.

The aspects of the operation subsystem which relate to the interoperability of the trans-European high-speed rail system may all be grouped under one of the following headings:

— procedures,

— documentation,

— qualification of personnel,

— communications,

— system monitoring.

'Infrastructure manager' means the body referred to in Article 3 and Article 7 of Directive 91/440/EEC and in Article 1 of Directive 2001/12/EC. The reallocation of tasks to bodies different from infrastructure managers is possible under Directive 2001/12/EC and the information concerning this reallocation must be mentioned in the network statement to be published by infrastructure managers in accordance with Directive 2001/14/EC.

3. **ESSENTIAL REQUIREMENTS**

3.1. *COMPLIANCE WITH THE ESSENTIAL REQUIREMENTS*

According to Article 4(1) of Directive 96/48/EC, the trans-European high-speed rail system, subsystems and their interoperability constituents must meet the essential requirements set out in general terms in Annex III to the Directive.

3.2. *ESSENTIAL REQUIREMENTS ASPECTS*

The essential requirements cover:

— safety,

— reliability and availability,

— health,

— environmental protection,

— technical compatibility.

According to Directive 96/48/EC, the essential requirements may be generally applicable to the whole trans-European high-speed rail system or be specific to each subsystem and its constituents.

3.3. *ASPECTS RELATING SPECIFICALLY TO THE OPERATION SUBSYSTEM*

In the case of the operation subsystem, the specific aspects, in addition to the considerations in Annex III to the Directive, are as follows.

3.3.1. SAFETY

In accordance with Annex III to Directive 96/48/EC, the safety-related essential requirements that apply to the operation subsystem are the following:

Essential requirement 1.1.1:

'The design, construction or assembly, maintenance and monitoring of safety-critical components, and more particularly of the components involved in train movements must be such as to guarantee safety at the level corresponding to the aims laid down for the network, including those for specific degraded situations.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.1.2:

'The parameters involved in the wheel/rail contact must meet the stability requirements needed in order to guarantee safe movement at the maximum authorised speed.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.1.3:

'The components used must withstand any normal or exceptional stresses that have been specified during their period in service. The safety repercussions of any accidental failures must be limited by appropriate means.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.1.4:

'The design of fixed installations and rolling stock and the choice of the materials used must be aimed at limiting the generation, propagation and effects of fire and smoke in the event of a fire.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.1.5:

'Any devices intended to be handled by users must be so designed as not to impair their safety if used foreseeably in a manner not in accordance with the posted instructions.'

This essential requirement is not relevant to the operation subsystem.

However, the following safety-specific requirements do concern the operation subsystem:

Essential requirement 2.7.1:

'Alignment of the network operating rules and the qualifications of drivers and on-board staff must be such as to ensure safe international operation.

The operations and maintenance intervals, the training and qualifications of maintenance staff and the quality assurance system set up in the maintenance centres of the operators concerned must be such as to ensure a high level of safety.'

The first part of this essential requirement, (alignment of operating rules and personnel qualifications), is addressed by the following subsections of this specification, relating essentially to human factors:

— the unicity of procedures to be applied for identical situations directly linked to the operating of a new system: subsection 4.1.1,

— determining the scope of and harmonising the formatting of the documentation for drivers:

  — concerning procedures: subsection 4.1.2.1.1,

  — concerning timetables: subsection 4.1.2.1.3,

— the development of a 'procedures manual' for on-board staff: subsection 4.1.2.2,

— formalising and harmonising the description of the line and the installations on the route and formalising the process by which the documents used to inform the driver in advance are prepared and updated and the process by which the driver is advised in real time: subsection 4.1.2.1.2,

— formalising the safety messages, the methodology and the specification of the language to be used for different types of safety-related voice communications: section 4.1.4,

— formalising the process for checking out the system from the safety standpoint: section 4.1.10,

— formalising the process of verification of the composition of the crews: section 4.1.12.1,

— formalising the procedure to follow when running with a passenger overload: section 4.1.12.3.

Driver and train crew qualifications are assured by:

— formalisation and harmonisation of the organisation set up to qualify personnel from the standpoint of procedures and languages: section 4.1.3.1,

— formalisation of the process of route learning and maintenance of route knowledge: section 4.1.3.2,

— definition of a programme for special training for specific qualifications: section 4.1.3.3.

As concerns the training and qualification of maintenance personnel, requirements applicable to personnel responsible for maintaining the rolling stock are addressed by the rolling stock subsystems specification.

3.3.2. RELIABILITY AND AVAILABILITY

Essential requirement 1.2:

'The monitoring and maintenance of fixed or movable components that are involved in train movements must be organised, carried out and quantified in such a manner as to maintain their operation under the intended conditions.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 2.7.2:

'The operation and maintenance periods, the training and qualifications of the maintenance staff and the quality assurance system set up by the operators concerned in the maintenance centres must be such as to ensure a high level of system reliability and availability.'

The requirements applicable to personnel responsible for maintaining the rolling stock are addressed by the rolling stock subsystem specification.

3.3.3. HEALTH

Essential requirement 1.3.1:

'Materials likely, by virtue of the way they are used, to constitute a health hazard to those having access to them must not be used in trains and railway infrastructures.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.3.2:

'Those materials must be selected, deployed and used in such a way as to restrict the emission of harmful and dangerous fumes or gases, particularly in the event of fire.'

This essential requirement is not relevant to the operation subsystem.

3.3.4. ENVIRONMENTAL PROTECTION

Essential requirement 1.4.1:

'The repercussions on the environment of the establishment and operation of the trans-European high-speed rail system must be assessed and taken into account at the design stage of the system in accordance with the Community provisions in force.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.4.2:

'The materials used in the trains and infrastructures must prevent the emission of fumes or gases which are harmful and dangerous to the environment, particularly in the event of fire.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 1.4.3:

'The rolling stock and energy-supply systems must be designed and manufactured in such a way as to be electromagnetically compatible with the installations, equipment and public or private networks with which they might interfere.'

This essential requirement is not relevant to the operation subsystem.

