Department for Transport

National Technical Specification Notice

Operation and Traffic Management (OPE)

Date of publication: ~~1 January 2021~~[XX]

Rail Interoperability – The Railways (Interoperability) Regulations 2011

Notice to all:

- Manufacturers and distributors of railway equipment
- Infrastructure managers and railway undertakings
- Railway infrastructure and train: builders, designers, operators, owners and managers
- Certifying authorities, approved bodies and notified bodies, recognised organisations and railway consultants

This Notice should be read with the Railways (Interoperability) Regulations 2011 and other relevant National Technical Specifications Notices (NTSNs). Unless otherwise defined, expressions used in this NTSN have the same meaning as in the Railways (Interoperability) Regulations 2011.

Summary

This Notice has been published by the Secretary of State for Transport pursuant to regulation 3B of the Railways (Interoperability) Regulations 2011 and comes into force on ~~implementation period (IP) completion day (as defined in regulation 39(1) of the European Union (Withdrawal Agreement) Act 2020)~~[XX]. This Notice is only applicable for Great Britain. TSIs continue to have direct effect in Northern Ireland.

The objective of the Railways (Interoperability) Regulations 2011 is to enhance the interoperability of the rail system through the uniform application of technical standards relating to railway equipment to be placed into service in the UK.

This Notice provides technical information on the features required relating to the operation of trains on the rail system to meet the essential requirements set out in Schedule 2 to the Railways (Interoperability) Regulations 2011.

This Notice replaces and substantially reproduces the provisions of Commission Implementing Regulation (EU) 2019/773 (OPE TSI) ~~Commission Decision 2012/757/EU~~ concerning the technical specification for interoperability relating to the 'operation and traffic management' subsystem of the rail system in the European Union and ~~amending~~ repealing Decision 2012/757~~07/756~~/E~~C~~U ~~(OPE TSI), as it had effect immediately before IP completion day~~. ~~Notwithstanding the publication of Implementing Regulation (EU) 2019/773, Commission Decision 2012/757/EU was the applicable standard immediately before 1 January 2021 (see Article 5 of Implementing Regulation (EU) 2019/773).~~

The technical requirements set out in this Notice are the same as those in the OPE TSI except where indicated otherwise. The specific cases that were included in the OPE TSI that are relevant to the UK have been retained as UK specific cases. The specific cases for Northern Ireland and EU Member States have not been included as they are not relevant to this Notice.

Operation and Traffic Management

National Technical Specification Notice

Article 1

~~Subject matter~~

This National Technical Specification Notice (NTSN) concerns the operation and traffic management subsystem of the GB rail system, as set out in the Annex ~~I~~.

This shall apply to the operation and traffic management subsystem of the GB rail system as defined in paragraph 2 of Schedule 3 to the Railways (Interoperability) Regulations 2011.

Article 2

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~~Scope~~

~~(a) The NTSN set out in Annex I shall apply to the "operation and traffic management" subsystem of the GB rail system as defined in paragraph 2 of Schedule 3 to the Railways (Interoperability) Regulations 2011.~~

~~(b) The NTSN shall apply to the GB rail system, and excludes the cases referred to in regulation 3(2) and 3(5) of the Railways (Interoperability) Regulations 2011.~~

Article 3

~~Open points~~

~~1.~~ ~~With regard to the issues classified as "open points" referred to in Appendix I of Annex I, t~~The conditions to be complied with for verifying the interoperability in accordance with regulation 15 of the Railways (Interoperability) Regulations 2011 shall be the applicable national technical rules in the following situations:~~.~~

~~Article 3a~~

~~UK Specific cases~~

(a) ~~With regard to UK specific cases~~ in the specific situations referred to in point 7.2~~3~~ of the Annex ~~I~~to this NTSN~~, the conditions to be met for the verification of interoperability in accordance with regulation 15 of the Railways (Interoperability) Regulations 2011 shall be as set out in the national technical rules in force in the UK;~~.

~~1.~~(b) with regard to the topics listed as open points and areas for national rules referred to in Appendix I of the Annex to this NTSN.

~~*Article 3b*~~

~~*This provision has been left intentionally blank*~~

~~*Article 3c*~~

~~*This provision has been left intentionally blank*~~

~~*Article 3d*~~

~~**Implementation**~~

~~1. For the purpose of this NTSN, the implementation plan published in September 2016 continues to apply.~~

Article 4

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Article 5

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Article 6

This NTSN, published by the Secretary of State on ~~1 January 2021~~[XX] in accordance with regulation 3B of the Railways (Interoperability) Regulations 2011, replaces the previous version of the Operation and Traffic Management NTSN published on 1 January 2021~~Decision 2012/757/EU~~[1] as the relevant standard to be complied with in relation to the technical specifications for interoperability relating to the 'operation and traffic management' subsystem of the rail system.

~~1 Commission Decision 2012/757/EU of 14 November 2012 concerning the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system in the European Union and amending Decision 2007/756/EC. This EU legislation is retained EU law under section 3 of the European Union (Withdrawal) Act 2018.~~

However, Appendix A and C of the Annex to the previous version of the Operation and Traffic Management NTSN published on 1 January 2021 may continue to apply until 16 June 2024 at the latest.

Appendix A and C of the Annex to this NTSN shall apply from 16 June 2024 at the latest.

This NTSN substantially reproduces the technical requirements of Commission Implementing Regulation (EU) 2019/773 except where indicated otherwise.

~~Where relevant, the text from sections 4.2.2.1.3.2 and 4.4 of the Annex to Commission Implementing Regulation (EU) 2019/773 that were applicable on IP completion day have been incorporated into this NTSN.~~For the purpose of this NTSN, the implementation plan published in September 2016 continues to apply.

~~Decisions 2008/231/EC[2] and 2011/314/EU[3] were repealed with effect from 1 January 2014.~~

~~*Article 5*~~

~~*This provision has been left intentionally blank*~~

Article 7~~6~~

~~1.~~ The European Union Agency for Railways has published on its website the lists of codes referred in parts 9, 10, 11, 12 and 13 of Appendix 6 of the Annex to Decision 2007/756/EC[4].

~~*Article 7*~~

~~*This provision has been left intentionally blank*~~

~~*Article 8*~~

~~*This provision has been left intentionally blank*~~

~~2 Commission Decision 2008/231/EC of 1 February 2008 concerning the technical specification of interoperability relating to the operation subsystem of the trans-European high-speed rail system (OJ L 84, 26.3.2008). Repealed on 1 January 2014.~~

~~3 Commission Decision 2011/314/EU of 12 May 2011 concerning the technical specification for interoperability relating to the 'operation and traffic management' subsystem of the trans-European conventional rail system. Repealed on 1 January 2014.~~

4 Commission Decision 2007/756/EC of 9 November 2007 adopting a common specification of the national vehicle register provided for under Articles 14(4) and (5) of Directives 96/48/EC and 2001/16/EC. This EU legislation is retained EU law under section 3 of the European Union (Withdrawal) Act 2018.

ANNEX

TABLE OF CONTENTS

1. INTRODUCTION

1.1. TECHNICAL SCOPE

This National Technical Specification Notice (NTSN) ~~concerns~~ covers the ‘~~“~~operation and traffic management’~~”~~ subsystem shown in the list contained in Schedule 3 to the Railways (Interoperability) Regulations 2011. ~~Further information on this subsystem is provided in Chapter 2.~~

1.2. GEOGRAPHICAL SCOPE

The geographical scope of this ~~TSI~~ NTSN is the network of the GB rail system and excludes the cases referred to in regulation 3(2) and 3(5) of the Railways (Interoperability) Regulations 2011.

2. DESCRIPTION OF ~~SUBSYSTEM/~~SCOPE

~~2.1. SUBSYSTEM~~

~~The “operation and traffic management” subsystem is described in Schedule 3 to the Railways (Interoperability) Regulations 2011 as:~~

~~“The procedures and related equipment enabling a coherent operation of the various structural subsystems, during both normal and degraded operation, including in particular train composition and train driving, traffic planning and management.~~

~~The professional qualifications which may be required for carrying out cross-border services.”~~

~~2.2. SCOPE~~

~~This NTSN applies to the “operation and traffic management” subsystem of infrastructure managers (hereinafter referred to as “IM”) and railway undertakings (hereinafter referred to as “RU”) related to the operation of trains on the GB rail system as defined in Chapter 1.2.~~

~~2.2.1.~~2.1. STAFF AND TRAINS

Points 4.6 and 4.7 apply to those staff undertaking the safety-critical tasks associated with accompanying a train.

Point 4.6.2 applies to train drivers ~~as provided for in~~ without prejudice to point 8 of Annex VI to Directive 2007/59/EC of the European Parliament and of the Council[5].

For those staff undertaking the safety-critical tasks associated with despatching trains and authorising train movements, recognition of professional qualifications and health and safety conditions may apply between the UK and other countries.

For those staff undertaking the safety-critical tasks associated with the last preparation of a train before it is scheduled to cross a border(s) and work beyond any location(s) designated as the '~~"~~frontier'~~"~~ in the network statement of an infrastructure manager and included in ~~his~~ its safety authorisation, point 4.6 shall apply while taking into account any recognition agreements between the UK and other countries in relation to point 4.7.~~,~~ The train will not be considered to be a cross-border service, if all the vehicles of the train crossing the state border cross it only to the '~~"~~frontier'~~"~~ location(s).

Commented [A1]: TSI text:

A train shall not be considered to be a cross- border service, if it complies with the conditions of point (8) of Article 10 of Directive (EU) 2016/798.

~~2.2.2.~~2.2. PRINCIPLES

This NTSN covers those elements ~~(as set out in Chapter 4)~~ of the rail '~~"~~operation and traffic management'~~"~~ subsystem, where ~~principally~~ there are operational interfaces between ~~RU and IM~~ railway undertakings and infrastructure managers and where there is a particular benefit to interoperability.

~~RU and IM must~~ Railway undertakings and infrastructure managers shall ensure that all requirements concerning rules and procedures as well as documentation are met by the establishment of the appropriate processes. The set-~~-~~up of these processes is a relevant part of ~~RU's and IM's~~ railway undertakings' and infrastructure managers' safety management system (hereinafter referred to as '~~"~~SMS'~~"~~) as required by Directive 2004/49/EC[6].The SMS itself is assessed by the safety authority before granting safety certificate/authorisation.

Commented [A2]: TSI text:

Directive (EU) 2016/798

5 Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community. Implemented by the Train Driving Licences and Certificates Regulations 2010. This EU legislation is EU derived domestic legislation under section 2 of the European Union (Withdrawal) Act 2018.

6 Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive). Implemented by the Railways and Other Guided Transport Systems (Safety) Regulations 2006. This EU legislation is EU derived domestic legislation under section 2 of the European Union (Withdrawal) Act 2018.

~~2.2.3.~~2.3. APPLICABILITY TO EXISTING NON-NTSN CONFORM VEHICLES AND INFRASTRUCTURE

While the majority of the requirements contained in this NTSN relate to processes and procedures, a number also relate to physical elements~~, trains and~~ of vehicles and infrastructure that ~~which~~ are important for their operational function in the context of this NTSN.

~~The design criteria for these~~ Those physical elements are ~~described~~ specified in the structural NTSNs covering other subsystems than operation and traffic management. They have to be assessed according to the procedures defined in those NTSNs.~~such as rolling stock. In the context of this NTSN it is their operational function that is considered.~~

None of the provisions of this NTSN shall be used to justify a national rule under a structural NTSN.

3. ESSENTIAL REQUIREMENTS

3.1. COMPLIANCE WITH THE ESSENTIAL REQUIREMENTS

The GB rail system, its subsystems and their interoperability constituents ~~must~~ shall meet the essential requirements set out in general terms in Schedule 2 of the Railways (Interoperability) Regulations 2011.

3.2. ESSENTIAL REQUIREMENTS — OVERVIEW

The essential requirements cover:

— safety,

— reliability and availability,

— health,

— environmental protection,

— technical compatibility,

— accessibility.

The following table summarises the correspondence between the essential requirements set out in Schedule 2 to the Railways (Interoperability) Regulations 2011 and this NTSN.

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.1.2	Documentation for drivers						X											X		X	
4.2.1.2.1	Driver's Rule Book												X					X		X	
4.2.1.2.2	Route Book																	X		X	
4.2.1.2.2.1	Preparation of the Route Book																	X			
4.2.1.2.2.2	Modification to information contained within the Route Book																	X		X	
4.2.1.2.2.3	Informing the driver in real time																	X	X	X	
4.2.1.2.3	Timetables																	X	X	X	
4.2.1.2.4	Rolling stock						X											X		X	
4.2.1.3	Documentation for railway undertaking staff other than drivers						X											X		X	

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.1.4	Documentation for infrastructure manager's staff authorising train movements						X											X	X		
4.2.1.5	Safety-related communications between train crew, other railway undertaking staff and staff authorising train movements						X											X	X	X	
4.2.2.1	Train visibility	X																X		X	
4.2.2.1.1	General requirement	X																X		X	
4.2.2.1.2	Front end	X																X		X	
4.2.2.1.3	Rear end	X																X		X	
4.2.2.2	Train audibility	X											X					X		X	
4.2.2.2.1	General requirement	X																X		X	

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.2.2.2	Control	X																		X	
4.2.2.3	Vehicle identification						X											X		X	
4.2.2.4	Safety of passengers and load																	X			
4.2.2.5	Route Compatibility and Train composition																	X			
4.2.2.5.1	Route Compatibility																	X			
4.2.2.5.2	Train composition																	X			
4.2.2.6	Train braking		X															X		X	
4.2.2.6.1	Minimum requirements of the braking system		X															X		X	
4.2.2.6.2	Braking performance		X															X		X	

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.2.7	Ensuring that the train is in running order		X															X		X	
4.2.2.7.1	General requirement																	X		X	
4.2.2.7.2	~~Data required~~Pre-departure data																	X		X	
4.2.2.8	Requirements for signal and line-side marker sighting														X			X			
4.2.2.9	Driver vigilance																	X			
4.2.3.1	Train planning		X																X	X	
4.2.3.2	Identification of trains																	X	X	X	
4.2.3.3	Train departure																	X		X	
4.2.3.3.1	Checks and tests before departure		X				X											X		X	

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.3.3.2	Informing the infrastructure manager of the train's operational status		X				X												X	X	
4.2.3.4	Traffic management																	X	X	X	
4.2.3.4.1	General requirements																	X	X	X	
4.2.3.4.2	Train reporting																	X	X	X	
4.2.3.4.2.1	Data required for train position reporting																	X		X	
~~4.2.3.4.2.2~~	~~Predicted handover time~~																	~~X~~		~~X~~	
4.2.3.4.3	Dangerous goods																	X	X		
4.2.3.4.4	Operational quality																		X	X	
4.2.3.5	Data recording						X												X		

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.2.3.5.1	Recording of supervision data outside the train						X												X		
4.2.3.5.2	Recording of supervision data on board the train						X												X		
4.2.3.6	Degraded operation																	X	X	X	
4.2.3.6.1	Advice to other users																	X		X	
4.2.3.6.2	Advice to train drivers																	X			
4.2.3.6.3	Contingency arrangements																	X	X	X	
4.2.3.7	Managing an emergency situation																	X	X	X	
4.2.3.8	Aid to train crew in the event of an incident or of a major rolling stock malfunction																			X	
4.4	ERTMS operating rules																	X	X		

Clause	Clause Title	Safety					Reliability & Availability	Health		Environmental protection					Technical compatibility	Accessibility		Essential requirements specific to operation and traffic management			
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.2	1.3.1	1.3.2	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5	1.6.1	1.6.2	2.6.1	2.6.2	2.6.3	2.6.4
4.6	Professional qualifications																	X	X	X	
4.7	Health and safety conditions																	X			
4.8	Additional information on infrastructure and vehicles																	X			
4.8.1	Infrastructure																	X			
4.8.2	Vehicles																	X			

4. CHARACTERISTICS OF THE SUBSYSTEM

4.1. INTRODUCTION

~~Taking into account all the relevant essential requirements, the "operation and traffic management" subsystem, as described in point 2.2, covers only the elements specified in this Chapter.~~

In accordance with Directive 2012/34/EU of the European Parliament and of the Council[7], it is the overall responsibility of the infrastructure manager to provide all the appropriate requirements which ~~must~~ shall be met by trains permitted to run on ~~his~~ its network, taking into account the geographic particularities of individual lines and the functional or technical specifications set out in this Chapter.

4.2. FUNCTIONAL AND TECHNICAL SPECIFICATIONS OF THE SUBSYSTEM

The functional and technical specifications of the '~~"~~operation and traffic management~~"~~' subsystem comprise of the following:

— specifications relating to staff,

— specifications relating to trains,

— specifications relating to train operations.

4.2.1. Specifications relating to staff

4.2.1.1. General requirements

This point deals with staff who contribute to the operation of the subsystem by performing safety-critical tasks involving a direct interface between a railway undertaking and an infrastructure manager.

(1) Railway undertaking staff:

(a) undertaking the task of driving trains ('~~"~~driver~~"~~') and forming part of the '~~"~~train crew~~"~~';

7 Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area. Implemented by the Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016. This EU legislation is EU derived domestic legislation under section 2 of the European Union (Withdrawal) Act 2018.

(b) undertaking tasks on-board (other than driving) and forming part of the ~~"~~'train crew~~"~~';

(c) undertaking the task of preparing trains.

(2) Infrastructure manager's staff undertaking the task of authorising the movement of trains

The areas covered are:

— ~~d~~Documentation~~,~~

— ~~c~~Communication~~.~~

In addition, for the staff as defined in point ~~2.~~2.1, this NTSN sets out requirements on:

— ~~q~~Qualifications (see point 4.6 and Appendix G)~~,~~

— ~~h~~Health and safety conditions (see point 4.7)~~.~~

4.2.1.2. Documentation for drivers

The railway undertaking operating the train ~~must~~ shall supply the driver with all the necessary information and documentation required to carry out her/his duties; they may be paper based or in electronic format.