3.3.5. TECHNICAL COMPATIBILITY

Essential requirement 1.5:

'The technical characteristics of the infrastructures and fixed installations must be compatible with each other and with those of the trains to be used on the trans-European high-speed rail system.

If adherence to these characteristics proves difficult on certain sections of the network, temporary solutions, which ensure compatibility in the future, may be implemented.'

This essential requirement is not relevant to the operation subsystem.

Essential requirement 2.7.3:

'The alignment of the operating rules of the networks and the qualifications of drivers, on-board staff and managers in charge of traffic must be such as to ensure operating efficiency on the trans-European high-speed rail system.'

This essential requirement is assured by:

— the unicity of procedures to be applied for identical situations directly linked to the operating of a new system: subsection 4.1.1,

— formalisation of the safety messages, of the methodology and specification of the language to be used for different types of safety-related voice communications: section 4.1.4,

— the provision of assistance to the driver in the event of an incident: section 4.1.5,

— informing the traffic managers about the operational status of the rolling stock: section 4.1.7,

— formalisation of the procedures and scenarios to be followed in the event of a major system degradation or incident: section 4.1.8,

— formalisation of the system compliance from the point of view of the quality of operation: section 4.1.11.

3.4. *VERIFICATION OF CONFORMITY*

The verification of conformity of the subsystem and its constituents with the essential requirements shall be made in accordance with the requirements laid down in Directive 96/48/EC.

4. CHARACTERISATION OF THE OPERATION SUBSYSTEM

The trans-European high-speed rail system to which Directive 96/48/EC applies and of which the operation subsystem is a part, is an integrated system whose coherence must be verified in particular with the basic parameters, the interfaces and performance, for the purpose of ensuring interoperability of the system in compliance with the essential requirements.

The basic parameters and applicable specifications for each interoperability element, characterising the operation subsystem, are shown below.

4.1. *PARAMETERS OF THE OPERATION SUBSYSTEM*

None of the 'basic parameters' listed in Annex II to Directive 96/48/EC is relevant to the operation subsystem.

The other parameters relevant to the subsystem are the following.

The operation subsystem must meet all the specified performances for each of the following line categories of the trans-European high-speed rail system that are relevant to it:

— lines specially constructed for high-speed,

— lines specially upgraded for high-speed,

— lines specially upgraded for high-speed which have special features.

In the case of the operation subsystem, certain other parameters as specified below must be met for operating interoperable high-speed trains, but they are not all specifically relevant to high-speed.

In the absence of a definition of the needs for all trains, at least the following safety-critical elements shall be specified.

4.1.1. PROCEDURES FOR OPERATING A NEW SYSTEM

The procedures to be used for identical situations linked directly to the operation of a new system intended to be used on the interoperable European network must be unique; for ERTMS/ETCS in particular, they shall comply with a European specification which shall be established.

4.1.2. DOCUMENTATION

4.1.2.1. ***Driver's documentation***

4.1.2.1.1. **Procedures**

All the necessary procedures for the driver shall be included in a document or a computer medium called the driver's rule book.

The driver's rule book shall state the requirements for the routes worked and the rolling stock used on those routes according to the situations of normal operation and degraded operation which the driver may meet.

Every driver's rule book shall be drafted following the standardised outline or format below:

A — Organisation of the service

B — Personal safety

C — Signalling and command and control

D — Running conditions of the rolling stock

E — Onboard systems

F — Running and driving of the train

G — Anomalies, incidents and accidents

Appendix 1 to driver's rule book: Manual of communication procedures

Appendix 2 to driver's rule book: Book of forms ('Livret formulaires').

The driver's rule book shall be written in the language of one of the States of the interoperable network chosen by the railway undertaking in liaison with the infrastructure managers of the networks that the service will be operated on, except for messages and forms ('formulaires') which shall remain in the language of the infrastructure managers (see subsection 4.1.4.1).

The driver's rule book shall be written by the railway undertaking and it shall include the information supplied by the infrastructure managers.

The process for preparing and updating the driver's rule book shall include the following steps:

— the infrastructure manager (IM) shall send the railway undertaking the delimited regulations in the IM's language,

— the railway undertaking shall draw up the initial or updated document in the IM's language,

— the infrastructure manager shall scrutinise the part of the document prepared by the railway undertaking relevant to the IM,

— the infrastructure manager shall grant authorisation to use those elements of the document which concern the IM,

— if the language chosen by the railway undertaking is not the one used by the infrastructure manager, the document shall be translated by a competent and acknowledged body, chosen by the infrastructure manager and the railway undertaking. The railway undertaking shall provide a certificate of compliance for the translation. The certificate will not include the section containing the messages and the forms (see point 4.1.4.1). Upon request, the railway undertaking and the infrastructure manager have the right to participate in the translation process.

4.1.2.1.2. **Description of the line and lineside equipment on lines worked over**

4.1.2.1.2.1. *Basic elements*

All the items necessary for operating the rolling stock concerned on the designated routes shall be set out in a document or computer medium called the 'route book'.

The route book shall include at least the following information:

— the general operating characteristics:

  — type of signalling and corresponding running regime (double track, two-way working, etc.),

  — type of power supply,

  — type of ground-train radio equipment,

— indication of rising and falling gradients:

  — gradient values and precise delimitation of areas with steep gradients,

— detailed line diagram:

  — names of stations on the line and key locations and their location,

  — permissible speed limits for each track and for the rolling stock concerned,

  — names of the organisation responsible for traffic management,

  — identification of the radio channels to be used,

  — schematic description of track layout.

The format of the route book shall be prepared in the same manner for all the infrastructures worked over by the trains of an individual railway undertaking.

The route book shall be written in the language of one of the Member States of the interoperable network chosen by the railway undertaking.

The route book shall be written by the railway undertaking using the information supplied by the infrastructure manager.

The process for preparing and updating the route book shall be defined by the railway undertaking. The infrastructure manager shall validate each element of the document for which it is responsible and which are within its language competencies.