This information ~~must~~ shall take into account the necessary elements for operation in normal, degraded and emergency situations for the routes to be worked over and the rolling stock used on those routes.

4.2.1.2.1. Driver's Rule Book

All the necessary procedures for the driver ~~must~~ shall be included in a document or a computer medium called the '~~"~~Driver's Rule Book~~"~~'.

The Driver's Rule Book ~~must~~ shall state the requirements for all the routes worked and the rolling stock used on those routes according to the situations of normal operation, degraded operation and in emergency situations which the driver may encounter.

The Driver's Rule Book ~~must~~ shall cover two distinct aspects:

— one which describes the set of common rules and procedures (taking into account the contents of Appendices A, B and C),

— another which sets out any necessary rules and procedures specific to each infrastructure manager.

It ~~must~~ shall include procedures covering, as a minimum, the following aspects:

— ~~s~~Staff safety and security,

— ~~s~~Signalling and control command,

— ~~t~~Train operation including degraded mode,

— ~~t~~Traction and rolling stock,

— ~~i~~Incidents and accidents.

The railway undertaking ~~is~~ shall be responsible for ~~compiling~~ the Driver's Rule Book and compile it in such a way that it is complete and accurate, and the driver's application of all operational rules is enabled.

The railway undertaking must present the Driver's Rule Book in a clear format for the entire infrastructure over which their drivers will work.

~~The railway undertaking must compile the Driver's Rule Book in such a way that the driver's application of all operational rules is enabled.~~

It ~~must~~ shall have two appendices:

— Appendix 1: Manual of communication procedures,

— Appendix 2: Book of Forms.

Predefined messages and forms ~~must remain~~ shall at least exist in the ~~"~~'operating~~"~~' language(s) of infrastructure manager(s).

The railway undertaking's process for preparing and updating the Driver's Rule Book ~~must~~ shall include the following steps:

— the infrastructure manager (or the organisation responsible for the preparation of the operating rules) ~~must~~shall provide the railway undertaking with the appropriate information in the infrastructure manager's operating language,

— the railway undertaking ~~must~~shall draw up the initial or updated document,

— if the language chosen by the railway undertaking for the Driver's Rule Book is not the language in which the appropriate information was originally supplied, it is the responsibility of the railway undertaking to arrange for any necessary translation and/or provide explanatory notes in another language.

The infrastructure manager ~~must~~ shall ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate.

~~The railway undertaking must ensure that the content of the Driver's Rule Book is complete and accurate.~~

4.2.1.2.2. Description of the line and the relevant line-side equipment associated with the lines worked over

Drivers ~~must~~shall be provided with a description of the lines and the associated line-side equipment for the lines over which they ~~will~~shall operate and relevant to the driving task. Such information ~~must~~shall be set out in a single document called the '~~"~~Route Book~~"~~' ~~(which can either be a traditional document or computer-based)~~.

The following is a list of information which ~~must~~shall, as a minimum, be provided:

— the general operating characteristics,

— indication of rising and falling gradients,

— detailed line diagram.

4.2.1.2.2.1. Preparation of the Route Book

The format of the Route Book ~~must~~ shall be prepared in the same manner for all the infrastructures worked over by the trains of an individual railway undertaking.

The railway undertaking is responsible for the complete and correct compilation of the Route Book, using the information supplied by the infrastructure manager(s). The railway undertaking shall ensure that the content of the Route Book is complete and accurate, including when grouping the modifications to information contained within the Route Book.

The infrastructure manager ~~must~~ shall provide the railway undertaking with at least the information for the Route Book as defined in Appendix D. This information shall include relevant information that shall be taken into account to adapt train operation to line characteristics and vehicle characteristics. The infrastructure manager shall provide this information free of charge and as soon as reasonably possible and in any event within 28 days of the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the information of the Route Book whenever such information becomes available.

The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate. For emergency situations or real time information appropriate means of communication from the infrastructure manager shall ensure timely information to the railway undertaking about elements in Appendix D.

~~The following information must be included (this list is not exhaustive):~~

~~(a) the general operating characteristics:~~

Commented [A3]: TSI text:

The railway undertaking shall ensure the route book duly describes operational conditions related to line characteristics and vehicle characteristics.

Commented [A4]: TSI text:

Appendix D2 through RINF. This information shall include relevant information that shall be taken into account to adapt train operation to line characteristics and vehicle characteristics. Until RINF provides the relevant parameters in accordance with Article 6 of Commission Implementing Regulation (EU) 2019/777(3), the infrastructure manager shall provide this information through other means free of charge and as soon as reasonably possible and in any event within 15 days for the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the information of the route book through RINF whenever such information becomes available or through other means until RINF allows for such functionality.

The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate. For emergency situations or real time information appropriate alternative means of communication of the infrastructure manager shall ensure immediate information to the railway undertaking about Appendix D2.

~~(a) type of signalling system and corresponding operational regime (double track, reversible working, left- or right-hand running, etc.),~~

~~(b) type of power supply,~~

~~(c) type of track to train radio equipment.~~

~~(b) indication of rising and falling gradients with their gradient values and location;~~

~~(c) detailed line diagram:~~

- ~~names of stations on the line and key locations and their location,~~
- ~~tunnels, including location, name, length, specific information such as the existence of walkways and points of safe egress as well as the location of safe areas where evacuation of passengers can take place,~~
- ~~essential locations such as neutral sections,~~
- ~~permissible speed limits for each track, including, if necessary, differential speeds relating to certain types of train,~~
- ~~the responsible infrastructure manager,~~
- ~~means of communication with the traffic management/control centre in normal and degraded mode.~~

~~The infrastructure manager must ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate.~~

~~The railway undertaking must ensure that the content of the Route Book is complete and accurate.~~

4.2.1.2.2.2. Modifications to information contained within the Route Book

The infrastructure manager ~~must~~shall advise the railway undertaking of any permanent or temporary modifications to information supplied in accordance with point 4.2.1.2.2.1.

These changes ~~must~~shall be grouped by the railway undertaking into a dedicated document or computer medium whose format ~~must~~shall be the same for all the infrastructures worked over by the trains of an individual railway undertaking.

~~The infrastructure manager must ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate.~~

~~The railway undertaking must ensure that the content of the document grouping the modifications to information contained within the Route Book is complete and accurate.~~

4.2.1.2.2.3. Informing the driver in real time

The infrastructure manager ~~must~~shall inform drivers of any changes to the line or relevant line-side equipment that have not been advised as modifications to information for the Route Book as set out in point 4.2.1.2.2.2.

4.2.1.2.3. Timetables

The provision of train schedule information facilitates the punctual running of trains and assists in service performance.

The railway undertaking ~~must~~shall provide drivers with the information necessary for the normal running of the train and as a minimum include:

— the train identification,

— the train running days (if necessary),

— the stopping points and the activities associated with them,

— other timing points,

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

Such train running information, which ~~must~~shall be based on information supplied by the infrastructure manager, may be provided either electronically or in a paper format.

Presentation to the driver ~~must~~shall be consistent across all the lines over which the railway undertaking operates.

4.2.1.2.4. Rolling stock

The railway undertaking ~~must~~shall provide the driver with all information relevant to the working of the rolling stock during degraded situations (such as trains requiring assistance). Such documentation ~~must~~shall also focus on the specific interface with the infrastructure manager's staff in these cases.

4.2.1.3. Documentation for railway undertaking staff other than drivers

The railway undertaking ~~must~~shall provide all members of ~~his~~ its staff (whether on train or otherwise) who undertake safety-critical tasks involving a direct interface with the staff, equipment or systems of the infrastructure manager with the rules, procedures, rolling stock and route specific information it deems appropriate to such tasks. Such information shall be applicable in both normal and degraded operation.

For staff on board trains, the structure, format, content and process for preparation and updating of such information ~~must~~shall be based on the specification set out in Subsection 4.2.1.2.

4.2.1.4. Documentation for infrastructure manager's staff authorising train movements

All the information necessary to ensure safety-related communication between staff authorising the movement of trains and train crews ~~must~~shall be set out in:

— documents describing the Communications Principles (Appendix C);

— the document entitled Book of Forms.

The infrastructure manager ~~must~~shall draw up these documents in ~~his~~ all its operating language(s).

4.2.1.5. Safety-related communications between train crew, other railway undertaking staff and staff authorising train movements

The language used for safety-related communication between train crew, other railway undertaking staff (as defined in Appendix G) and the staff authorising train movements is the operating language(s) (as defined in Appendix J) used by the infrastructure manager on the route concerned.

The principles for safety-related communication between train crew and staff responsible for authorising the movement of trains are to be found in Appendix C.

In accordance with Directive 2012/34/EU, the infrastructure manager is responsible for publishing the '~~"~~operating~~"~~' language(s) used by ~~his~~ its personnel in daily operational use.

Where, however, local practice requires that a second language is also provided for, it is the responsibility of the infrastructure manager to determine the geographic boundaries for its use.

4.2.2. Specifications relating to trains

4.2.2.1. Train visibility

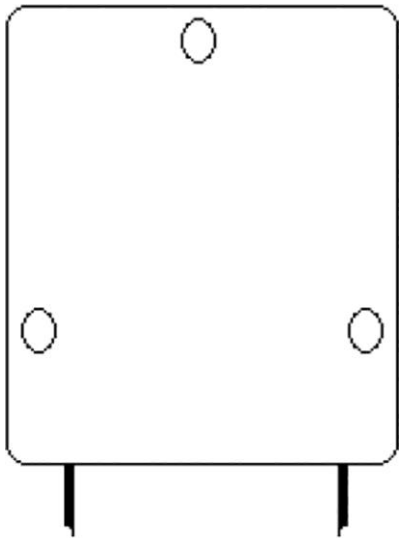
4.2.2.1.1. General requirement

The railway undertaking ~~must~~shall ensure that trains are fitted with means of indicating the front and rear of the train.

4.2.2.1.2. Front end

The railway undertaking ~~must~~shall ensure that an approaching train is clearly visible and recognisable as such, by the presence and layout of its lit white front-end lights.

The forward facing front end of the leading vehicle of a train ~~must~~shall be fitted with three lights in an isosceles triangle, as shown below. These lights ~~must~~shall always be lit when the train is being driven from that end.



The front-end lights ~~must~~shall optimise train detectability (marker lights), provide sufficient visibility for the train driver (head lights) by night and during low light conditions and ~~must~~shall not dazzle the drivers of oncoming trains.

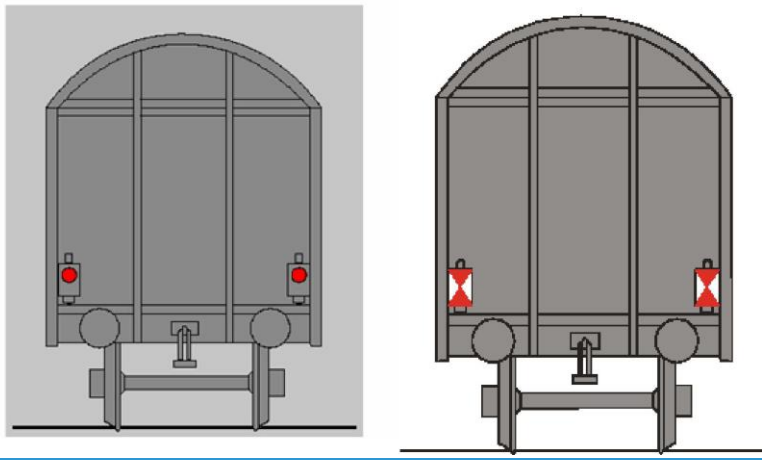
The spacing, the height above rails, the diameter, the intensity of the lights, the dimensions and shape of the emitted beam in both day and night time operation are defined in LOC&PAS NTSN.

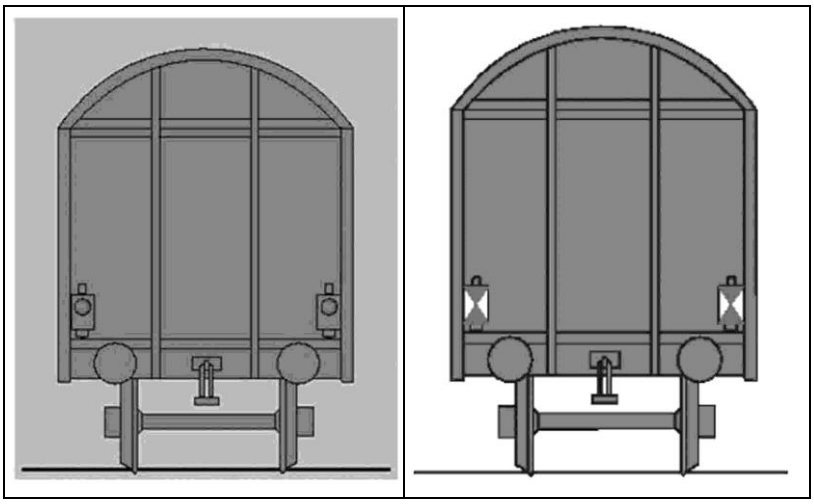
Commented [A5]: TSI text:

By the dates mentioned below for the harmonisation of the rear end signal as per section 4.2.2.1.3.2, the luminous intensity of vehicle headlamps shall be in accordance with point (5) of section 4.2.7.1.1 of the Annex to Commission Regulation (EU) No 1302/2014 (4) (LOC&PAS TSI) in order to access the lines identified in RINF where permissive driving is used.

4.2.2.1.3. Rear end

The railway undertaking ~~must~~shall provide the required means of indicating the rear of a train. The rear-end signal ~~must~~shall only be exhibited on the rear of the last vehicle of the train. It ~~must~~shall be displayed as shown below.





4.2.2.1.3.1. Passenger trains

The rear ~~-~~end ~~indication~~ signal of a passenger train ~~must~~shall consist of ~~two~~ 2 steady red lights at the same height above buffer on the transversal axis.

4.2.2.1.3.2. Freight trains

The ~~UK has a requirement for a~~ rear end ~~indication~~ signal shall consist~~ing~~ of two steady red lights in accordance with the LOC&PAS NTSN or one flashing light that meets the requirements specified in the relevant national technical rules.

Commented [A6]: Additional to TSI

Reflective plates shall comply with Appendix E to the WAG NTSN.

The lamps shall be on the same height above buffer on the transversal axis

~~***4.2.2.1.3.3. Freight trains not crossing a border between the UK and EU Member States***~~

~~The rule for freight trains in international traffic described in 4.2.2.1.3.2shall also be accepted for trains not crossing a border.~~

4.2.2.2. Train audibility

4.2.2.2.1. General requirement

The railway undertaking ~~must~~shall ensure that trains are fitted with an audible warning device to indicate the approach of a train.

4.2.2.2.2. Control

The activation of the audible warning device ~~must~~shall be possible from all driving positions.

4.2.2.3. Vehicle identification

Each vehicle ~~must~~shall have a number to uniquely identify it from any other rail vehicle. This number ~~must~~shall be prominently displayed at least on each longitudinal side of the vehicle.

It ~~must~~shall also be possible to identify operational restrictions applicable to the vehicle.

Further requirements are specified in Appendix H.

4.2.2.4. Safety of passengers and load

4.2.2.4.1. Safety of load

The railway undertaking ~~must~~shall make sure that freight vehicles are safely and securely loaded and remain so throughout the journey.

4.2.2.4.2. Safety of passengers

The railway undertaking ~~must~~shall ensure that passenger transport is undertaken safely at the departure and during the journey.

4.2.2.5. Route compatibility and train composition

4.2.2.5.1. Route compatibility

(a) The railway undertaking is responsible for ensuring that all vehicles composing its train are compatible with the intended route(s).

The railway undertaking shall have a process in its SMS to ensure that all vehicles it uses are authorised, registered and compatible with the intended route(s) including the requirements to be followed by its staff.

The processes for route compatibility in the SMS of the railway undertaking shall include the following checks, which may be performed in parallel at any appropriate time or in any appropriate sequence:

— each vehicle is authorised and registered;

— each vehicle in the train is compatible with the route;

— the composition of the train is compatible with the route and the path;

— the preparation of the train ensuring that the train is correctly formed and complete.

(b) The infrastructure manager shall provide the information for route compatibility as defined in Appendix D.

The infrastructure manager shall provide this information free of charge as soon as possible to railway undertakings, authorised applicants for path requests and, where applicable, to an applicant for authorisation under the Railway Interoperability Regulations 2011.

The first submission of route compatibility information by the infrastructure manager shall be delivered at the request of the railway undertaking as soon as reasonably possible and in any event within 28 days unless the infrastructure manager and the railway undertaking agree a longer deadline. The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate.

The infrastructure manager shall inform the railway undertaking of the changes on characteristics of the route whenever such information.

For emergency situations or real time information, the infrastructure manager shall ensure timely information is given to the railway undertaking through appropriate means of communication.

(c) Additional elements for route compatibility shall be checked when relevant:

— transport of dangerous good as referred to in point 4.2.3.4.3,

Commented [A7]: TSI text:

The route compatibility process shall not duplicate processes performed as part of the vehicle authorisation under Commission Implementing Regulation (EU) 2018/545 to ensure technical compatibility between the vehicle and the network(s). Parameters of Appendix D1 already verified and checked during vehicle authorisation or other similar processes shall not be reassessed in the framework of route compatibility check.

For vehicle authorised under Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1, already checked during the authorisation process, being part of:

—the file referred to in Article 21(3) of Directive (EU) 2016/797, and
—the vehicle authorisation as referred to in Article 21(10) of Directive (EU) 2016/797,
shall be provided by the applicant referred to in Article 2(22) of Directive (EU) 2016/797 or the keeper to the railway undertaking upon request, when such information is not available in ERATV or other registers for rail vehicles.

For vehicles authorised before Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1 shall be provided to the railway undertaking by the holder of the vehicle authorisation documentation or the keeper upon request, when such information is not available in ERATV or other registers for rail vehicles.

Commented [A8]: TSI text:

Appendix D1 through RINF.