4.1.2.1.2.2. *Modified elements*

Any elements modified either permanently or temporarily shall be advised to the railway undertaking by the infrastructure managers; these changes shall be grouped by the railway undertaking into a dedicated document or computer medium whose format shall be the same for all the infrastructures worked over by the trains of an individual railway undertaking.

The process whereby this document or computer medium is prepared shall be defined by the railway undertaking and validated by each infrastructure manager for each element for which it is responsible and which are within its language competencies.

4.1.2.1.2.3. *Informing the driver in real time*

The procedure for advising drivers in real time about all modifications to safety arrangements on the route shall be defined by the infrastructure managers concerned (the process shall be unique where ERTMS/ETCS is in use).

4.1.2.1.3. **Rolling stock**

All the information about running of the rolling stock in both normal and degraded situations that must be known by the driver shall be compiled into a document or in a computer medium called the 'driver's rolling stock book'.

The driver's rolling stock book shall be prepared by the railway undertaking.

4.1.2.1.4. **Timetables**

The information necessary for the normal running of the train shall be taken up in a single document or computer medium called the 'timetable sheet' ('fiche train') that shall be given to the driver and that shall include at least the following items:

— the stopping points and other timing points,

— the arrival/departure/passing times at each of those points.

The timetable sheet shall be prepared by the railway undertaking concerned as a compilation of the timing information supplied by the infrastructure manager(s) concerned.

The process by which it is prepared shall be formalised by the railway undertaking and validated by each infrastructure manager concerned for each element of the document for which it is responsible and which are within its language competencies.

4.1.2.2. ***Documentation for on-board staff***

All the procedures necessary for on-board staff shall be grouped into a document or computer medium called the 'on-board crew's rule book'.

The on-board crew's rule book shall be prepared by the railway undertaking and shall include the information supplied by the infrastructure managers.

The infrastructure managers may request, concerning the part relevant to them, that this document be drawn up and updated in accordance with the same process as the one used for the driver's rule book (subsection 4.1.2.1.1).

All the items necessary for using the rolling stock which must be known to the on-board staff concerning both normal and degraded situations shall be collected into a document or computer medium called the 'on-board staff's rolling stock book'.

The on-board staff's rolling stock book shall be written by the railway undertaking.

4.1.3. QUALIFICATION OF DRIVERS AND TRAIN STAFF OF THE RAILWAY UNDERTAKING HAVING SAFETY-RELATED DUTIES

4.1.3.1. ***Basic qualification, procedures and languages***

For drivers and train staff having safety duties the railway undertaking shall apply the qualification process consisting of the following phases and elements.

A. Personnel selection:

— evaluation of personnel's experience and their professional and physical qualities,

— evaluation of their competence in use of the foreign language(s) in their vocational field or their aptitude to learn it (them).

B. Initial vocational training:

— training requirements specification,

— training programme resources,

— qualification of instructors.

C. Initial certification:

— drawing up of the requirements for the certification programme,

— licensing of certifiers,

— delivery of a certificate of qualification.

D. Maintenance of the qualification level and monitoring personnel:

— career monitoring scheme,

— health monitoring scheme.

E. Maintenance of the qualification level and refresher training:

— principles of assessment of training needs,

— principles of training implementation,

— principles of training evaluation.

F. Maintenance of the qualification level and maintenance of continued certification:

— principles of continued certification,

— formalisation of continued certification procedures.

The qualification process is defined taking into account the rules which apply on the concerned infrastructures. The document describing the detail of the process is sent to each concerned infrastructure manager.

4.1.3.2. ***Route knowledge***

The railway undertaking shall define the process whereby knowledge of the routes the service operates on is acquired and maintained, based on the rules laid down by the infrastructure managers.

4.1.3.3. ***Special qualifications***

In certain cases, included in the register of infrastructure, such as a tunnel containing particular equipment, the railway undertaking shall draw up a special training and maintenance of knowledge programme for all of the train staff who might become involved in safety procedures, based on the rules set down by the infrastructure managers concerned.

4.1.4. SAFETY-RELATED COMMUNICATIONS BETWEEN PERSONNEL

4.1.4.1. ***Nature and format of messages and safety-related communications methodology***

Principles to be applied by railway undertakings and infrastructure managers concerning:

— the nature and format of the messages,

— the communications methodology,

are defined in Annex A to the present TSI.

Operational items prepared so as to facilitate the applications of these principles, are defined in documents for use by drivers and traffic management staff.

For the drivers, there are Annexes to the driver's rule book:

— Annex 1: Manual of communication procedures,

— Annex 2: Book of forms ('livret formulaires')

4.1.4.2. ***Language used between the ground and the train***

The language used shall be that used on the infrastructure concerned; it shall be decided by the infrastructure manager.

The level of knowledge for safety purposes shall be as follows:

— Driving function (driver)

Ability to send and understand the messages specified in Annex A to the present TSI.

The content of these messages shall be laid down by the infrastructure manager.

— Train accompaniment function (on-board staff)

Ability to send information describing the train and its operational status as far as the staff is concerned and useful measures for dealing with particular situations involving passengers.

The content of these messages shall be laid down by the infrastructure manager.

4.1.4.3. ***Language used between on-board staff and between on-board Staff and the driver***

The language used shall be that used on one of the territories of the interoperable network. It shall be chosen by the railway undertaking.

4.1.4.4. ***Language used between on-board staff and passengers***

In situations related to passenger safety and health, the language used between the train staff and passengers shall be that used on one of the territories of the interoperable network; it shall be chosen by the railway undertaking by agreement with the infrastructure managers.

Moreover, the infrastructure managers may set down particular rules for specific cases (for running through long tunnels for example) or to comply with the regulations of individual Member States.

4.1.5. AID TO DRIVERS IN THE EVENT OF AN INCIDENT OR OF A MAJOR ROLLING STOCK MALFUNCTION

The railway undertaking shall keep available, during all the time that the train is running, an expert who can be contacted directly by the driver, in real time, in the event of an incident or of major malfunctioning of the rolling stock.

4.1.6. INVESTIGATION OR INQUIRY FOLLOWING AN ACCIDENT OR INCIDENT

The railway undertaking shall specify, by agreement with the infrastructure manager, the persons to be contacted.

The infrastructure manager, by agreement with the railway undertaking, shall prescribe the time scales against which the investigation or inquiry into an accident or incident shall commence.

As far as conservation, extraction and reading of the required safety-related event recordings, the railway undertaking must establish, in agreement with the infrastructure manager, a procedure in order that these actions may be undertaken.

4.1.7. INFORMING THE INFRASTRUCTURE MANAGER OF THE TRAIN'S OPERATIONAL STATUS

A procedure shall be defined between the infrastructure manager and the railway undertaking so that any anomaly affecting the rolling stock having possible repercussions on the train's running (prior to departure and en route) will be reported to the organisation responsible for traffic management.

4.1.8. SCENARIOS AND PROCEDURES TO DEAL WITH MAJOR INCIDENTS

Scenarios and procedures shall be specified by the infrastructure managers in coordination with the railway undertaking for the following incidents:

— Accident:

  — rescuing people,

— Rolling stock failures:

  — evacuating passengers,

  — rescuing failed stock,

— Infrastructure failures:

  — driving conditions for a re-routed train.

The railway undertakings and the infrastructure managers shall take account of these scenarios and procedures in the rule books and in their personnel training specifications.

Furthermore, and in order for the infrastructure managers to be able to pre-establish the measures to be taken according to the rules and regulations, depending on the nature of the incidents, the tailway undertaking shall supply them, at their request, the list of specific malfunctions of the rolling stock which may have substantial traffic implications.

4.1.9. RUNNING UNDER PARTICULAR CONDITIONS (TEST TRAINS AND FAILED TRAINS)

The particular conditions for the running of trains for rolling stock under test and the movement of recovered, failed stock shall be defined by the railway undertakings and scrutinised for endorsement by the Infrastructure Managers concerned.

4.1.10. MONITORING THE SYSTEM FROM THE SAFETY POINT OF VIEW

4.1.10.1. ***Checking compliance with the specifications***

Compliance with the interoperability specifications shall be checked, in particular, through audits.

The infrastructure managers shall:

— carry out, as a minimum, yearly audits of their network, covering:

  — implementation of the specifications by the railway undertakings,

  — the effectiveness of the monitoring system set up by the railway undertaking,

— inform the railway undertakings of the findings of those audits carried out on their network.

The railway undertakings shall:

— make audits at least once a year of the interoperable high-speed service that concerns them,

— communicate the findings of the audits to the infrastructure managers concerned.

4.1.10.2. ***Feedback of experience***

The infrastructure managers shall:

— set up a process for feedback of field information on the operational performance of the interoperable high-speed system,

— advise the railway undertakings concerned about incidents and accidents having occurred on their territory,

— communicate to the railway undertakings, when one of their staff is concerned, the analyses and conclusions of the investigation or inquiry.

The railway undertakings shall:

— set up a process for feedback of field information on the operational performance of the interoperable high-speed system,

— periodically and if needed inform the infrastructure managers about the results of the feedback and areas where corrective actions are expected.

4.1.11. MONITORING QUALITY OF OPERATION

Events which have significantly disrupted operations shall be analysed as soon as possible, jointly by the railway undertaking and the infrastructure manager concerned.

Any recurring event shall be analysed jointly by the railway undertaking and the infrastructure managers concerned at least once a year.

These processes shall be defined by the railway undertaking in agreement with the infrastructure managers.

4.1.12. ON-BOARD SERVICE

4.1.12.1. ***Crewing***

The minimum number of persons on board and their qualification shall be in accordance with the train staffing rules of each of the infrastructures worked over.

A procedure shall be drawn up by the railway undertaking in agreement with the infrastructure manager to define the checks to be made before the train departs.

4.1.12.2. ***Number of passengers on-board the train***

When a railway undertaking uses high-speed rolling stock that cannot run at its nominal speed because of a substantial passenger overload, it shall take the necessary measures to ensure that normally such an overload situation never occurs.

In the exceptional cases where the situation does occur, the railway undertaking shall advise the infrastructure manager of the conditions under which the movement can be made.

For certain cases included in the register of infrastructure, such as a tunnel for which the infrastructure manager has provided an evacuation scenario whereby passengers shall have to walk down the train, the infrastructure manager together with the railway undertaking shall fix the maximum number of passengers allowed on the train.

Furthermore, in the case just mentioned and for the same reasons, no baggage shall be permitted in the aisles or doorways.

4.2. *INTERFACES WITH THE OPERATION SUBSYSTEM*

None

4.3. *SPECIFIED PERFORMANCE*

None

5. INTEROPERABILITY CONSTITUENTS

5.1. Within the meaning of Article 2(d) of Directive 96/48/EC, interoperability constituents are 'any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem, upon which the interoperability of the trans-European high-speed rail system depends either directly or indirectly.'

5.2. The interoperability constituents are covered by the relevant provisions of Directive 96/48/EC.

5.3. Some interoperability constituents are addressed by specifications setting out performance requirements for them. The assessment of their conformity and/or fitness for use shall be made, as a rule, via the interfaces of the interoperability constituents. Design or descriptive characteristics shall be relied on only by exception.

The operation subsystem does not have any interoperability constituents.

6. ASSESSMENT OF CONFORMITY AND/OR FITNESS FOR USE

6.1. *INTEROPERABILITY CONSTITUENTS*

The operations TSI contains no interoperability constituents.

6.2. *OPERATIONS SUBSYSTEM*

6.2.1. ASSESSMENT PROCEDURES AND MODULES APPLICABLE

Conformity assessment of the parameters in question involves verifying the following points for each parameter, on the route(s) to be worked over and the rolling stock to be used:

— prior to entry into service: the characteristics of all defined documents, procedures, processes or special provisions,

— during operation: the implementation and control of all defined elements associated with the quality monitoring system.

The types of module to be applied for conformity assessment are as follows.

— Prior to start up of service

  — For design parameters of concern to the infrastructure manager, the type A module shall be used.