Appendix D1 sets out all the parameters that shall be used in the process of the railway undertaking before the first use of a vehicle or train configuration in order to ensure all vehicles composing a train are compatible with the route(s) the train is planned to operate on including, where appropriate, deviation routes and routes to workshops. Modifications of the route and changes of infrastructure characteristics have to be taken into account. When a parameter of Appendix D1 is harmonised at network(s) level of an area of use, conformity with that parameter may be presumed for any vehicle authorised for that area of use. National rules or additional national requirements for network access in respect of route compatibility are in principle considered incompatible with Appendix D1. The infrastructure manager shall not require additional technical checks for the purpose of route compatibility beyond the list laid down in Appendix D1.

...

Commented [A9]: TSI text:

through other means than RINF

Commented [A10]: TSI text:

15

Commented [A11]: TSI text:

through RINF

— quieter route as referred to in the Noise NTSN,

— exceptional transport

— access conditions to underground stations for diesel and other thermal traction systems as referred to in clause 4.2.8.3 of the LOC&PAS NTSN.

Commented [A12]: TSI text:

as referred in Appendix I

~~4.2.2.4.3.~~4.2.2.5.2. Train composition

~~The railway undertaking must define the rules and procedures to be followed by his staff so as to ensure that the train is in compliance with the allocated path.~~

Train composition requirements ~~must~~ shall take into account the following elements according to the allocated path:

(a) all vehicles composing a train including their loads

— shall be compatible with all the requirements applicable on the routes over which the train shall run;

— shall be fit to run at the maximum speed at which the train is scheduled to run;

(b) all vehicles on the train shall remain within their specified maintenance interval for the duration (in terms of both time and distance) of the journey being undertaken;

(c) the train composed of vehicles including their loads, shall comply with the technical and operational constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals.

(d) the railway undertaking is responsible for ensuring that all vehicles composing the train including their load are technically fit for the journey to be undertaken and remains so throughout the journey.:

~~(a) the vehicles~~

~~— all vehicles in the train must be in compliance with all the requirements applicable on the routes over which the train will run,~~

~~— all vehicles on the train must be fit to run at the maximum speed at which the train is scheduled to run;~~

~~(b) all vehicles on the train must be currently within their specified maintenance interval and will remain so for the duration (in terms of both time and distance) of the journey being undertaken;~~

~~(c) the train~~

~~the combination of vehicles forming a train must comply with the technical constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals;~~

(d) ~~the railway undertaking is responsible for ensuring that the train is technically fit for the journey to be undertaken and remains so throughout the journey;~~

~~(e) the weight and axle load;~~

(f) ~~the weight of the train must be within the maximum permissible for the section of route, the strength of the couplings, the traction power and other relevant characteristics of the train. Axle load limitations must be respected;~~

~~(g) the maximum speed of the train~~

~~the maximum speed at which the train can run must take into account any restrictions on the route(s) concerned, braking performance, axle load and vehicle type;~~

(h) ~~the kinematic envelope;~~

~~(i) the kinematic gauge of each vehicle (inclusive of any load) in the train must be within the maximum permissible for the section of route.~~

The railway undertaking may need to consider additional constraints ~~Additional constraints may be required or imposed~~ due to the type of braking regime or traction type on a particular train (see point 4.2.2.6).

~~The infrastructure manager must inform the railway undertaking of the changes on characteristics of the allocated path change, as soon as these changes occur. The elements that must be checked in order to ensure the train's compliance with the allocated path are set out in Appendix D.~~

~~4.2.2.5.~~4.2.2.6. *Train braking*

~~4.2.2.5.1.~~4.2.2.6.1. Minimum requirements of the braking system

All vehicles in a train ~~must~~shall be connected to the continuous automatic braking system as defined in the ~~RST~~ LOC&PAS NTSNs.

The first and last vehicles (including any traction units) in any train ~~must~~shall have the automatic brake operative.

In the case of a train becoming accidentally divided into two parts, both sets of detached vehicles ~~must~~shall come automatically to a stand as a result of a maximum application of the brake.

~~4.2.2.5.2.~~4.2.2.6.2. **Braking performance and maximum speed allowed**

(1) The infrastructure manager shall provide the railway undertaking with all relevant line characteristics for each route:

— signalling distances (warning, stopping) containing their inherent safety margins,

— gradients,

— maximum permitted speeds, and

— conditions of use of braking systems possibly affecting the infrastructure such as magnetic, regenerative and eddy-current brake.

The infrastructure manager shall provide this information free of charge and as soon as reasonably possible and in any event within 28 days of the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the line characteristics whenever such information becomes available.

The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate.

(2) ~~Additionally, t~~The infrastructure manager may provide the following information:

(i) for trains able to run at a maximum speed higher than 200 km/h, deceleration profile and equivalent response time on level track;

(ii) for trainsets or for fixed train compositions, unable to run at a maximum speed higher than 200 km/h, deceleration (as above in (i)) or brake weight percentage;

(iii) for other trains (variable compositions of trains unable to run at a maximum speed higher than 200 km/h): brake weight percentage.

If the infrastructure manager provides the abovementioned information, it shall be made available to all railway undertakings~~RUs~~ who intend to operate trains on its network in a non-discriminatory way.

The braking tables already in use and accepted for the existing non NTSN conform lines at the 1 July 2015 shall also be made available.

(3) The railway undertaking shall, in the planning stage, determine the braking capability of the train and corresponding maximum speed taking into account:

Commented [A13]: TSI text:

through RINF

Commented [A14]: TSI text:

Until RINF provides the relevant parameters, the infrastructure manager shall provide this information through others means free of charge and as soon as reasonably possible and in any event within 15 days for the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the line characteristics through RINF whenever such information becomes available or through other means until RINF allows for such functionality.

The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate.

— the relevant line characteristics as expressed in point (1) above ~~or~~and, if available, the information provided by the infrastructure manager in accordance to point (2) above;~~. If the infrastructure manager has provided the information of point (2), the railway undertaking has to express the braking capability by using the same information,~~ and

— the rolling-stock-related margins derived from reliability and availability of the braking system.

Furthermore, the railway undertaking shall ensure that during operation each train achieves at least the necessary braking performance. The railway undertaking shall set up and implement corresponding rules and shall manage them within its safety management system.

In particular the railway undertaking has to set up rules to be used if a train does not reach the necessary braking performance during operation. In this case, the railway undertaking ~~must~~shall immediately inform the infrastructure manager. The infrastructure manager may take appropriate measures to reduce the impact on the overall traffic on its network.

~~4.2.2.6.~~4.2.2.7. *Ensuring that the train is in running order*

~~4.2.2.6.1.~~4.2.2.7.1. General requirement

The railway undertaking ~~must~~shall define the process to ensure that all safety-related on-train equipment is in a fully functional state and that the train is safe to run.

The railway undertaking ~~must~~shall inform the infrastructure manager of any modification to the characteristics of the train affecting its performance or any modification that might affect the ability to accommodate the train in its allocated path.

The infrastructure manager and the railway undertaking ~~must~~shall define and keep up to date conditions and procedures for train running temporarily in degraded mode.

~~4.2.2.6.2.~~4.2.2.7.2. Pre-departure ~~D~~data ~~required~~

The railway undertaking shall ensure that the following data required for safe and efficient operation is made available to the infrastructure manager(s) prior to the departure of the train~~and the process by which this data must be forwarded must comprise~~:

— the train identification,

— the identity of the railway undertaking responsible for the train,

— the actual length of the train,

— if a train carries passengers or animals when it is not scheduled to do so,

— any operational restrictions with an indication of the vehicle(s) concerned (gauge, speed restrictions, etc.),

— information the infrastructure manager requires for the transport of dangerous goods.

~~The railway undertaking must ensure that this data is made available to the infrastructure manager(s) prior to the departure of the train.~~

The railway undertaking ~~must~~shall advise the infrastructure manager(s) if a train ~~will~~ does not occupy its allocated path or is cancelled.

~~4.2.2.7.~~4.2.2.8. *Requirements for signal and line-side marker sighting*

The driver ~~must~~shall be able to observe signals and line-side markers, and they ~~must~~shall be observable by the driver whenever applicable. The same applies for other types of line-side signs if they are safety-related.

Therefore, signals, line-side markers, signs and information boards ~~must~~shall be designed and positioned in such a consistent way to facilitate this. Issues that ~~must~~shall be taken into account include:

— that they are suitably sited so that train headlights allow the driver to read the information,

— suitability and intensity of lighting, where required to illuminate the information,

— where retro-reflectivity is employed, the reflective properties of the material used are in compliance with appropriate specifications and the signs are fabricated so that train headlights easily allow the driver to read the information.

Driving cabs ~~must~~shall be designed in such a consistent way that the driver is able to easily see the information displayed to him.

~~4.2.2.8.~~4.2.2.9. *Driver vigilance*

A means of on-board monitoring of driver vigilance is necessary. This shall intervene to bring the train to a stand if the driver does not react within a certain time; the time range is specified in the rolling stock NTSNs.

4.2.3. Specifications relating to train operations

4.2.3.1. Train planning

In accordance with Directive 2012/34/EU, the infrastructure manager ~~must~~shall advise what data is required when a train path is requested.

4.2.3.2. Identification of trains

Each train ~~must~~shall be identified by a train running number. The train running number is given by the infrastructure manager when allocating a train path and ~~must~~shall be known by the railway undertaking and all infrastructure managers operating the train. The train running number ~~must~~shall be unique per network. Changes of train running number during a train journey should be avoided.

4.2.3.2.1. Format of train running number

The train running number format is defined in the control-command and signalling NTSN (hereinafter referred to as '~~"~~CCS NTSN~~"~~').

4.2.3.3. Train departure

4.2.3.3.1. Checks and tests before departure

The railway undertaking ~~must~~shall define the checks and tests to ensure that any departure is undertaken safely (e.g. doors, load, brakes).

4.2.3.3.2. Informing the infrastructure manager of the train's operational status

The railway undertaking shall inform the infrastructure manager when a train is ready for access to the network.

The railway undertaking ~~must~~shall inform the infrastructure manager of any anomaly affecting the train or its operation having possible repercussions on the train's running prior to departure and during the journey.

4.2.3.4. Traffic management

4.2.3.4.1. General requirements

Traffic management ~~must~~shall ensure the safe, efficient and punctual operation of the railway, including effective recovery from service disruption.

The infrastructure manager ~~must~~shall determine procedures and means for:

— the real time management of trains,

— operational measures to maintain the highest possible performance of the infrastructure in case of delays or incidents, whether actual or anticipated, and

— the provision of information to the railway undertaking(s) in such cases.

Any additional processes required by the railway undertaking and which affect the interface with the infrastructure manager(s) ~~can~~ may be introduced after being agreed with the infrastructure manager.

4.2.3.4.2. Train reporting

4.2.3.4.2.1. Data required for train position reporting and predicted handover time

The infrastructure manager ~~must~~shall:

(a) provide a means of real time recording of the times at which trains depart from, arrive at or pass appropriate predefined reporting points on their networks and the delta-time value;

(b) have a process which enables an indication of the estimated number of minutes of deviation from the scheduled time a train is scheduled to be handed over from one infrastructure manager to another; this shall include information on service disruption (description and location of problem).

~~(a)~~

~~(b)~~(c) provide the specific data according to the Telematics Applications for Freight (TAF) and Telematics Applications for Passengers (TAP) NTSNs required in relation to train position reporting. Such information must include:

—(1) ~~t~~Train identification~~,~~

—(2) ~~i~~Identity of reporting point~~,~~

—(3) ~~l~~Line on which the train is running~~,~~

—(4) ~~s~~Scheduled time at reporting point~~,~~

—(5) ~~a~~Actual time at reporting point (and whether depart, arrive or pass — separate arrival and departure times must be provided in respect of intermediate reporting points at which the train calls)~~,~~

—(6) ~~n~~Number of minutes early or late at the reporting point~~,~~

—(7) ~~i~~Initial explanation of any single delay exceeding 10 minutes or as otherwise required by the performance monitoring regime~~,~~

Commented [A15]: Regulation (EU) 2019/773:

according to Commission Regulation (EU) No 1305/2014 (8) (Telematics Applications for Freight — TAF TSI) and Commission Regulation (EU) No 454/2011 (9) (Telematics Applications for Passengers — TAP TSI)

—(8) ~~i~~Indication that a report for a train is overdue and the number of minutes by which it is overdue~~,~~

—(9) ~~f~~Former train identification(s), if any

—(10) ~~t~~Train cancelled for a whole or a part of its journey.

~~***4.2.3.4.2.2. Predicted handover time***~~

~~The infrastructure manager must have a process, which enables an indication of the estimated number of minutes of deviation from the scheduled time a train is scheduled to be handed over from one infrastructure manager to another.~~

~~This must include information on service disruption (description and location of problem).~~

4.2.3.4.3. Dangerous goods

The railway undertaking ~~must~~ shall define the procedures to ~~supervise~~ perform the transport of dangerous goods.

These procedures ~~must~~ shall include:

— the provisions as specified in Directive 2008/68/EC of the European Parliament and of the Council[8] and Directive 2010/35/EU of the European Parliament and of the Council[9], as applicable,

— ~~advice to~~informing the driver of the presence and position of dangerous goods on the train,

— information the infrastructure manager requires for transport of dangerous goods,

— determination, in conjunction with the infrastructure manager, of lines of communication and planning of specific measures in case of emergency situations involving the goods.

Commented [A16]: TSI text:

inform to the driver

8 Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods. Implemented by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. This EU legislation is EU derived domestic legislation under section 2 of the European Union (Withdrawal) Act 2018.

[9] Directive 2010/35/EU of the European Parliament and of the Council of 16 June 2010 on transportable pressure equipment and repealing Council Directives 76/767/EEC, 84/525/EEC, 84/526/EEC, 84/527/EEC and 1999/36/EC. Implemented by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. This EU legislation is EU derived domestic legislation under section 2 of the European Union (Withdrawal) Act 2018.

4.2.3.4.4. Operational quality

The infrastructure manager and the railway undertaking ~~must~~shall have processes in place to monitor the efficient operation of all the services concerned.

Monitoring processes ~~must~~shall be designed to analyse data and detect underlying trends, both in terms of human error and system error. The results of this analysis ~~must~~shall be used to generate improvement actions, designed to eliminate or mitigate against events which could compromise the efficient operation of the network.

Where such improvement actions would have network-wide benefits, involving other infrastructure managers and railway undertakings, they ~~must~~shall, subject to commercial confidentiality, be communicated accordingly.

Events that have significantly disrupted operations ~~must~~shall be analysed as soon as possible by the infrastructure manager. Where appropriate, and in particular where one of their staff is concerned, the infrastructure manager ~~must~~shall invite those railway undertaking(s) involved in the event concerned to participate in the analysis. Where the result of such analysis leads to network improvement recommendations designed to eliminate or mitigate against causes of accidents/incidents, these ~~must~~shall be communicated to all relevant infrastructure managers and railway undertakings concerned.

These processes shall be documented and subject to internal audit.

4.2.3.5. Data recording

Data pertaining to the running of a train ~~must~~shall be recorded and retained for the purposes of:

— ~~s~~Supporting systematic safety monitoring as a means of preventing incidents and accidents~~;~~.

— ~~i~~Identification of driver, train and infrastructure performance in the period leading up to and, if appropriate, immediately after an incident or accident, in order to enable the identification of causes, and supporting the case for new or changed measures to prevent recurrence.~~;~~

— ~~r~~Recording information relating to the performance of both the locomotive/traction unit and the person driving.

It ~~must~~shall be possible to match recorded data to:

— the date and time of the recording,

— the precise geographic location of the event being recorded,

— the train identification,

— the identity of the driver.

Data to be recorded for ETCS/GSM-R are those defined in the CCS NTSN ~~CCS~~ and that are relevant considering the requirements in this point 4.2.3.5 ~~of this NTSN~~.

The data ~~must~~shall be securely sealed and stored and accessible to authorised bodies including the Rail Accident Investigation Branch in carrying out their role pursuant to Article 19 of Directive 2004/49/EC.

Commented [A17]: TSI text:

Article 22 of Directive (EU) 2016/798

4.2.3.5.1. Recording of supervision data outside the train

As a minimum, the infrastructure manager ~~must~~shall record the following data:

— the failure of line-side equipment associated with the movement of trains (signalling, points etc.);~~;~~

— the detection of an overheating axle bearing, if fitted;~~;~~

— safety-related communication between the train driver and signaller.

4.2.3.5.2. Recording of supervision data on board the train

As a minimum, the railway undertaking ~~must~~shall record the following data:

— the detection of passing of signals at danger or ~~"~~"end of movement authority~~"~~";~~;~~

— application of the emergency brake;~~;~~

— speed at which the train is running~~;~~;

— any isolation or overriding of the on-board train control (signalling) systems;~~;~~

— operation of the audible warning device;~~;~~

— operation of door controls (release, closure), if fitted~~;~~;

— detection by on-board alarm systems related to the safe operation of the train, if fitted~~;~~;

— identity of the cab for which data is being recorded to be checked.

Further technical specifications concerning the recording device are set out in the LOC&PAS NTSN.

4.2.3.6. Degraded operation

4.2.3.6.1. Advice to other users

The infrastructure manager in conjunction with the railway undertaking(s) ~~must~~shall define a process to immediately inform each other of any situation that

impedes the safety, performance and/or the availability of the rail network or rolling stock.

4.2.3.6.2. Advice to train drivers

In any case of degraded operation associated with the infrastructure manager's area of responsibility, the infrastructure manager ~~must~~shall give formal instructions to drivers on what measures to take in order to safely overcome the degradation.

4.2.3.6.3. Contingency arrangements

The infrastructure manager in conjunction with all the railway undertakings operating over his infrastructure, and neighbouring infrastructure managers as appropriate, ~~must~~shall define, publish and make available appropriate contingency measures and assign responsibilities based on the requirement to reduce any negative impact as a result of degraded operation.

The planning requirements and the response to such events ~~must~~shall be proportional to the nature and potential severity of the degradation.