  — For design parameters of concern to the railway undertaking, the type A module shall be used in conjunction with the additional provision A1 as follows:

    'a notified body chosen by the railway undertaking shall conduct a verification of the characteristics of design parameter elements of concern to it prior to start up of service'.

This module is referred to as AE and is described in point 6.2.2.

— During operation

  For the parameter elements relating to the quality monitoring system, a type D module shall be used in conjunction with the provision D1 as follows:

  'a notified body, or a notified institution chosen by the infrastructure manager and the railway companies, shall, every two years, assess the elements of the parameters relating to the quality monitoring system processes (application of the quality monitoring system, identified as SQ in Table 6.2.2) that concern the railway undertaking and/or the infrastructure manager. The choice of the notified body is made according to a procedure laid down by the Member State concerned and from among the notified bodies with the essential skills, and in agreement with the authority appointed by the Member State concerned to issue the safety certificates.'

  This module shall be referred to as DE and is described in point 6.2.2.

6.2.2. APPLICATION OF MODULES

The table below:

— lists the parameters to be assessed and the elements to be verified for each parameter and identifies the quality monitoring system elements to be assessed (marked SQ),

— gives a TSI reference for the various parameters and indicates which modules should be used.

This table is the basis for applying the modules.

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Modules to be applied	
			RU	IM
Procedure for operating a new system	Application for this system of the instructions set out in the European specification established for the system	4.1.1.		A
Documentation				
Driver's rule book	Existence	4.1.2.1.1	AE	A
	Structure		AE	
	Language of text		AE	
	Drafting and updating process, including the choice of a competent and acknowledged body and conformity certification of the translation		AE	
Route book	Existence	4.1.2.1.2.1	AE	
	Minimum content		AE	
	Mode of presentation by railway undertaking		AE	
	Language of text		AE	
	Drafting and updating process		AE	A
Document or computer file of amended elements	Existence	4.1.2.1.2.2	AE	
	Mode of presentation by railway undertaking		AE	
	Drafting and updating process		AE	A
Procedure for informing the driver in real time	Existence	4.1.2.1.2.3	AE	A
Driver's rolling stock book	Existence	4.1.2.1.3	AE	
Timetable sheet	Existence	4.1.2.1.4	AE	
	Minimum content		AE	
	Mode of presentation by railway undertaking		AE	
	Language of text		AE	
	Drafting process		AE	A

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Modules to be applied	
			RU	IM
On-board crew's rule book	Existence of these documents	4.1.2.2	AE	
	Drafting and updating process as appropriate		AE	A
On-board staff's rolling stock book	Existence		AE	
Qualification of drivers and on-board staff				
Process for general qualifications of drivers and on-board staff	Existence	4.1.3.1	AE	
	Structure		AE	
	Submission by the RU to each IM of the document describing the processes		AE	
Process for acquisition and maintenance of route knowledge	Existence	4.1.3.2	AE	A
Process for training and maintaining knowledge for specific qualifications	Existence of a specific programme	4.1.3.3	AE	A
Safety-critical communications				
Operational elements for ground-to-mobile communications appearing in the documents: — to be used by the driver (appendices to the rule book) — manual of communications procedures — book of forms — to be used by staff responsible for traffic management	Application of the principles set out in Appendix A	4.1.4.1	AE	A
Language used between track and train	Definition	4.1.4.2	AE	
Language used between on-board staff and driver	Definition	4.1.4.3	AE	

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Modules to be applied	
			RU	IM
Language(s) used between on-board staff and passengers	Definition	4.1.4.4	AE	A
Measures to assist drivers	Existence	4.1.5	AE	
Measures for investigation and inquiry purposes and to access and read recorded safety data	Existence	4.1.6	AE	A
Procedure to inform the infrastructure manager of the train's operational status	Existence	4.1.7	AE	A
Scenarios and procedures to deal with major incidents	Existence	4.1.8	AE	A
	Inclusion in rule books and training specifications		AE	A
	List of malfunctions		AE	A
Measures concerning running conditions for rolling stock undergoing testing and return of failed rolling stock	Definition	4.1.9	AE	A
	Inclusion in audit programmes			
System verification from safety standpoint				
Audit process	Existence	4.1.10.1	AE	A
	Application of process in operation (SQ)		DE	DE
Feedback	Existence	4.1.10.2	AE	A
	Application of process in operation (SQ)		DE	DE
System verification from operating quality standpoint	Existence	4.1.11	AE	A
	Application of process in operation (SQ)		DE	DE
On-board service				
Provisions governing the composition of train crews	Definition of minimum number of staff on board and their qualifications	4.1.12.1	AE	A

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Modules to be applied	
			RU	IM
Procedure to check the number of staff on board prior to train departure	Existence		AE	A
Provisions concerning the train load factor	Existence Verification as part of audit	4.1.12.2	AE	
Provisions concerning the maximum number of passengers where evacuation scenarios exist	Existence		AE	A
Provisions concerning baggage	Existence		AE	

(SQ) Elements concerning the quality monitoring system to be verified during operation.

The arrangements for implementing the modules are as follows.

Module A

The producer (infrastructure manager) shall, for the elements of parameters of concern to him:

(a) draw up the operating documentation for the interoperable system in question:

— documentation on the rolling stock used and the route being worked over,

— documentation on each parameter: document, name of the process, procedure or special provisions,

— list of European specifications to be applied,

and shall archive this material, keeping it available for inspection by national authorities for a period of at least 10 years;

(b) verify, for each parameter and design element of the parameters indicated in the above list, that the characteristics defined in the TSI are complied with;

(c) draw up a declaration of conformity including the list of parameters and elements to be verified (from the previous table) and, for each of them, an indication of compliance. This declaration shall be archived with the operating documentation.

Module AE

The producer (railway undertaking) shall, for the elements of concern to him:

(a) draw up the operating documentation for the interoperable system in question:

— documentation on the rolling stock used and the route being worked,

— documentation on each parameter: document, wording of the process, procedure or special provisions,

— list of European specifications to be applied,

and shall archive this material, keeping it available for inspection by the national authorities for a period of at least 10 years;

(b) select a notified body and request verification, for each parameter and design parameter element indicated in the above list, that the characteristics defined in the TSI are complied with along the whole of the route being worked over.