These measures, which ~~must~~shall as a minimum include plans for recovering the network to '~~"~~normal~~"~~' status, may also address:

— rolling stock failures (for example, those which could result in substantial traffic disruption, the procedures for rescuing failed trains)~~;~~;

— infrastructure failures (for example, when there has been a failure of the electric power or the conditions under which trains may be diverted from the booked route)~~;~~;

— extreme weather conditions.

The infrastructure manager ~~must~~shall establish and keep updated contact information for key infrastructure manager and railway undertaking staff who may be contacted in the event of service disruption leading to degraded operation. This information ~~must~~shall include contact details both during and outside office hours.

The railway undertaking ~~must~~shall submit this information to the infrastructure manager and advise the infrastructure manager of any changes to these contact details.

The infrastructure manager ~~must~~shall advise all the railway undertaking(s) of any changes to ~~his~~ its details.

4.2.3.7. Managing an emergency situation

The infrastructure manager ~~must~~shall, in consultation with:

— all railway undertakings operating over ~~his~~ its infrastructure, or, where appropriate, representative bodies of railway undertakings operating over ~~his~~ its infrastructure,

— neighbouring infrastructure managers, as appropriate,

— local authorities, representative bodies of the emergency services (including fire-fighting and rescue) at either local or national level, as appropriate, define, publish and make available appropriate measures to manage emergency situations and restore the line to normal operation.

Such measures shall typically cover:

— collisions,

— fires on train,

— evacuation of trains,

— accidents in tunnels,

— incidents involving dangerous goods,

— derailments.

The railway undertaking ~~must~~shall provide the infrastructure manager with any specific information in respect to these circumstances, especially in respect to the recovery or re-railing of their trains.

Additionally, the railway undertaking ~~must~~shall have processes to inform passengers about on-board emergency and safety procedures.

4.2.3.8. Aid to train crew in the event of an incident or of a major rolling stock malfunction

The railway undertaking ~~must~~shall define appropriate procedures to assist the train crew in degraded situations in order to avoid or decrease delays caused by technical or other failures of the rolling stock (for example, lines of communication, measures to be taken in case of evacuation of a train).

4.3. FUNCTIONAL AND TECHNICAL SPECIFICATIONS OF THE INTERFACES

In the light of the essential requirements set out in Chapter 3 of this NTSN, the functional and technical specifications of the interfaces are as follows:

4.3.1. Interfaces with the infrastructure NTSN (INF NTSN)

Reference ~~operation~~ this NTSN		Reference ~~infrastructure~~ INF NTSN	
Parameter	**Point**	**Parameter**	**Point**
Braking performance and maximum speed allowed	4.2.2.6.2	Longitudinal track resistance	4.2.6.2
Modifications to information contained in the Route Book Degraded operation	4.2.1.2.2.2 4.2.3.6	Operating rules	4.4

Commented [A18]: TSI table contain additional interface of:

This NTSN: Parameters for the vehicle and train compatibility over the route intended for operation, Appendix D1

---> INF NTSN: Ascertain Compatibility of infrastructure and rolling stock after authorisation of rolling stock, 7.6

4.3.2. Interfaces with the control-command and signalling NTSN (CCS NTSN)

Reference ~~operation~~ this NTSN		Reference ~~control-command and signalling~~CCS NTSN	
Parameter	**Point**	**Parameter**	**Point**
Driver's Rule Book Operating rules	4.2.1.2.1 4.4	Operating rules (normal and degraded conditions)	4.4
Requirements for line-side signal and marker sighting	4.2.2.8	Visibility of track-side control-command and signalling objects	4.2.15
Train braking	4.2.2.6	Train braking performance and characteristics	4.~~3.2.3~~2.2
Driver's Rule Book	4.2.1.2.1	Use of sanding equipment On-board flange lubrication Use of composite brake blocks	4.2.10
Format of ~~T~~train running number	4.2.3.2.1	ETCS DMI GSM-R DMI	4.2.12 4.2.13

Commented [A19]: TSI table contain additional interface of:

This NTSN: Parameters for the vehicle and train compatibility over the route intended for operation, Appendix D1

---> CCS NTSN: Route compatibility checks before the use of authorised vehicles, 4.9

Reference ~~operation~~ this NTSN		Reference ~~control command and signalling~~CCS NTSN	
Parameter	**Point**	**Parameter**	**Point**
Data recording ~~on board~~	4.2.3.5	Interface to data recording for regulatory purposes	4.2.14
Ensuring that the train is in running order	4.2.2.7	Key management	4.2.8

4.3.3. Interfaces with the rolling stock NTSNs

4.3.3.1. Interfaces with ~~NTSN on~~ the locomotives and passenger rolling stock NTSN (LOC&PAS NTSN)

Commented [A20]: TSI table contain additional interface of:

This NTSN: Parameters for the vehicle and train compatibility over the route intended for operation, Appendix D1

---> LOC&PAS NTSN: Route compatibility checks before the use of authorised vehicles, 4.9

Reference ~~operation~~ this NTSN		Reference LOC&PAS NTSN	
Parameter	**Point**	**Parameter**	**Point**
Contingency arrangements	4.2.3.6.3	Rescue coupling End coupling	4.2.2.2.4 4.2.2.2.3
Route Compatibility and Train composition	4.2.2.5	Axle load parameter	4.2.3.2.1
Train braking	4.2.2.6	Braking performance	4.2.4.5
Train visibility	4.2.2.1	External ~~front and rear~~ lights	4.2.7.1
Train audibility	4.2.2.2	Horn (audible warning device)	4.2.7.2
Requirements for line-side signal and marker sighting	4.2.2.8	External visibility Optical characteristics of the windscreen Internal lighting	4.2.9.1.3 4.2.9.2.2 4.2.9.1.8
Driver vigilance	4.2.2.9	Driver's activity control function	4.2.9.3.1

Reference ~~operation~~ this NTSN		Reference LOC&PAS NTSN	
Parameter	**Point**	**Parameter**	**Point**
Recording of supervision data on board the train	4.2.3.5.2	Recording device	4.2.9.6
Managing an emergency situation	4.2.3.7	Lifting diagram and instructions Rescue-related descriptions	4.2.12.5 4.2.12.6
Route Compatibility and ~~T~~train composition Minimum elements relevant to professional qualification for the tasks associated with '~~"~~accompanying trains~~"~~'	4.2.2.5 Appendix F	Operating documentation	4.2.12.4
Sanding	Appendix B	Rolling stock characteristics for compatibility with train detection system based on track circuits — Isolating emissions~~Isolating emissions~~	4.2.3.3.1.1

4.3.3.2. Interfaces with ~~NTSN on~~ the freight wagons NTSN (WAG NTSN)

Commented [A21]: TSI table contain additional interface of:

This NTSN: Parameters for the vehicle and train compatibility over the route intended for operation, Appendix D1

---> WAG NTSN: Route compatibility checks before the use of authorised vehicles, 4.9

Reference ~~operation~~ this NTSN		Reference ~~freight wagon~~WAG NTSN	
Parameter	**Point**	**Parameter**	**Point**
Rear end	4.2.2.1.3~~.2~~	Attachment devices for rear-end signal	4.2.6.3
Freight trains	4.2.2.1.3.2	Rear-end signal	Appendix E
Route Compatibility and ~~T~~train composition	4.2.2.5	Gauging	4.2.3.1

Reference ~~operation~~ this NTSN		Reference ~~freight wagon~~WAG NTSN	
Parameter	**Point**	**Parameter**	**Point**
Route Compatibility and ~~T~~train composition	4.2.2.5	Compatibility with load- carrying capacity of lines	4.2.3.2
Contingency arrangements	4.2.3.6.3	Strength of unit — Lifting and jacking	4.2.2.2
Train braking	4.2.2.6	Brake	4.2.4

4.3.4. Interfaces with the Energy NTSN (ENE NTSN)

Reference ~~operation~~ this NTSN		Reference ~~energy~~ ENE NTSN	
Parameter	**Point**	**Parameter**	**Point**
Train composition	4.2.2.5	Maximum train current	4.2.4.1
Preparation of the Route Book	4.2.1.2.2.1		
Train composition	4.2.2.5	Separation sections:	
Preparation of the Route Book	4.2.1.2.2.1	Phase	4.2.15
		System	4.2.16

Commented [A22]: TSI table contain additional interface of:

This NTSN: Parameters for the vehicle and train compatibility over the route intended for operation, Appendix D1

---> ENE NTSN: Route compatibility checks before the use of authorised vehicles, 7.3.5

4.3.5. Interfaces with ~~NTSN on~~the Safety in Railway Tunnels NTSN (SRT NTSN)

Reference ~~operation~~ this NTSN		Reference SRT ~~T~~NTSN	
Parameter	**Point**	**Parameter**	**Point**
Ensuring that the train is in running order	4.2.2.7	Emergency rule	4.4.1
Train departure	4.2.3.3		
Degraded operation	4.2.3.6		

Reference ~~operation~~ this NTSN		Reference SRT ~~T~~NTSN	
Parameter	**Point**	**Parameter**	**Point**
Managing an emergency situation	4.2.3.7	Tunnels emergency plan Exercises Provision of on-train safety and emergency information to passengers	4.4.2 4.4.3 4.4.5
Professional competence	4.6.1	Tunnel-specific competence of the train crew and other staff	4.6.1

4.3.6. Interfaces with the Noise NTSN (NOI NTSN)

Reference this NTSN		Reference NOI NTSN	
Parameter	**Point**	**Parameter**	**Point**
Route compatibility and Train composition	4.2.2.5	Additional provisions for the application of this NTSN to existing wagons	7.2.2
Train planning	4.2.3.1	Quieter routes	Appendix D
Contingency arrangements	4.2.3.6.3	Specific rules for the operation of wagons on quieter routes in case of degraded operation	4.4.1

4.3.7. Interfaces with the Person with Reduced Mobility NTSN (PRM NTSN)

Reference this NTSN		Reference PRM NTSN	
Parameter	Point	Parameter	Point
Professional Competence Minimum elements relevant to professional qualification for the tasks associated with 'accompanying trains'	4.6.1 Appendix F	Infrastructure subsystem	4.4.1
Professional Competence Minimum elements relevant to professional qualification for the tasks associated with 'accompanying trains'	4.6.1 Appendix F	Rolling stock subsystem	4.4.2
Route Compatibility and Train composition	4.2.2.5	Rolling stock subsystem	4.4.2

4.4. OPERATING RULES

4.4.1. Railway system operational principles and rules

Operational principles and rules to be applied throughout the railway system are specified in Appendices A (ERTMS operational principles and rules) and B (common operational principles and rules).

4.5. MAINTENANCE RULES

Not applicable

4.6. PROFESSIONAL COMPETENCES

4.6.1. Professional competence

Staff of the railway undertaking and the infrastructure manager ~~must~~shall have attained appropriate professional competence to undertake all necessary safety-critical tasks in normal, degraded and emergency situations. Such competence comprises professional knowledge and the ability to put this knowledge into practice.

Minimum elements relevant to professional qualification for individual tasks ~~can~~ may be found in Appendices F and G.

4.6.2. Language competence

4.6.2.1. Principles

The infrastructure manager and the railway undertaking are required to ensure that their relevant staff are competent in the use of the communication protocols and principles set out in Appendix C.

Where the operating language used by the infrastructure manager differs from that habitually used by the railway undertaking's staff, such linguistic and communications training ~~must~~shall form a critical part of the railway undertaking's overall competence management system.

Railway undertaking staff whose duties require them to communicate with staff of the infrastructure manager in connection with safety-critical matters, whether in normal, degraded or emergency situations, ~~must~~shall have a sufficient level of knowledge in the operating language of the infrastructure manager.

4.6.2.2. Level of knowledge

The level of knowledge in the infrastructure manager's operating language ~~must~~shall be sufficient for safety purposes.

(a) As a minimum this ~~must~~shall comprise of the driver being able to:

- send and understand all the messages specified in Appendix C,
- effectively communicate in ~~routine~~normal, degraded and emergency situations,
- complete the forms associated with the use of the Book of Forms.

(b) Other members of the train crew whose duties require them to communicate with the infrastructure manager on safety-critical matters, ~~must~~shall as a minimum, be able to send and understand information describing the train and its operational status.

The level of knowledge for staff accompanying trains other than train drivers ~~must~~shall be at least level 2 as described in Appendix E.

4.6.3. Initial and ongoing assessment of staff

4.6.3.1. Basic elements

Railway undertakings and infrastructure managers are required to define the assessment process for their staff in order to meet the requirements specified in Commission Regulations (EU) No 1158/2010[10] and (EU) No 1169/2010[11].

Commented [A23]: TSI text:

in Delegated Regulation (EU) 2018/762 or

4.6.3.2. Analysis and update of training needs

Railway undertakings and infrastructure managers ~~must~~shall undertake an analysis of training needs for their relevant staff and define a process for reviewing and updating their individual training needs in order to meet the requirements specified in Regulations (EU) 1158/2010 and (EU) 1169/2010.

This analysis ~~must~~shall set out both scope and complexity and take into account the risks associated with the operation of trains, traction and rolling stock. The railway undertaking ~~must~~shall define the process by which knowledge of on board staff of the routes worked over is acquired and maintained. This process ~~must~~shall be:

— based upon the route information provided by the infrastructure manager, and

— in accordance with the process described in point 4.2.1.

For the tasks associated with '~~"~~accompanying trains~~"~~' and '~~"~~preparing trains~~"~~', the elements that shall be considered ~~can~~ may be found in respectively the appendices F and G. As appropriate, these elements ~~must~~shall be put in place as part of the training for staff.

It is possible that due to the type of operation envisaged by a railway undertaking or the nature of the network being run by an infrastructure manager, some of the elements in the appendices F and G ~~will~~ shall not be appropriate. The analysis of training needs ~~must~~shall document those not deemed appropriate and the reasons why.

10 Commission Regulation (EU) No 1158/2010 of 9 December 2010 on a common safety method for assessing conformity with the requirements for obtaining railway safety certificates. The EU legislation is retained EU law under section 3 of the European Union (Withdrawal) Act 2018, and it has been amended under that Act by the Rail Safety (Amendment etc.) (EU Exit) Regulations 2019.

11 Commission Regulation (EU) No 1169/2010 of 10 December 2010 on a common safety method for assessing conformity with the requirements for obtaining a railway safety authorisation. The EU legislation is retained EU law under section 3 of the European Union (Withdrawal) Act 2018, and it has been amended under that Act by the Rail Safety (Amendment etc.) (EU Exit) Regulations 2019.

4.6.4. Auxiliary staff

The railway undertaking ~~must~~shall make sure that the auxiliary staff (for example, catering and cleaning) not forming part of the train crew is, in addition to their basic instruction, trained to respond to the instructions of the fully trained members of the train crew.

4.7. HEALTH AND SAFETY CONDITIONS

4.7.1. Introduction

Staff specified in point 4.2.1 as staff performing safety-critical tasks in accordance with point 2.~~2~~1 ~~must~~shall have appropriate fitness to ensure that overall operational and safety standards are met.

Railway undertakings and infrastructure managers ~~must~~shall set up and document the process they put in place to meet the medical, psychological and health requirements for their staff within their safety management system.

Medical examinations as specified in point 4.7.2 and any associated decisions on the individual fitness of staff ~~must~~shall be conducted by a medical doctor.

Staff ~~must~~shall not perform safety-critical tasks whilst vigilance is impaired by substances such as alcohol, drugs or psychotropic medication. Therefore, the railway undertaking and the infrastructure manager ~~must~~shall have in place procedures to control the risk that staff attend for work under the influence of such substances, or consume such substances at work.

National legislation applies with regard to defined limits of the abovementioned substances.

4.7.2. Medical examinations and psychological assessments

4.7.2.1. Before appointment

4.7.2.1.1. Minimum content of the medical examination

Medical examinations ~~must~~shall cover:

— G~~g~~eneral medical examination~~;~~,

— E~~e~~xaminations of sensory functions (vision, hearing, colour perception)~~;~~,

— U~~u~~rine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination~~;~~,

— S~~s~~creening for abuse of drugs.

4.7.2.1.2. Psychological assessment

The aim of the psychological assessment is to support the railway undertaking in the appointment and management of staff who have the cognitive, psychomotor, behavioural and personality capabilities to perform their roles safely.

In determining the content of the psychological assessment, as a minimum, the following criteria relevant to the requirements of each safety function ~~must~~shall be taken into account:

(a) Cognitive:

— A~~a~~ttention and concentration,

— M~~m~~emory,

— P~~p~~erceptive capability,

— R~~r~~easoning,

— C~~c~~ommunication.

(b) Psychomotor:

— S~~s~~peed of reaction,

— G~~g~~estured coordination.

(c) Behavioural and personality

— E~~e~~motional self-control,

— B~~b~~ehavioural reliability,

— A~~a~~utonomy,

— C~~c~~onscientiousness.

If any of those elements is omitted, the respective decision ~~must~~shall be justified and documented by a psychologist.

Applicants shall demonstrate their psychological fitness by passing an examination conducted by, or under the supervision of — to be decided by the Safety Authority — a psychologist or a medical doctor.

4.7.2.2. After appointment

4.7.2.2.1. Frequency of periodic medical examinations

At least one systematic medical examination ~~must~~shall be performed:

— E~~e~~very 5 years for staff aged up to 40;~~,~~

— Eevery 3 years for staff aged between 41 and 62;

— Eevery year for staff aged over 62.

Increased frequency of examination muststall be set by the medical doctor if the state of health of the member of the staff requires so.

4.7.2.2.2. Minimum content of the periodic medical examination

If the worker complies with the criteria required at the examination, which is carried out before practising an occupation, the periodic specialised examinations muststall include as a minimum:

— Ggeneral medical examination;

— Eexamination of sensory functions (vision, hearing, colour perception);

— Uurine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination;

— Sscreening for abuse of drugs where clinically indicated.

4.7.2.2.3. Additional medical examinations and/or psychological assessments

Besides the periodic medical examination, an additional specific medical examination and/or psychological assessment muststall be performed where there is reasonable ground for doubting the medical or psychological fitness of a member of staff or reasonable suspicion of use of drugs or use of alcohol over the limits allowed. This would be the case especially after an incident or accident caused by human error on the part of the individual.