The notified body shall:

(c) verify, for each parameter and design parameter element indicated in the above list, that the characteristics defined in the TSI are complied with;

(d) notify the producer that requested the verifications of the results obtained.

The producer shall:

(e) draw up a declaration of conformity including a list of the parameters and elements to be verified, taken from the above table, and for each of them, an indication of conformity. This declaration shall be archived with the operating documentation.

Module DE

The producers (railway undertaking and infrastructure manager, each for the part of concern to it) shall:

(a) draw up the operating documentation for the interoperable system in question:

— documentation on the rolling stock used and the route being worked,

— documentation on the organisation, responsibilities and powers in relation to quality monitoring system,

— documentation on each parameter relating to the operating quality monitoring system:

— name of processes,

— result of audits,

— elements concerning feedback,

— elements concerning overall quality monitoring system,

and shall archive this material, keeping it available for inspection by national authorities for a period of at least 10 years;

(b) select a notified body or a notified institution every two years and request that it conduct an assessment of the elements of parameters relating to the quality monitoring system (application of the quality monitoring processes identified as SQ in the table above) which concerns them.

The notified body or the notified institution:

(c) shall conduct an assessment of the monitoring processes of concern to the producers (railway undertaking and/or infrastructure manager) and draw up a report for each, indicating in particular whether:

— the producers have implemented the processes as planned,

— the producers control the processes;

(d) gives the result of this assessment and the related report to the producers who requested the report.

The producers (railway undertaking and infrastructure manager, for the part of concern to each):

(e) shall establish a compliance declaration indicating the results of this assessment and the related report and keep this declaration with the operating documentation.

7. IMPLEMENTING THE OPERATION TSI

The operation of the train service on the relevant part of the trans-European high speed rail system must conform with the Operation TSI:

— when new or upgraded interoperable infrastructure is put into service in accordance with Article 14 of Directive 96/48/EC,

— or, when a new cross-border service is put into service,

— or, in the case of existing infrastructure referred to in point 1.2 of the present TSI, step by step and, if possible, by 2005.

However, in the case of an infrastructure where existing trains are running and are not subject to Directive 96/48/EC, the operating rules resulting from the application of this TSI can be adapted to the local situation in view of preserving the compatibility of the existing rail system and its current safety level. Such exceptions must be mentioned in the infrastructure register.

ANNEX A

SAFETY-RELATED COMMUNICATIONS BETWEEN PERSONNEL INVOLVED IN THE SUBSYSTEM

NATURE AND STRUCTURE OF THE MESSAGES

COMMUNICATION METHODOLOGY

INTRODUCTION

The purpose of this document is to set out the rules for safety-related ground-to-mobile and mobile-to-ground communications applicable to information transmitted or exchanged for safety critical situations on the interoperable network and in particular to:

— define the nature and structure of the safety-related messages,

— define the methodology for voice transmission of those messages.

This appendix is to serve as the basis:

— to enable the infrastructure manager to draw up the messages and books of forms (*formulaires*). These elements shall, be addressed to the railway undertakings at the same time as the delimited rules and regulations are made available,

— for the infrastructure managers and the railway undertaking to draw up the documents for the operators (books of forms: *livret formulaires*), instructions for the personnel responsible for traffic management and Appendix 1 to the driver's rule book 'Manual of communication procedures'.

1. *NATURE AND STRUCTURE OF THE SAFETY-RELATED MESSAGES*

1.1. NATURE

The safety-related messages shall be defined in a formal manner by each infrastructure manager according to four types:

— top priority emergency messages,

— procedural messages,

— additional messages,

— information messages with a variable content.

The rules concerning the transmission of these messages are given under section 2 – 'Communication methodology'.

1.1.1. **Top priority emergency messages**

The top priority emergency safety messages are intended to give urgent operational instructions.

To avoid any risk of misunderstanding, the message is always repeated.

Classified according to need, the main messages which can be sent are indicated hereafter: in addition, other top priority emergency messages may, if necessary, be defined by the infrastructure manager.

The top priority emergency messages may be followed by procedural messages (see subsection 1.1.2).

All essential top priority emergency messages are indicated in Appendix 1 'Manual of communications procedures' to the rule book for drivers and in the documents of instructions for use by the personnel responsible for traffic management.

1.1.1.1. *Messages sent either by the ground or the driver*

— Need to stop all trains:

Emergency stop all trains
Emergency stop all trains

Information on location or area are, if necessary, specified in the message.

In addition, this message is to be quickly complemented, if possible, by the reason, the location of the emergency and the train's identification:

Obstruction
or fire
or ..... **(other reason)**
on line ..... **(name)** **at** ..... **(m.ch)**
Driver of train ..... **(number)**

— Need to stop a particular train:

Train ..... **(number)** **on** ..... **(name)** **line(s)**
Emergency stop at ..... **(m.ch)**
Train ..... **(number)** **on** ..... **(name)** **line(s)**
Emergency stop at ..... **(m.ch)**

— Need for radio silence:

Radio silence
Radio silence

1.1.1.2. *Messages issued by the driver*

— Need to cut the traction power supply:

Emergency current isolation
Emergency current isolation

This message is to be quickly complemented, if possible, by the reason, the location of the emergency and the train's identification:

At ..... **(m.ch)**
on ..... **(name)** **line**
between ..... **(station)** **and** ..... **(station)**
Reason .....
Driver of train ..... **(number)**

1.1.2. **Procedure messages**

1.1.2.1. *Nature of the messages*

Procedural messages are used to send operational instructions associated with situations represented in the driver's rule book.

They comprise the text of the message itself, corresponding to a situation, and a number identifying the message.

If the message requires the recipient to report back, the text of the report is also given.

These messages use predetermined wording prescribed by the infrastructure managers in their own language and they are presented in the form of pre-printed paper forms.