The railway undertaking and the infrastructure manager muststall put systems in place to ensure that such additional examinations and assessments are undertaken as appropriate.

4.7.3. Medical requirements

4.7.3.1. General requirements

Staff muststall not suffer from medical conditions or take medical treatment likely to cause:

— Ssudden loss of consciousness;

— Iimpairment of awareness or concentration;

— Ssudden incapacity;

— Iimpairment of balance or coordination;

— Ssignificant limitation of mobility.

The following vision and hearing requirements ~~must~~shall be met:

4.7.3.2. Vision requirements

- A~~a~~ided or unaided distance visual acuity: 0,8 (right eye + left eye – measured separately), minimum of 0,3 for the worse eye;~~,~~
- M~~m~~aximum corrective lenses: hypermetropia + 5 / myopia – 8. The medical doctor may allow values outside this range in exceptional cases and after having sought the opinion of an eye specialist;~~,~~
- I~~i~~ntermediate and near vision: sufficient whether aided or unaided,
- C~~c~~ontact lenses are allowed;~~,~~
- N~~n~~ormal colour vision: using a recognised test, such as the Ishihara, completed by another recognised test if required;~~,~~
- V~~v~~ision field: normal (absence of any abnormality affecting the task to be performed);~~,~~
- V~~v~~ision for both eyes: effective;~~,~~
- B~~b~~inocular vision: effective;~~,~~
- C~~c~~ontrast sensitivity: good;~~,~~
- A~~a~~bsence of progressive eye disease;~~,~~
- L~~l~~ens implants, keratotomies and keratectomies are allowed only on condition that they are checked on a yearly basis or according to a frequency set by the medical doctor.

4.7.3.3. Hearing requirements

Sufficient hearing confirmed with tone audiogram, that is:

- H~~h~~earing good enough to hold a phone conversation going and be able to hear alert tones and radio messages~~,~~
- T~~t~~he use of hearing aids is allowed.

4.8. ADDITIONAL INFORMATION ON ~~REGISTERS OF~~ INFRASTRUCTURE AND VEHICLES

~~Due to the characteristics of the registers of infrastructure and vehicles, as defined in regulation 35 and 36 of the Railways (Interoperability) Regulations 2011, these registers are not suitable for the particular requirements of the operation and traffic management subsystem. Therefore this NTSN specifies nothing in respect of these registers.~~

~~However, there is an operational requirement for certain infrastructure related data items to be made available to a railway undertaking and conversely for certain rolling stock related items to be made available to an infrastructure manager, as specified in point 4.8.1 and point 4.8.2. In both cases the data concerned must be complete and accurate.~~

4.8.1. Infrastructure

The requirements for the rail infrastructure related data items with regard to the operation and traffic management subsystem, and which ~~must~~ shall be made available to railway undertakings, are specified in Appendix D.

The infrastructure manager shall provide this information free of charge and as soon as reasonably possible and in any event within 28 days of the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the infrastructure related data whenever such information becomes available. The infrastructure manager is responsible for the correctness of the data.

For emergency situations or real time information appropriate means of communication from the infrastructure manager shall ensure timely information to the railway undertaking.

The infrastructure manager is responsible for the correctness of the data. The infrastructure manager shall ensure the data is complete and accurate.

4.8.2. Rolling stock

The following rolling stock related data items ~~must~~ shall be available to infrastructure managers~~. The keeper is responsible for the correctness of the data~~:

— whether the vehicle is constructed from materials which ~~can~~ may be hazardous in case of accidents or fire (for example, asbestos); the keeper is responsible for the correctness of the data. The keeper shall ensure the data is complete and accurate.~~,~~

— total length of the vehicle, including buffers if existing; the railway undertaking is responsible for the correctness of the data. The railway undertaking shall ensure the data is complete and accurate.~~,~~

Commented [A24]: TSI text:

through RINF

Commented [A25]: TSI text:

Until RINF is complete, the infrastructure manager shall provide this information through other means free of charge and as soon as reasonably possible and in any event within 15 days for the first submission unless the railway undertaking agrees a longer deadline.

The infrastructure manager shall inform the railway undertaking of the changes on the infrastructure related data through RINF whenever such information becomes available or through other means until RINF allows for such functionality. The infrastructure manager is responsible for the correctness of the data.

For emergency situations or real time information appropriate alternative means of communication of the infrastructure manager shall ensure immediate information to the railway undertaking.

Commented [A26]: Additional to TSI text

Commented [A27]: Additional to TSI text

Commented [A28]: Additional to TSI text

5. INTEROPERABILITY CONSTITUENTS

5.1. DEFINITION

~~As defined in r~~Regulation 2 of the Railways (Interoperability) Regulations 2011 defines the~~,~~ ‘~~“~~interoperability constituents~~”~~’. ~~means “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 rail system depends directly or indirectly; and the concept of a ‘constituent’ covers both tangible objects and intangible objects such as software”.~~

5.2. LIST OF CONSTITUENTS

In respect to the operation and traffic management subsystem, there ~~are~~ is no interoperability constituent~~s~~.

6. ASSESSMENT OF CONFORMITY AND/OR SUITABILITY FOR USE OF THE CONSTITUENTS AND VERIFICATION OF THE SUBSYSTEM

6.1. INTEROPERABILITY CONSTITUENTS

As this NTSN does not yet specify any interoperability constituents, no assessment arrangements are discussed.

6.2. OPERATION AND TRAFFIC MANAGEMENT SUBSYSTEM

6.2.1. Principles

The operation and traffic management subsystem is a functional subsystem according to Schedule 3 to the Railways (Interoperability) Regulations 2011.

In accordance with Articles 10 and 11 of Directive 2004/49/EC, railway undertakings and infrastructure managers ~~must~~shall demonstrate compliance with the requirements of this NTSN within their safety management system when applying for any new or amended safety certificate or safety authorisation.

Commented [A29]: TSI text:

Articles 9 and 10 of Directive (EU) 2016/798

The common safety methods on conformity assessment require safety authorities to set up an inspection regime to supervise and monitor the ~~day-to-day~~ compliance with the safety management system including all NTSNs. It should be noted that

Commented [A30]: TSI text:

and the common safety methods on safety management system

none of the elements contained within this NTSN require separate assessment by an approved body.

Requirements in this NTSN that refer to structural subsystems and ~~are~~ listed in the interfaces (point 4.3) are assessed under the relevant structural NTSNs.

7. IMPLEMENTATION

7.1. PRINCIPLES

In accordance with regulation 5 of The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended), railway undertakings and infrastructure managers shall ensure compliance with this NTSN under their SMS.

Commented [A31]: TSI text:

In accordance with Article 9 of Directive (EU) 2016/798, railway undertakings and infrastructure managers shall ensure compliance with this Regulation under their SMS

Implementation of this NTSN and conformity with the relevant points of this NTSN ~~must~~ shall be determined in accordance with the UK national implementation plan which was published in September 2016.

~~This plan must take into account:~~

(a) ~~the specific human factors issues associated with operating any given line;~~

~~(b) the individual operating and safety elements of each line involved; and~~

~~(a) whether implementation of the element(s) under consideration is to be:~~

- ~~for all trains on the line, or not,~~
- ~~only for certain lines,~~
- ~~applicable on all lines,~~
- ~~applicable to all trains running on the network;~~

~~(b) the relationship with implementation of the other subsystems (control-command and signalling, rolling stock, etc.).~~

~~At this time any specific exceptions that may be applicable should be taken into account and documented as part of the plan.~~

~~The implementation plan must take into account the various levels of potential for implementation from any of the following events, namely when:~~

~~(a) a railway undertaking or infrastructure manager commences operations;~~

~~(b) a renewal or upgrade to the existing operational systems of a railway undertaking or infrastructure manager is introduced;~~

~~(c) new or upgraded infrastructure, energy, rolling stock or command control and signalling subsystems, requiring a corresponding set of operating procedures, are put into service.~~

~~7.2. IMPLEMENTATION GUIDELINES~~

~~There are three distinct elements to implementation:~~

~~(a) confirmation that any existing systems and processes comply with the requirements of this NTSN;~~

~~(b) adaptation of any existing systems and processes to comply with the requirements of this NTSN;~~

~~(c) new systems and processes arising from implementation of other subsystems~~

- ~~new/upgraded conventional lines (infrastructure/energy),~~
- ~~new or upgraded ETCS signalling installations, GSM-R radio installations, hot axle box detectors, etc. (control-command and signalling),~~
- ~~new rolling stock (rolling stock)~~

~~7.3.~~7.2. UK SPECIFIC CASES

~~7.3.1.~~7.2.1. Introduction

The following special provisions are permitted in the UK specific cases below.

These UK specific cases belong to two categories:

(a) the provisions apply either permanently (case "'P"'), or temporarily (case '"T"');

(b) in the temporary case the UK shall conform with the relevant subsystem by~~-~~ 2024 (case '"T12~~-~~"').

~~7.3.2.~~7.2.2. List of UK specific cases

7.2.2.1. This provision has been left intentionally blank

~~7.3.2.1.~~7.2.2.2. This provision has been left intentionally blank

~~7.3.2.2.~~*7.2.2.3. Temporary UK specific case (T1~~2~~) (Great Britain)*

For the implementation of point 4.2.3.2.1, Great Britain is using alphanumeric numbers in the existing systems. Britain's implementation plan sets out the requirements and time schedule for the transition from alphanumeric train running numbers to numeric train running numbers.

Commented [A32]: TSI text:

Permanent specific case Ireland and the UK for Northern Ireland

For the implementation of point 4.2.2.1.3.2, trains which are operated solely on the 1 600 mm track gauge system network of Ireland and Northern Ireland shall use 2 steady red lights as train rear end signal.

Appendix A ERTMS operational principles and ~~/ETCS operating~~ rules

The ~~operating~~ operational rules for ERTMS/ETCS and ERTMS/GSM-R are specified in the ~~Technical~~ Document 'ERTMS operational principles and rules – version 5' issued on 9.4.2019[12] ~~"ETCS and GSM-R rules and principles — version 4" published on the ERA website (www.era.europa.eu)~~.

Appendix B Common operational principles and rules

B1. Fundamental operational principles

(1) The method of signalling must maintain a space interval between trains that is safe.

(2) Before a train is allowed to start or continue moving, it must have an authority to move that clearly indicates the limit of that authority.

(3) Trains proceeding over any portion of line must not be obstructed in a way that threatens their safety.

(4) Trains must be prevented from proceeding onto a portion of line if it is known or suspected that it would not be safe for them to pass.

(5) Trains must not be allowed to begin or continue their journeys until it is clear that it is safe for them to do so.

(6) Trains must only be allowed to operate over any portion of line as long as the rolling stock is compatible with the infrastructure on that portion of line.

(7) Trains must not continue to operate after they have been found to be unsafe in any respect, until measures have been taken to allow them to continue safely.

(8) People must be kept at a safe distance from moving trains.

(9) The workforce must be protected from the particular hazards associated with electrified railways.

B2. Common operational rules

In case of degraded operation, the contingency arrangements set out in point 4.2.3.6.3 shall also be considered.

[12] Published on the ERA website (www.era.europa.eu).

Commented [A33]: TSI text:

1) The method of authorising a train movement shall maintain a safe interval between trains.

2) A train shall only operate over a portion of line if the train composition is compatible with the infrastructure.

3) Before a train begins or continues its journey, it shall be ensured that passengers, staff and goods are carried safely.

4) Before a train is allowed to start or continue its movement, it shall have an authority to move and all necessary information to define the conditions of that authority.

5) A train shall be prevented from proceeding onto a portion of line if it is known or suspected that it would not be safe for the train to pass until measures have been taken to allow the train to continue safely.

6) *A train shall not continue to operate after it has been found to be unsafe in any respect, until measures have been taken to allow the train to continue safely.*

1. SANDING

If the train is equipped with manually activated sanding ~~device~~equipment, the driver shall always be allowed to apply sand but shall avoid it wherever possible:

— in the area of points and crossings,

— during braking at speeds less than 20 km/h,

— when at standstill.

The exceptions to this are:

— if there is a risk of SPAD (~~s~~Signal ~~p~~Passed ~~a~~At ~~d~~Danger), or other serious incident and the application of sand would assist adhesion,

— when starting away,

— when required to test the sanding equipment on the traction unit.

2. DEPARTURE OF THE TRAIN

At the initial station or after a scheduled stop the driver is allowed to depart when the following conditions are fulfilled:

— after the driver has received an authorisation for train movement;~~,~~

— after train service conditions are fulfilled;~~,~~

— when it is time to depart, except when allowed to start before the scheduled time.

3. NO AUTHORISATION FOR TRAIN MOVEMENT AT THE EXPECTED TIME

If the driver has not received an authorisation for train movement at the expected time, and has no information as to the reason, the driver shall inform the signaller.

4. COMPLETE FAILURE OF FRONT -END LIGHTS

If the driver is not able to display any front -end light:

4.1. During good visibility

The driver shall inform the signaller about the failure. The train shall proceed at the maximum permitted speed to the nearest location where the front -end light ~~can~~ may be repaired/replaced or the affected vehicle replaced. When proceeding, the driver shall use the train audible warning device as necessary or as instructed by the signaller.

4.2. During darkness or poor visibility

The driver shall inform the signaller about the failure. As long as a portable front-end light displaying a white light is fitted on the front of the train, the train shall proceed at the maximum allowable speed for that failure to the nearest location where the front-end light ~~can~~ may be repaired/replaced or the affected vehicle replaced.

If a portable front ~~-~~end light is not available, the train shall not proceed, unless formal instructions are given by the signaller to continue to the nearest suitable location to where the line ~~can~~ may be cleared.

When proceeding, the driver shall use the train audible warning device as necessary or as instructed by the signaller.

5. COMPLETE FAILURE OF A REAR ~~-~~END SIGNAL

(1) If the signaller becomes aware of the complete failure of the train rear-end signal, the signaller shall make arrangements to stop the train in an appropriate location and inform the driver.

(2) The driver shall then check the completeness of the train and if necessary repair/replace the train rear ~~-~~end signal.

(3) The driver shall report to the signaller that the train is ready to proceed. Otherwise, if the repair is not possible, the train may not proceed, unless special arrangements are made between signaller and driver.

6. FAILURE OF THE AUDIBLE WARNING DEVICE OF A TRAIN

If the audible warning device fails, the driver shall inform the signaller about the failure. The train shall not exceed the permitted speed ~~for~~ in the event of the failure of an audible warning device and shall proceed to the nearest location where the audible warning device ~~can~~ may be repaired or the affected vehicle replaced. The driver shall be ~~able~~ prepared to stop before passing over any level crossing where the audible warning device ~~must~~ is required to be sounded and then proceed over the level crossing only when it is safe to do so. If a multi-tone audible warning device is defective but at least one tone is functioning, the train may proceed normally.

7. FAILURE OF LEVEL CROSSING

7.1. Stopping trains passing over a defective level crossing

When a technical failure affecting safety of running trains over a level crossing has been detected and as long as the safe operation has not been restored, the normal passing of trains over the level crossing ~~must~~shall be prevented.

7.2. Passing trains over the defective level crossing (if authorised)

(1) Where the nature of the failure permits train movements to continue, the driver of each train shall be authorised to continue and to pass over the level crossing.

(2) After being instructed to pass over the level crossing with a failure, the driver shall pass the level crossing as instructed. If the level crossing becomes obstructed the driver shall take all possible measures necessary to stop.

(3) When approaching the level crossing, the driver shall use the audible warning device when necessary or when formal instructions have been given by the signaller. If the level crossing is clear, the driver shall proceed and accelerate the train as soon as the front of the train has passed clear the level crossing.

8. FAILURE OF VOICE RADIO COMMUNICATION

8.1. Failure of train radio detected during train preparation

In case of on board radio failure a train shall not be permitted to start a service on lines where a radio is required.

8.2. Failure of ~~train~~ voice radio communication when the train has entered service

All failure types

~~When~~ If the driver becomes aware that the primary voice radio communication is failed, the driver shall inform the signaller as soon as practicable using any available means.

The driver shall then ~~carry out~~apply the ~~formal~~ instructions ~~given~~ by the signaller concerning the further movement of the train.

On-board failure

A train with a failed ~~train~~ voice radio communication may ~~continue the service~~:

— continue its service if~~as long as~~ another means of ~~emergency~~ communication is provided between the train driver and the signaller;~~,~~ or

— proceed to the nearest location where the radio ~~can~~ may be repaired or the affected vehicle replaced ~~as long as~~ if another means of voice communication is not provided between the driver and the signaller.

9. RUNNING ON SIGHT

When a driver has to run on sight, the driver shall:

— Pproceed with caution, controlling the speed, having regard to the visibility of the line, so ~~taking into account the line visible in advance, such~~ that it is possible within the free visible part to stop short of any vehicle, stop aspect or obstacle on the infrastructure~~,~~; and

— Nnot exceed the maximum speed for running on sight.

This does not apply to unexpected obstacle entering the track zone within the stopping distance.

10. ASSISTANCE TO A FAILED TRAIN

(1) If a train is stopped by failure, the driver ~~must~~ shall immediately inform the signaller about the failure and the circumstances of the failure.

(2) When an assisting train is needed, the driver and signaller ~~must~~shall agree at least all of the following:

— the type of assisting train needed,

— if a specific direction is required (front or rear),

— the location of the failed train.

— After the driver has asked for assistance, the train ~~must~~shall not be moved even if the defect is rectified until:

— the assisting train has arrived, or

— the driver and signaller have agreed alternative arrangements.

(3) The signaller ~~must~~shall not allow the assisting train to enter the section occupied by the failed train unless confirmation has been received that the failed train ~~will~~ shall not be moved.

When the assisting train is ready to enter the section occupied by the failed train, the signaller shall inform the driver of the assisting train at least the following:

— the location of the failed train,

— the location where the failed train is to be taken to

(4) The driver of the combined train ~~must~~shall make sure that:

— the assisting train is coupled to the failed train, and

— the brake performance of the train is checked, the automatic brake, if compatible, is connected and a brake test has been carried out.