1.1.2.2. *Procedure forms*

Procedure Forms are the formalised medium for procedural messages.

Their purpose is to:

— provide a common working document used in real-time by the ground staff responsible for traffic management and by the drivers,

— enable traceability of communications.

These forms are identified by a unique code word or number relating to the procedure.

They are drawn up by each infrastructure manager in his own language.

1.1.2.3. *Book of forms (livret formulaires)*

The whole set of forms must be collected into books (books of forms) in paper form:

— a book of forms intended for the driver which groups all the forms that might be used by the different infrastructure managers anywhere on the route travelled. The book of forms shall constitute Appendix 2 to the driver's rule book,

— a book of forms intended for personnel responsible for traffic management, allowing them to put into practice all the procedures used within their territory.

The book of forms are in two parts.

The first part comprises the following items.

— a reminder about the utilisation of the book of forms,

— an index of ground-originated procedure forms,

— an index of driver-originated procedure forms,

— the list of situations cross-referencing to which procedure form is to be used,

— a glossary giving the situations to which each procedure form applies,

— the code for spelling out messages (phonetic alphabet etc.).

The second part contains the procedure forms themselves.

Several model forms are included in the book of forms and page dividers shall be used.

The railway undertaking may include explanatory text relevant to each form and the situations covered, in the drivers' book of forms.

1.1.3. **Additional messages**

Additional messages are information messages used by the driver to inform the personnel in charge of traffic management or used by the personnel in charge of traffic management to advise the driver of certain predictable situations related to train running or to the technical condition of the train or the infrastructure.

The necessary additional messages are identified by the infrastructure managers and are included in Appendix 1 'Manual of communications procedures' of the driver's rule book and in the documents of instructions for use by personnel in charge of traffic management.

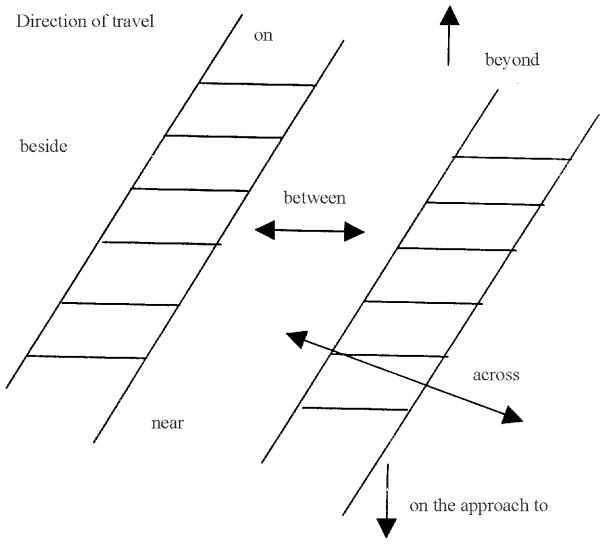
1.1.4. **Information messages with a variable, content**

These messages shall be used, in some situations, by the driver to advise personnel in charge of traffic management on the ground about circumstances which are of a rare nature and for which predetermined messages are not provided.

To make it easier to describe the situations and construct the information messages, a message model, a glossary of railway terminology, a descriptive diagram of the rolling stock being employed and a descriptive statement of the infrastructure equipment (track, traction supply, etc.) shall be drawn up.

1.1.4.1. *Model structure for messages*

These variable-field messages shall be structured on the following basic model:

Stage in the communication flow	Message element
Reason for passing the information	☐ for information ☐ for action
Observation	☐ There is ☐ I saw ☐ I had ☐ I hit
Position — along the line — in respect to my train	☐ at ..... (station name) ☐ ..... (characteristic point) ☐ at milepost/kilometre point ..... (number) ☐ power car ..... (number) ☐ trailer car ..... (number)
Nature — object — person	☐ ..... (see glossary)
State — static — moving	☐ standing on ☐ lying on ☐ fallen on ☐ walking ☐ running ☐ towards
Location with respect to the tracks	

These messages may be followed by a request for instructions.

The elements of the messages are provided in both the language chosen by the railway undertaking and in those of the concerned infrastructure managers.

1.1.4.2. *Glossary of railway terminology*

The glossary of railway terminology shall be produced by the railway undertaking for each network traversed. It shall supply the terms in regular use in the language chosen by the railway undertaking and in those of the infrastructure managers whose infrastructure is worked over.

It shall be composed of two parts:

— a listing of terms by subject matter,

— a listing of the terms in alphabetical order.

1.1.4.3. *Descriptive diagram of the rolling stock*

The descriptive diagram of the rolling stock used shall be prepared by the railway undertaking and shall list the names of the various components that may be the subject of communications with the different infrastructure managers concerned. It shall provide the common names for the standard terms in the language chosen by the railway undertaking and in those of the infrastructure managers whose infrastructure is worked over.

1.1.4.4. *Descriptive statement of the characteristics of the infrastructure equipment (track, traction supply, etc.)*

The descriptive statement of the characteristics of the infrastructure equipment (track, traction supply, etc.) on the route worked over shall be drawn up by the railway undertaking, showing the names of the various components that may be the subject of communications with the infrastructure managers concerned. It shall provide the common names for the standard terms in the language chosen by the railway undertaking and in the ones of the infrastructure managers whose infrastructure is worked over.

2. *COMMUNICATIONS METHODOLOGY*

2.1. ELEMENTS AND RULES OF THE METHODOLOGY

2.1.1. **Glossary of terms used in the procedures**

2.1.1.1. *Speech transmission procedure*

Term transferring the opportunity to speak to the opposite party:

over

2.1.1.2. *Message receiving procedure*

— upon receiving a direct message

Term confirming that the sent message has been received:

received

Term used to have the message repeated in the event of poor reception or misunderstanding

say again (+ speak slowly)

— upon reception of a message that has been read back

Terms used to ascertain whether a read-back message exactly matches the sent message:

correct

or not:

error (+ I say again)

2.1.1.3. *Communications breaking procedure*

— if the message has ended:

out

— if break is temporary but does not break the connection

Term used to keep the other party waiting:

wait

— if break is temporary but the connection is broken

Term used to tell the other party that the communication is going to be broken but will be resumed later on:

I call again

2.1.1.4. *Message cancelling procedure*

Term used to cancel the procedure underway:

cancel procedure .....