(5) When the combined train is ready to continue, the driver in control ~~must~~shall contact the signaller and inform the signaller of any restrictions and move the train in accordance with any instructions given by the signaller.

11. AUTHORISATION TO PASS A SIGNAL SHOWING A STOP ASPECT/INDICATION

The driver of the train concerned ~~must~~shall have authorisation to pass a signal showing stop aspect/indication.

When giving authorisation, the signaller ~~must~~shall give the driver any instructions concerning the movement.

The driver ~~must~~shall apply the instructions and ~~must~~shall not exceed any speed restriction, where one is imposed, until reaching the location where the normal operation ~~can~~ may be resumed.

12. ANOMALIES IN LINE-SIDE SIGNALLING

If any of the following anomalies are observed:

— no signal aspect is shown where there should be one,

— an irregular aspect is shown at the signal,

— an irregular signal aspect sequence is received on the approach to the signal,

— the aspect of the signal is not clearly visible.

The driver shall act according to the most restrictive aspect that could be presented by the signal.

In all cases the driver ~~must~~shall report to the signaller the abnormal signalling aspect when observed.

13. EMERGENCY CALL

When receiving an emergency call the driver shall assume that there is a dangerous situation and perform all actions necessary in order to avoid or reduce the effect of this situation.

In addition, the driver shall:

— immediately reduce the speed of the train to the appropriate speed for running on sight; and

— run on sight unless otherwise instructed by the signaller; and

— obey the instructions given by the signaller.

Drivers that have been ordered to stop shall not restart without authorisation from the signaller. Other drivers shall continue running on sight until the signaller informs them that running on sight is no longer necessary.

14. IMMEDIATE ACTIONS TO PREVENT DANGER TO TRAINS

(1) Any railway undertaking/infrastructure manager ~~RU/IM~~ staff who become aware of a danger to trains ~~must~~shall take immediate action to stop any trains which may be affected and take any other action as necessary to avoid harm or loss.

(2) Any driver made aware of a danger to their train ~~must~~shall stop and alert the signaller immediately to the danger.

15. FAILURE OF ON-BOARD EQUIPMENT

The railway undertaking shall determine the cases in which a failure of an on-board equipment affects the running of the train.

The railway undertaking shall give the necessary information to the driver and/or train crew of what action to take in the case of on-board failures that affect the running of the train.

If the driver becomes aware of a failure of any on-board equipment that affects the running of the train, the driver shall:

— Inform the signaller of the situation and the restrictions on the train should the train be allowed to continue its mission,

— The driver shall not commence or recommence the mission until permission to do so has been granted by the signaller,

— If the signaller gives permission for the train to start or continue its mission then the driver shall proceed in accordance with the restrictions placed upon the train,

If the signaller does not give permission for the train to commence or recommence its mission then the driver shall follow the instructions given by the signaller.

16. END OF AUTHORITY PASSED WITHOUT PERMISSION

— If the driver becomes aware that the train has passed an end of authority without permission, the driver shall stop the train immediately.

— If the train is stopped by ATP/TPS , the driver shall take action to support the emergency brake.

— The driver shall inform the signaller.

— If the signaller becomes aware that a train has passed an end of authority without permission, then the signaller shall take any necessary action to stop the train immediately.

— The driver and signaller shall take any necessary action to protect all movements.

When the train is able to continue, the driver shall inform the signaller. The signaller shall set or check the route for the train to continue its journey and issue all necessary instructions

17. FAILURE OF TRACKSIDE EQUIPMENT INCLUDING CATENARY

— The infrastructure manager shall determine whether the failure of trackside equipment (including catenary) affects the safe and/or effective operation of trains.

— The infrastructure manager shall provide the necessary instructions to the driver of what action to take in the case of such a failure as referenced in this NTSN in point 4.2.1.2.2.3.

— If the driver becomes aware of a failure of any trackside equipment (including catenary) that affects the safe and/or effective operation of trains, the driver shall inform the signaller of the situation as soon as possible and follow the instructions given by the signaller.

Appendix C Safety-related communications methodology

C1. Oral communication

1. ~~s~~Scope and P~~p~~urpose

~~1.1.~~ This Appendix sets out the rules for safety-related communications, between train crew, mainly the train driver, and signaller, in particular to define its structure ~~and~~, methodology and content. Safety-related communication has priority over all other communication.

2. Safety related communications

~~1.2.~~*2.1. Communication structure*

~~1.3.~~ The ~~voice~~ transmission of safety-related messages shall be short and clear and, as far as possible, without abbreviation. In ~~particular it shall cover the following points~~order to ensure ~~it~~ a message is understood and the necessary action ~~can~~ may be undertaken, whoever is giving the message shall cover at least the following points:

— ~~give~~ indicate their exact location.~~,~~

— state the ~~task~~ function they are carrying out and information on the action that is needed.~~,~~

~~— make sure the message is received and repeated back as required,~~

~~— if necessary, correct a mistake that has been made in the message,~~

~~— if necessary, let the person know how they can be contacted.~~

Drivers shall identify themselves by the train running number and the location.

Signallers shall identify themselves by the control area or the location of the signal box.

~~*1.4. Emergency messages are intended to give urgent operational instructions that are directly linked with the safety of the railway. For such messages the repetition of the message can be omitted.*~~

~~2.~~*2.2. Communication methodology*

Whoever is giving the message shall:

— check that the message is received and repeated back as required. As emergency messages are intended to give urgent operational instructions that are directly linked with the safety of the railway, the repetition of these messages may be omitted.

— if necessary, correct a mistake that has been made in the message,

— if necessary, let the person know how they may be contacted.

~~*2.1. Drivers shall identify themselves by the train running number and the location. Signallers shall identify themselves by the control area or the location of the signal box.*~~

For communication between signallers and drivers it is the signallers' responsibility to ensure that they are talking to the driver within their control area. This is critical when communication is taking place in areas where communications boundaries overlap. This principle shall apply even after an interruption during transmission.

~~*2.2.*~~*2.3. Communication content*

~~*2.3.*~~ The following messages shall be used for ~~this purpose~~ identification by the different parties.

— by the signaller:

Train ..... [running number] ~~.....~~ this is .....~~.....~~ ~~(~~[control area/location of the signal box~~)~~]

— by the driver:

this is train …… [running number] ~~……~~at …..…… [~~(~~location]~~)~~

Terminology shall be used in the communication procedure by all the parties:

Situation	**Terminology**
Term transferring the opportunity to speak to the opposite party	*'Over'*
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'*
Term used to ascertain whether a read-back message exactly matches the sent message	*'Correct'*
Term used to indicate that a read-back message does not match the sent message	*'Error (+ I say again)'*
Term used to keep the other party waiting when there is a temporary break in the communication and the connection is not broken	*'Wait'*
Term used to tell the other party that the communication might be broken but should be resumed later on	*'I call again'*
Term used to indicate that the message has ended	*'Out'*

Terminology used by all parties to indicate that there is an emergency situation shall be either as defined in the Rule Book or the standard European terminology of 'Mayday, Mayday, Mayday'.

For use of 'Mayday, Mayday, Mayday' this term shall not be translated and does not have to be used in case emergency call functionality is available on the train (e.g. GSM-R).

3. ~~e~~Communication rules

~~*3.1.*~~ In order that safety-related communication is correctly understood, whatever the communication mean is used, the following rules ~~must be adopted~~shall be used:

Commented [A34]: TSI text:

Standard terminology shall be used in the communication procedure by all the parties without translation:

Situation: Term used to indicate that there is an emergency situation
Standard Terminology: 'Mayday, mayday, mayday'

This term shall not be translated and does not have to be used in case emergency call functionality is available on the train (e.g. GSM-R).

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3.1. International Phonetic Alphabet

~~3.2.~~ The International Phonetic Alphabet shall be used:

— to identify letters of the alphabet;~~,~~

— to spell words and location names that are difficult to say, or may be misunderstood;~~,~~

~~— in case of interference on the radio or phone,~~

— when quoting the identity of signals or points.

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

3.2. Numbers

~~3.3.~~ The numbers shall be spoken digit by digit:

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0 = Zero	5 = Five
1 = One	6 = Six
2 = Two	7 = Seven
3 = Three	8 = Eight
4 = Four	9 = Nine

~~4. TERMS (GENERAL)~~

~~Standard terminology to be used in the communication procedure~~

~~4.1. Speech transmission procedure~~

~~4.1.1.Term transferring the opportunity to speak to the opposite party:~~

~~over~~

4.2. Message receiving procedure

4.2.1. Upon receiving a direct message

Term confirming that the sent message has been received:

received

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

say again (+ speak slowly)

4.2.3. Upon receipt of a message that has been read back

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

correct

4.2.4. or not:

error (+ I say again)

4.3. Communications breaking procedure

4.3.1. If the message has ended:

out

4.3.2. If break is temporary and the connection is not broken

Term used to keep the other party waiting:

wait

4.3.3. Term used to tell the other party that the communication might be broken but should be resumed later on:

I call again

5. WRITTEN ORDERS

5.1. A written order must only be issued when the train is at a standstill and shall be attributed with a unique identification or authorisation number provided by the signaller.

5.2. A written order takes precedence over the related indications provided by trackside signals and/or the DMI except when a lower permitted speed or a lower release speed than the maximum speed prescribed in the written order is applicable.

5.3. A written order should be issued as close as practicable to the affected area.

5.4. A written order must only be issued when the driver has identified the train running number and the location of the train / shunting movement.

5.5. A written order must state the following as a minimum:

- from where it was issued (signal box …),
- at what time and date it was issued,
- to which train / shunting movement it refers,
- where that train / shunting movement is located,
- at which location it applies,
- clear, precise, unambiguous instructions,
- unique identification or an authorisation number.

5.6. A written order may be transmitted:

- physically on paper, or
- as verbal instructions to the driver to write down, or
- other safe methods of communication to meet the abovementioned requirements.

5.7. When the driver receives a written order the driver shall check that this written order refers to his train/shunting movement and its current location.

5.8. A written order that has been issued can only be revoked by a new written order explicitly referring to the previous one.

6. TERMS (WRITTEN ORDERS)

Standard terminology to be used in the communication procedure

~~**Cancelling a written order**~~

~~*6.1. Term used to cancel the written order procedure underway:*~~

~~cancel procedure …~~

~~*6.2. If the message is then subsequently to be resumed, the procedure shall be repeated from the start.*~~

~~**Error during transmission**~~

~~*6.3. When a transmission error is discovered by the sender, 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**~~

~~*6.4. When the sender discovers an error whilst the message is being read back, the sender shall send the following procedure messages:*~~

~~error + I say again~~

~~and send the initial message again.~~

~~**Misunderstanding**~~

~~*6.5. If one of the parties does not fully understand a message he must ask the other party to repeat the message by using the following text:*~~

~~say again (+ speak slowly)~~

C2. Operational instructions

1. Introduction

Railway undertakings and infrastructure managers shall use European instructions in the communication procedure in the following cases:

(1) Permission to pass an End of Authority – signal showing a stop aspect/stop indication;

(2) Permission to proceed after a trip (ETCS);

(3) Obligation to remain at standstill, obligation to carry out end of mission (ETCS);

(4) Revocation of an operational instruction;

(5) Obligation to run under restrictions;

(6) Obligation to run on sight;

(7) Permission to start in Staff Responsible (ETCS) after preparing a movement;

(8) Permission to pass a defective level crossing;

(9) Obligation to run with power supply restrictions;

(10-20) RESERVED

The numbers 1 to 20 are reserved for European instructions, numbers 1-5 and 7 are mandatory for ETCS. If an operational instruction related to class B system requires more information than the European instructions, the national instruction may be used instead. In such case, the infrastructure manager may define these requirements in its national instructions. If numbered, the national instructions defined by the individual infrastructure managers shall start from 21 onwards. The national instructions shall contain at least the same content of that for a European instruction.

2. Content

An operational instruction shall state the following as a minimum:

— from where it was issued (location of signaller),

— at what date it was issued (not for verbal instruction),

— to which train/shunting movement it refers,

— clear, precise, unambiguous instructions,

— unique identification provided by the signaller.

In addition, depending on the circumstances, an operational instruction might also state:

— at what time it was issued,

— where that train/shunting movement is located, at which location it applies,

— ID of train driver;

— ID of issuer;

— verification (signature or electronic confirmation) that the instruction has been received.

Any operational instruction that has been issued to be written down may only be revoked by a European instruction (4) explicitly referring to the unique identification of the instruction to be revoked.

3. Delivery of the operational instruction

A European instruction includes information delivered electronically, verbally, physically on paper or as verbal instructions to be written down by the train driver or by other safe methods of communication with the same level of information.

In principle when it is necessary for an operational instruction to be written down by the train driver, the train shall be at standstill. The railway undertaking and the concerned infrastructure manager may jointly undertake a risk assessment which could, as a result, define the conditions under which it is safe to deviate from this principle.

An operational instruction shall be delivered as close as practicable to the affected area.

An operational instruction takes precedence over the related indications provided by trackside signals and/or the DMI. When a permitted speed or a release speed lower than the maximum speed prescribed in the operational instruction is applicable, the lowest speed shall be applied.

An operational instruction shall only be issued by the signaller when the train running number has been identified and, if necessary, the location of the train/shunting movement. Before applying the operational instruction, the train driver shall check that this operational instruction refers to her/his train/shunting movement and her/his current or identified location.

4. Awareness of the operational instruction

The railway undertaking has to define a procedure to ensure that the train driver is aware of an operational instruction until the train has reached the location where it has to be processed.

When the operational instruction does not need to be performed immediately after its delivery, it shall be possible for the train driver to retrieve the operational instruction.

5. Monitoring of processed operational instruction

As part of the compliance with the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended), the infrastructure manager and railway undertaking shall monitor the processes of delivery and use of the operational instructions.

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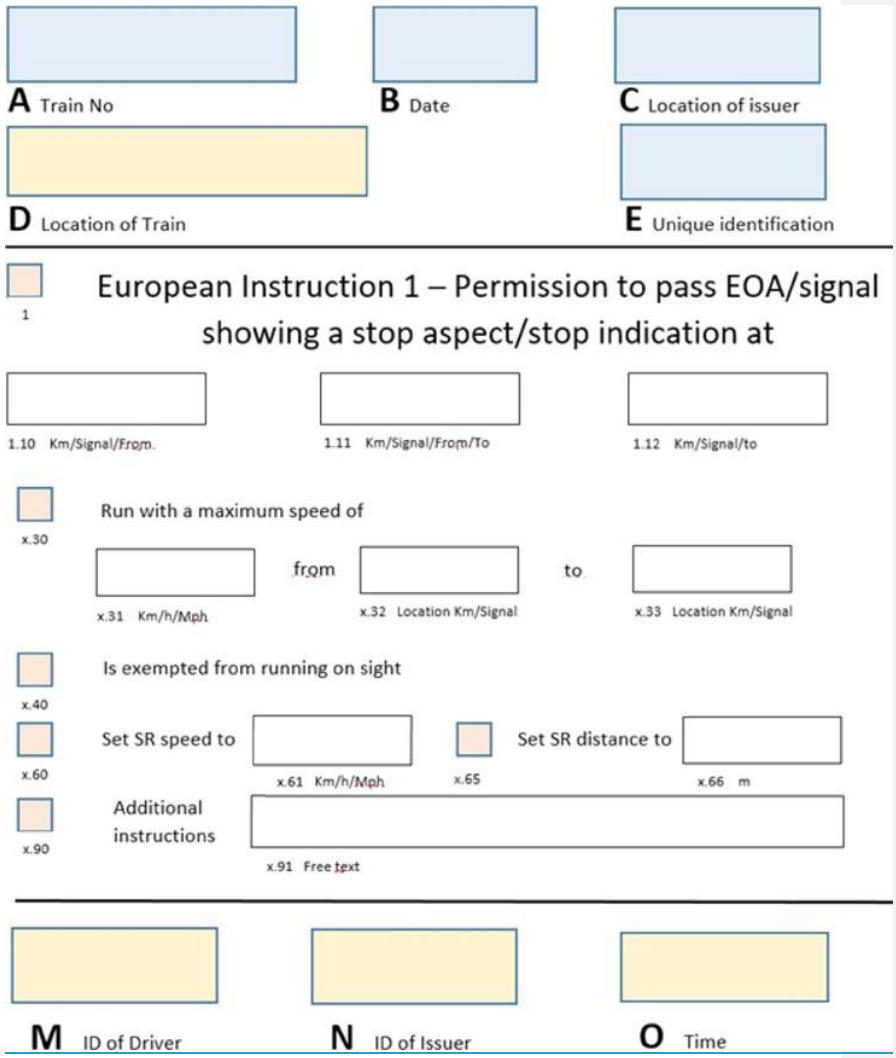
6. European instructions

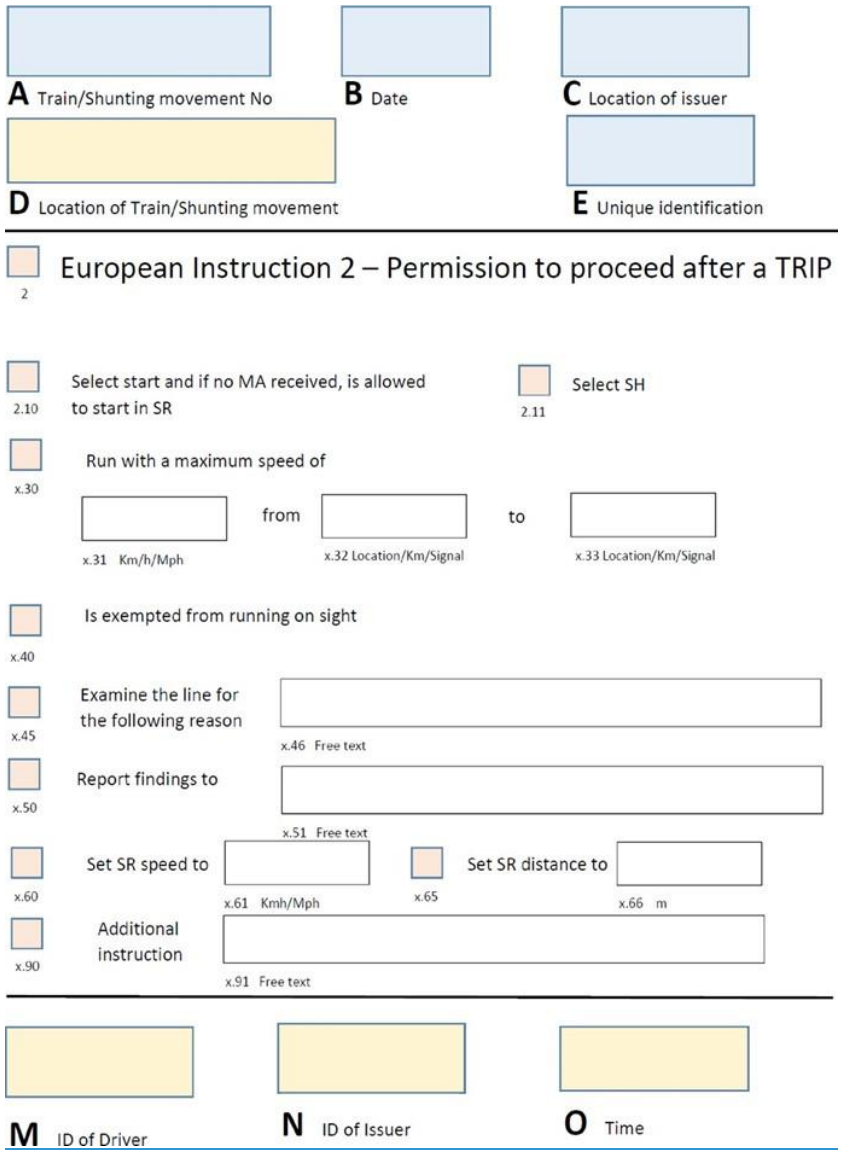
Each field of information contained in a European instruction shall be given its own identifier.

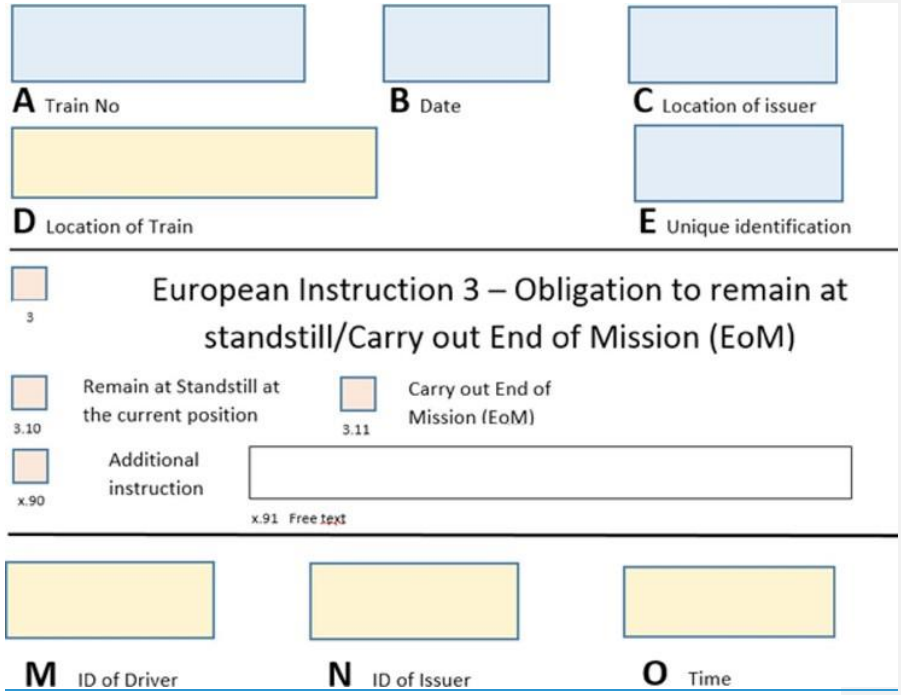
While the content and the identifiers shall be used, the format itself is indicative.

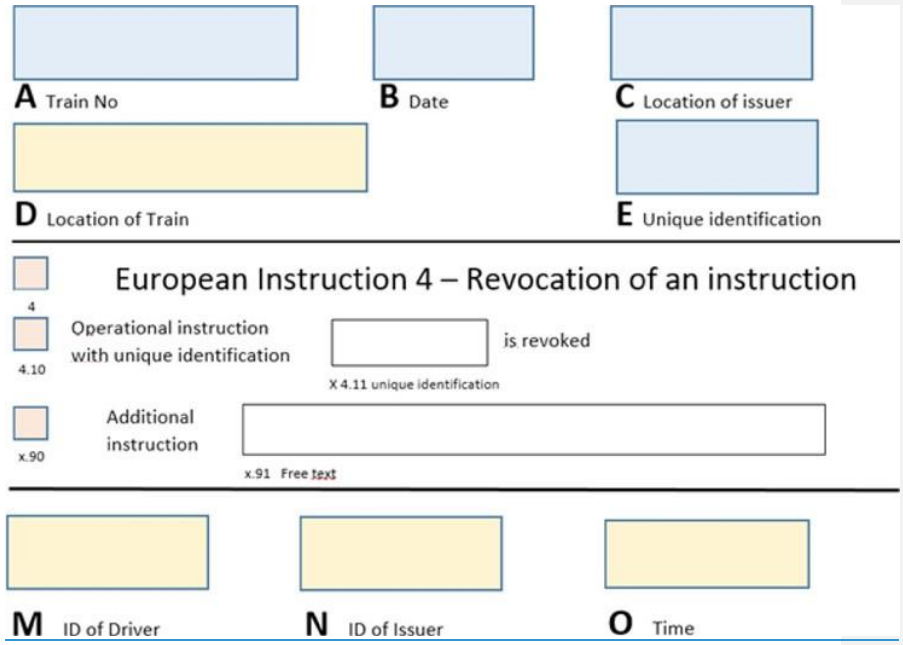
If a specific field is not to be used on the network of an infrastructure manager, there is no obligation to display this field in the European instruction and no field shall be added.

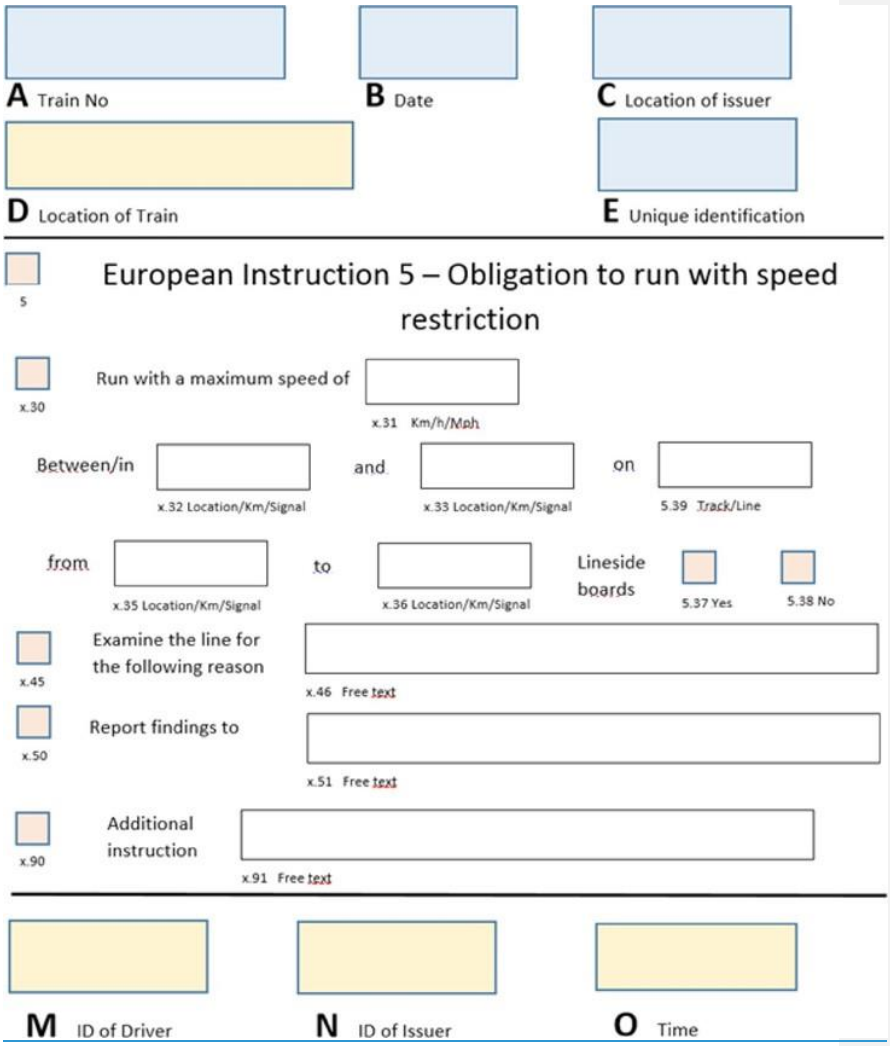
Commented [A36]: TSI text: *in a Member State or*

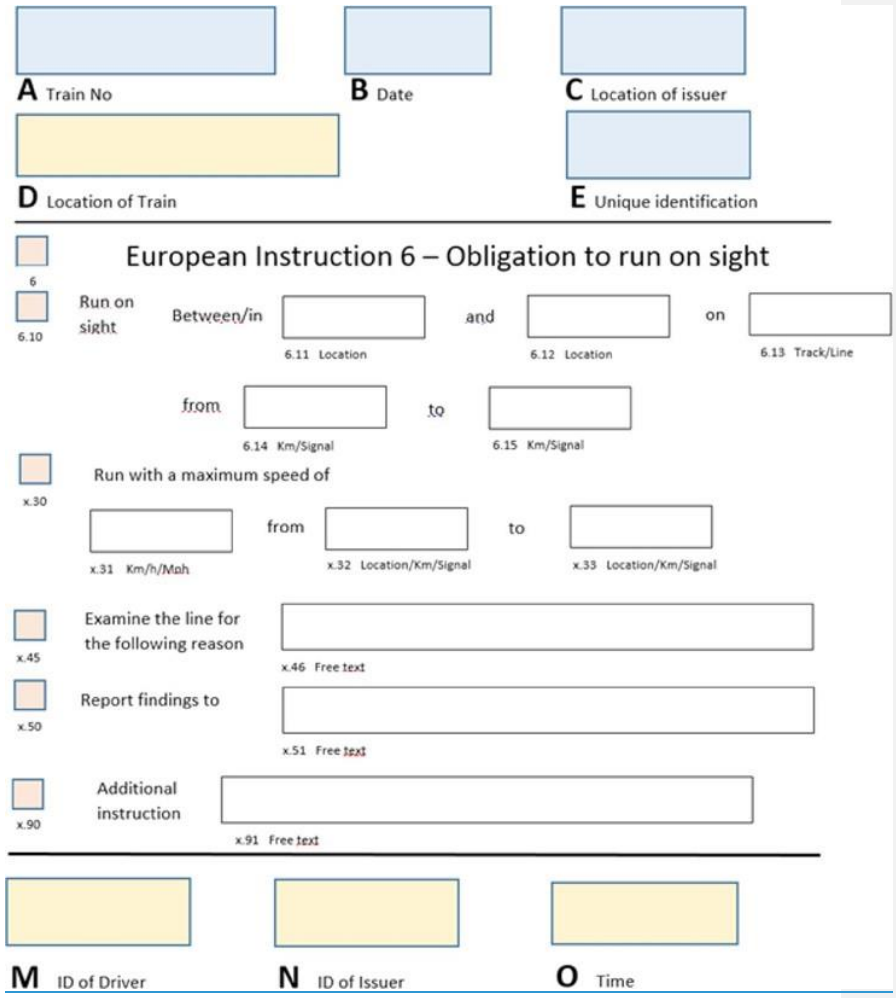

A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
1
European Instruction 1 – Permission to pass EOA/signal showing a stop aspect/stop indication at
1.10 Km/Signal/From
1.11 Km/Signal/From/To
1.12 Km/Signal/to
x.30
Run with a maximum speed of
x.31 Km/h/Mph
from
x.32 Location Km/Signal
to
x.33 Location Km/Signal
x.40
Is exempted from running on sight
x.60
Set SR speed to
x.61 Km/h/Mph
x.65
Set SR distance to
x.66 m
x.90
Additional instructions
x.91 Free text
M ID of Driver
N ID of Issuer
O Time

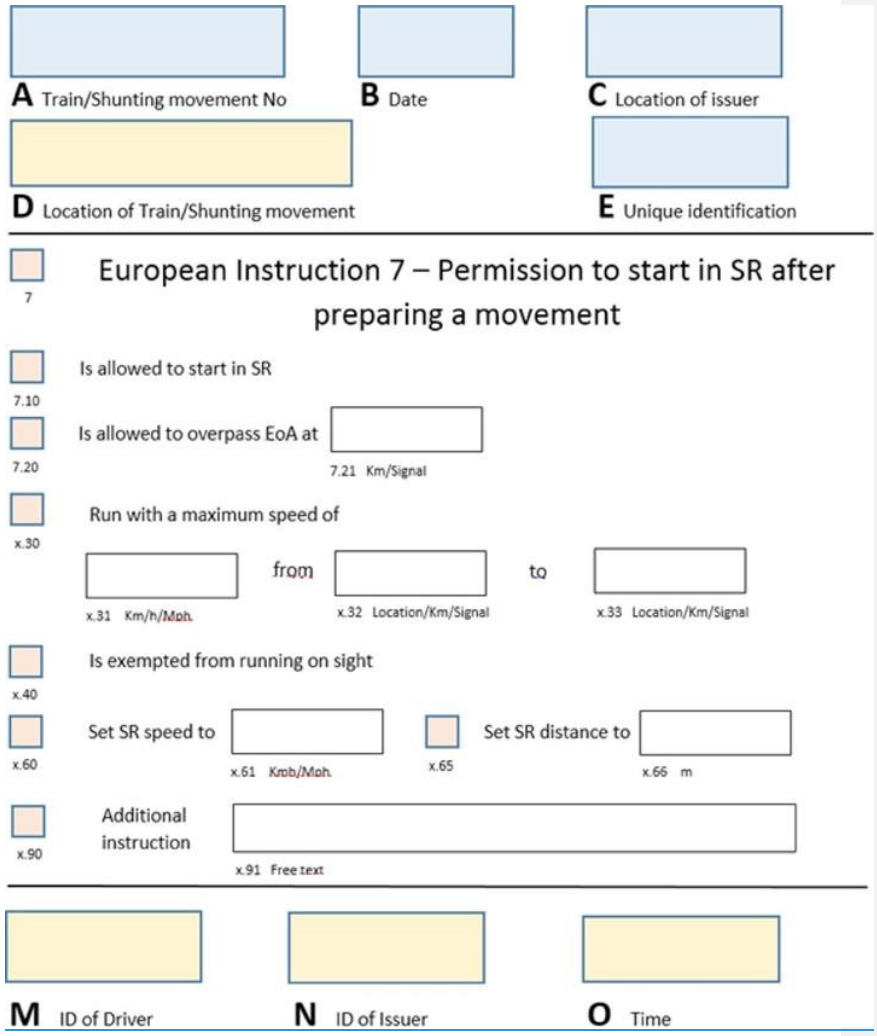

A Train/Shunting movement No
B Date
C Location of issuer
D Location of Train/Shunting movement
E Unique identification
2
European Instruction 2 – Permission to proceed after a TRIP
2.10
Select start and if no MA received, is allowed to start in SR
2.11
Select SH
x.30
Run with a maximum speed of
x.31 Km/h/Mph
from
x.32 Location/Km/Signal
to
x.33 Location/Km/Signal
x.40
Is exempted from running on sight
x.45
Examine the line for the following reason
x.46 Free text
x.50
Report findings to
x.51 Free text
x.60
Set SR speed to
x.61 Kmh/Mph
x.65
Set SR distance to
x.66 m
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time

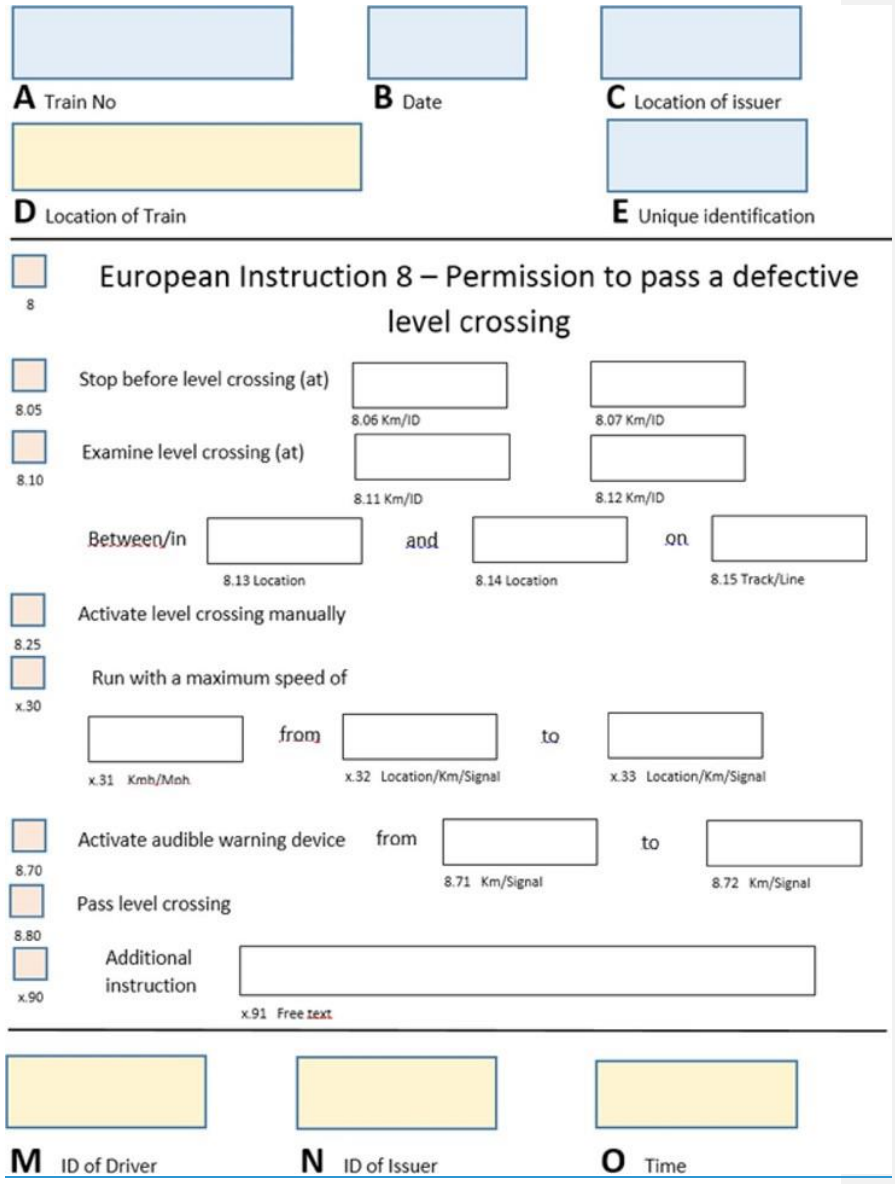

A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
3
European Instruction 3 – Obligation to remain at standstill/Carry out End of Mission (EoM)
3.10
Remain at Standstill at the current position
3.11
Carry out End of Mission (EoM)
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time