If the message is then to subsequently be resumed, the procedure shall be repeated from the start.

2.1.2. **Rules to be applied in the event of error or misunderstanding**

To permit the correction of possible errors during communication, the following rules shall be applied:

2.1.2.1. *Errors*

— error during transmission

When a transmission error is discovered by the sender himself, the sender must request cancellation by sending the following procedure message:

error (+ prepare new form ...)

or

error + I say again

and then send the initial message again

— error during read back

When the sender discovers an error whilst the message is being read back to him, the sender shall send the following procedure messages:

error + I say again

and send the initial message again.

2.1.2.2. *Misunderstanding*

If one of the parties misunderstands a message he must ask the other party to repeat the message by using the following text:

say again (+ speak slowly)

2.1.3. **Word, number, time, distance, speed and date spelling code**

To aid in understanding and expressing messages in different situations, each term must be pronounced slowly and correctly by spelling out the words and figures likely to be misunderstood. The following spelling rules shall apply.

2.1.3.1. *Spelling out of words and letter groups*

The international phonetic alphabet shall be used.

A	Alpha	F	Foxtrot	K	Kilo	P	Papa	U	Uniforme	Z	Zulu
B	Bravo	G	Golf	L	Lima	Q	Quebec	V	Victor		
C	Charlie	H	Hotel	M	Mike	R	Romeo	W	Whisky		
D	Delta	I	India	N	November	S	Sierra	X	X-ray		
E	Echo	J	Juliet	O	Oscar	T	Tango	Y	Yankee		

Examples: points A B = points alpha bravo; signal number KX 835 = signal Kilo X-Ray eight three five.

The railway undertaking may add further indications about pronunciation as it deems necessary.

2.1.3.2. *Expression of numbers*

Numbers shall be spoken digit by digit.

0	zero	5	five
1	one	6	six
2	two	7	seven
3	three	8	eight
4	four	9	nine

Example: train **2183** = train two one eight three.

Decimals shall be expressed by the word point.

Example: **12.50** = one two point five zero.

2.1.3.3. *Expression of time*

The time shall be given in local time, in plain language.

Example: **10:52 hours** = ten fifty-two.

If necessary, the time shall be spelled out digit by digit (one zero five two hours).

2.1.3.4. *Expression of distances and speeds*

Distances shall be expressed in kilometres and speeds in kilometres per hour. Miles may be used if that unit is used on the infrastructure concerned.

2.1.3.5. *Expression of dates*

Dates shall be expressed in the usual manner.

Example: **10 December.**

2.2. COMMUNICATIONS STRUCTURE

The voice transmission of safety-related messages shall in principle comprise two 2 phases as follows:

— identification and request for instructions,

— transmission of the message itself and termination of the transmission.

The first phase may be cut back or entirely omitted for top priority safety messages.

2.2.1. **Rules for identification and requests for instruction**

To enable the parties to identify one another, define the operational situation and transmit procedural instructions, the following rules shall apply:

2.2.1.1. *Identification*

Every communication other than top priority safety messages must begin with identification messages even after an interruption during transmission.

The following messages shall be used for this purpose by the different parties.

— by the personnel responsible for traffic management:

train . . . . . .

. . . . . (number)

this is . . . . . signals

. . . . . (name)

— by the driver:

. . . . . signals

. . . . . (name)

this is train . . . . . .

. . . . . (number)

NB:

The identification may be followed by an additional information message giving the person responsible for traffic management enough details of the situation to determine precisely the procedure that the driver may subsequently be required to follow.

2.2.1.2. *Request for instructions*

Every application of a procedure must be preceded by a request for instructions. The following terms shall be used to request instructions:

prepare procedure . . . . . .

2.2.2. **Rules for message transmission procedures**

2.2.2.1. *Top priority safety messages*

Due to their urgent and imperative nature, these messages:

— may be sent or received while running,

— may omit the identification part,

— shall be repeated,

— shall, as soon as possible, be followed by further information.

2.2.2.2. *Procedural message*

In order to reliably send (at a standstill) the procedural messages contained in the book of forms (livret formulaires), the following rules shall be followed.

2.2.2.2.1. Message sending

The form may be completed prior to transmitting the message so that the full text of the message can be sent in one single transmission.

2.2.2.2.2. Message receiving

The receiver of the message must fill in the form given in the book of forms based upon the information given by the sender.

2.2.2.2.3. Read back

All the predetermined railway messages in the book of forms shall be required to be read back. The read back shall include the message shown in the grey field on the forms, the report back section and any additional or complementary information.

2.2.2.2.4. Acknowledgement of correct read back

Every read-back message shall be followed by an acknowledgement of conformity or non-conformity given by the sender of the message:

correct

or

error + I say again

and resending of the initial message.

2.2.2.2.5. Acknowledgement

Every message received shall be acknowledged positively or negatively as follows:

received

or

negative, say again (+ speak slowly)

2.2.2.2.6. Traceability and verification

A unique identification or authorisation number shall accompany all messages initiated from the ground:

— if the message concerns an action for which the driver requires a specific authorisation (e.g. passing a signal at danger, etc.):

authorisation .....

..... **(number)**

— in all other cases (e.g. proceeding with caution, etc.):

message .....

..... **(number)**

2.2.2.2.7. Reporting back

Every message comprising a request to 'report back' shall be followed by a 'report'.

2.2.2.3. *Additional messages*

Additional messages

— shall be preceded by the identification procedure,

— shall be short and precise (limited wherever possible to information to be communicated and where it applies),

— shall be read back and followed by an acknowledgement of correct read back, or not,

— may be followed by a request for instructions or a request for further information.

2.2.2.4. *Information messages with a variable content not predetermined*

Information messages with a variable content shall be:

— preceded by the identification procedure,

— prepared before sending,

— read back and followed by an acknowledgement of correct read back, or not.