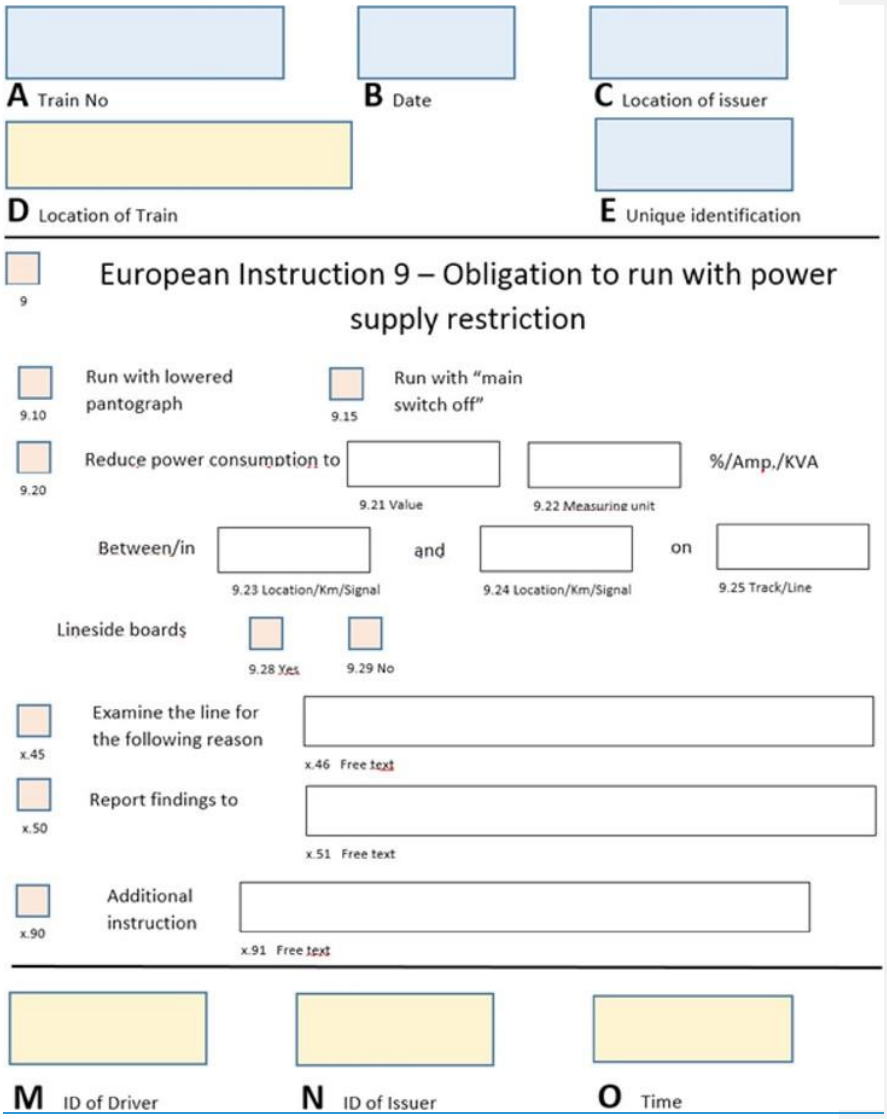

A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
European Instruction 4 – Revocation of an instruction
4
Operational instruction with unique identification
is revoked
4.10
X 4.11 unique identification
Additional instruction
x.90
x.91 Free text
M ID of Driver
N ID of Issuer
O Time


A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
5
European Instruction 5 – Obligation to run with speed restriction
x.30
Run with a maximum speed of
x.31 Km/h/Mph
Between/in
x.32 Location/Km/Signal
and
x.33 Location/Km/Signal
on
5.39 Track/Line
from
x.35 Location/Km/Signal
to
x.36 Location/Km/Signal
Lineside boards
5.37 Yes
5.38 No
x.45
Examine the line for the following reason
x.46 Free text
x.50
Report findings to
x.51 Free text
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time


A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
European Instruction 6 – Obligation to run on sight
6
6.10
Run on sight
Between/in
6.11 Location
and
6.12 Location
on
6.13 Track/Line
from
6.14 Km/Signal
to
6.15 Km/Signal
x.30
Run with a maximum speed of
x.31 Km/h/Mph
from
x.32 Location/Km/Signal
to
x.33 Location/Km/Signal
x.45
Examine the line for the following reason
x.46 Free text
x.50
Report findings to
x.51 Free text
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time


A Train/Shunting movement No
B Date
C Location of issuer
D Location of Train/Shunting movement
E Unique identification
7
European Instruction 7 – Permission to start in SR after preparing a movement
7.10
Is allowed to start in SR
7.20
Is allowed to overpass EoA at
7.21 Km/Signal
x.30
Run with a maximum speed of
x.31 Km/h/Mph
from
x.32 Location/Km/Signal
to
x.33 Location/Km/Signal
x.40
Is exempted from running on sight
x.60
Set SR speed to
x.61 Kmh/Mph
x.65
Set SR distance to
x.66 m
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time


A Train No
B Date
C Location of issuer
D Location of Train
E Unique identification
8
European Instruction 8 – Permission to pass a defective level crossing
8.05
Stop before level crossing (at)
8.06 Km/ID
8.07 Km/ID
8.10
Examine level crossing (at)
8.11 Km/ID
8.12 Km/ID
Between/in
8.13 Location
and
8.14 Location
on
8.15 Track/Line
8.25
Activate level crossing manually
x.30
Run with a maximum speed of
x.31 Kmh/Mph
from
x.32 Location/Km/Signal
to
x.33 Location/Km/Signal
8.70
Activate audible warning device
from
8.71 Km/Signal
to
8.72 Km/Signal
8.80
Pass level crossing
x.90
Additional instruction
x.91 Free text
M ID of Driver
N ID of Issuer
O Time



7. Communication of an operational instruction

Terminology shall be used in the communication procedure by all the parties:

Situation	Terminology
Cancelling an operational instruction	*'Cancel procedure'*

If the message is then subsequently to be resumed, the procedure shall be repeated from the start	*'Error during transmission'*
When a transmission error is discovered by the sender, the sender shall request cancellation	*'Error (+ prepare new form)'* *Or* *'Error (+ I say again)'*
Error during read back	*'Error (+ I say again)'*
Misunderstanding: if one of the parties does not fully understand a message, the message shall be repeated	*'Say again (+ speak slowly)'*

~~7.~~8. BOOK OF FORMS

The infrastructure manager is responsible for drawing up the Book of Forms and the forms themselves in its operating language.

All the forms to be used shall be assembled in a document or a computer medium called the Book of Forms.

~~In order to identify the forms, a unique code word or number relating to the procedure shall be developed.~~

This Book of Forms shall be used by both the driver and the staff authorising the movement of trains. The Book used by the driver and the Book used by the staff authorising the movement of trains shall be structured and numbered in the same way.

The Book of Forms shall comprise two parts.

The first part contains at least the following items:

— an index of ~~written order~~operational instruction forms~~;~~,

— a list of situations to which each form applies~~;~~,

— the table containing the international phonetic alphabet.

~~7.1.1.~~ The second part contains the forms themselves. These ~~must~~ shall be collected by the ~~RU~~ railway undertaking and given to the driver.

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~~8.~~9. GLOSSARY OF RAILWAY TERMINOLOGY

~~8.1.~~ The railway undertaking shall produce a glossary of railway terminology for each network over which its trains operate. It shall supply the terms in regular use in the language chosen by the railway undertaking and in the '~~"~~operating'~~"~~

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language of the infra-structure manager(s) whose infrastructure the railway undertaking operates on.

~~8.2. The glossary shall be composed of two parts:~~

~~— a listing of terms by subject matter,~~

~~— a listing of the terms in alphabetical order.~~

Appendix D Route Book and train compatibility

Commented [A37]: TSI text:

Please see separate document *OPE TSI Appendix D1* for the corresponding Appendix D1 to the TSI.

Elements the infrastructure manager has to provide to the railway undertaking for the Route Book and for the train compatibility over the route intended for operation

Number	Title	Route Book	Train compatibility over route intended for operation
1	**Generic information regarding the IM**		
1.1	IM's Name	X	X
2	**Maps and diagrams**		
2.1	**Map: schematic overview including**		
2.1.1	Line sections	X	
2.1.2	Principal locations (stations, yards, junctions, freight terminals)	X	
2.2	**Line diagram**		
~~*Information to be included on diagrams, supplemented as necessary by text. Where a separate station/yard/depot diagram is provided then information on line diagram may be simplified.*~~			
2.2.1	Indication of running lines, loops catch/trap points and access to sidings	X	
2.2.2	Principal locations (stations, yards, junctions, freight terminals) and their position relative to the line	X	

Number	Title	Route Book	Train compatibility over route intended for operation
2.2.3	Location, type and name of all fixed signals relevant for trains	X	
2.3	**Station/yard/depot diagrams**		
~~*Information to be identified on location specific diagrams, supplemented as necessary by text*~~			
2.3.1	Name of location	X	X
2.3.2	Type of location passenger terminal, freight terminal, yard, depot	X	
2.3.3	Location, type and identification of fixed signals that protect danger points	X	
2.3.4	Identification and plan of tracks, including switches	X	
2.3.5	Identification of platforms	X	X
2.3.6	Length of platforms	X	X
2.3.7	Height of platforms	X	X
2.3.8	Curvature of platforms	X	X
2.3.9~~8~~	Identification of loops	X	X
2.3.10~~9~~	~~Length of loops~~Other installations	X	~~X~~
3	**Specific line segment information**		
3.1	**General characteristics**		
3.1.1	Line segment extremity 1	X	X
3.1.2	Line segment extremity 2	X	X
3.1.3	Line-side indications of distance (frequency, appearance and positioning)	X	
3.1.4	Maximum permissible speed for each track, including, if necessary, differential speeds	X	X

Number	Title	Route Book	Train compatibility over route intended for operation
	relating to certain types of train ~~speed(s)/Speeds according to allocated path timetable~~		
3.1.5	Any other information the driver shall be aware of	X	
3.1.6	Specific geographical information required on the local infrastructure	X	
3.1.7	Special restrictions for dangerous goods		X
3.1.8	Special loading restrictions		X
3.1.9	Means of communication with the traffic management/control centre in normal, degraded and emergency situation	X	
3.2	**Specific technical characteristics**		
3.2.1	Track gauge		X
3.2.2	Structure gauge		X
3.2.3	Maximum axle load		X
3.2.4	Maximum load per linear meter		X
3.2.5	Maximum cant deficiency		X
3.2.6	Minimum radius of curvature		X
3.2.7	Gradient percentage	X	X
3.2.8	Gradient location	X	X
3.2.9	Braking performance related information		X
3.2.10	For brake system that does not use wheel-rail adhesion, accepted braking effort		X
3.2.11	Tunnels: location, name, length, specific information such as the existence of walkways and points of safe egress as well as the location	X	X

Number	Title	Route Book	Train compatibility over route intended for operation
	of safe areas where evacuation of passengers may take place; fire safety categorisation ~~and tunnel-related data in clause 4.2.1.2.2.1c~~		
3.2.12	Non-stopping areas: identification, location, type	X	
3.2.13	Industrial risks — locations where it is dangerous for the driver to step out	X	
3.2.14	Locations of areas designated for testing the sanding device (if existing)	X	
3.2.15	Type of signalling system and corresponding operational regime (double track, reversible working, left or right hand running, etc.)	X	
3.2.16	Type of track to train radio equipment	X	
3.3	**Energy subsystem**		
3.3.1	Energy supply system (voltage and frequency)	X	X
3.3.2	Maximum train current	X	X
3.3.3	Restriction related to power consumption of specific electric traction unit(s)	X	
3.3.4	Restriction related to the position of Multiple Traction unit(s) to comply with contact line separation (position of pantograph)	X	
3.3.5	Location of neutral sections	X	
3.3.6	Location of areas that must be passed with lowered pantographs.	X	
3.3.7	Conditions applying with regard to regenerative braking	X	X
3.3.8	Maximum current at standstill per pantograph	X	X

Number	Title	Route Book	Train compatibility over route intended for operation
3.3.9	Requirements for number of raised pantographs and spacing between them		X
3.3.10	Contact wire height		X
3.3.11	Characteristics of pantograph accepted		X
3.3.12	Mean contact force permitted		X
3.4	**Control-command and signalling subsystem**		
3.4.1	Need for more than one system active simultaneously	X	
ERTMS/ETCS			
3.4.2	Level of application		X
3.4.3	Optional functions required on board: infill		X
3.4.4	Software version number		X
ERTMS/GSM-R radio			
3.4.5	Version number		X
Class B signalling systems			
3.4.6	System name		X
3.4.7	Software version number		X
Class B radio systems			
3.4.8	System name		X
3.4.9	Software version number		X
Speed restrictions related to braking performance			
3.4.10	Class B train protection, control and warning systems		X
Switch-overs			

Number	Title	Route Book	Train compatibility over route intended for operation
3.4.11	Special conditions to switch over between different class B train protection, control and warning systems	X	
3.4.12	Special technical conditions required to switch over between ERTMS/ETCS and Class B systems	X	
3.4.13	Special instructions (location) to switch over between different radio systems	X	
EMC Susceptibility of infrastructure-side control-command and signalling			
3.4.14	Permissibility to use eddy-current brake	X	X
3.4.15	Permissibility to use magnetic brake	X	X
3.5	**Operation and traffic management subsystem**		
3.5.1	Operating language	X	
3.5.2	Special climatic conditions and associated arrangements, if any		X

Appendix E Language and communication level

The oral qualification in a language ~~can~~may be subdivided into five levels:

Level	Description
5	— ~~can~~may adapt the way he/she speaks to any interlocutor — ~~can~~may put forward an opinion — ~~can~~may negotiate — ~~can~~may persuade — ~~can~~may give advice
4	— ~~can~~may cope with totally unforeseen situations — ~~can~~may make assumptions — ~~can~~may express an argued opinion

3	— ~~can~~may cope with practical situations involving an unforeseen element — ~~can~~may describe — ~~can~~may keep a simple conversation going
2	— ~~can~~may cope with simple practical situations — ~~can~~may ask questions — ~~can~~may answer questions
1	— ~~can~~may talk using memorised sentences

Appendix F Minimum elements relevant to professional qualification for the tasks associated with 'accompanying trains'~~Professional qualifications – accompanying trains~~

~~**Minimum elements relevant to professional qualification for the tasks associated with "accompanying trains"**~~

1. General requirements

(a) This Appendix, which ~~must~~ shall be read in conjunction with points 4.6 and 4.7 is a list of the elements that are deemed to be relevant to the tasks associated with accompanying a train on the network.

(b) The expression "professional qualification", when taken within the context of this NTSN, refers to those elements that are important to ensure that operational staff are trained and able to understand and discharge the tasks.

(c) Rules and procedures apply to the tasks being performed and to the person carrying out the tasks. These tasks may be carried out by any authorised qualified person irrespective of any name, job title or grade used in rules or procedures or by the individual company.

2. Professional knowledge

Any authorisation requires a successfully passed initial examination and provisions for ongoing assessment and training as described in point 4.6.

2.1. General professional knowledge

(a) Principles of organisation's safety management system, relevant to the tasks.

(b) Roles and responsibilities of the key players involved in operations.

(c) General conditions relevant to the safety of passengers or cargo and persons on or about the railway track.

(d) Conditions of health and safety at work.

(e) General principles of security of the railway system.

(f) Personal safety including when leaving the train on the running line.

2.2. Knowledge of operational procedures and safety systems relevant to the tasks

(a) Operational procedures and safety rules.

(b) Relevant aspects of control command and signalling system.

(c) Formalised messaging procedure including use of communication equipment.

2.3. Knowledge of rolling stock

(a) Passenger vehicle interior equipment.

(b) Appropriate knowledge of safety-critical tasks in respect to procedures and interfaces for rolling stock.

2.4. Knowledge of the route

(a) Relevant operational arrangements (such as the method of train despatch) at individual locations (station equipment and signalling etc.).

(b) Stations at which passengers may alight or board the train.

(c) Local operating and emergency arrangements specific to the line(s) of route.

2.5. Knowledge on passenger safety

The training on passenger safety shall cover at least the following:

(a) Principles to ensure the safety of passengers:

— ~~s~~Support passengers with reduced mobility~~,~~;

— ~~i~~Identify the hazards~~,~~;

— ~~p~~Procedures applicable to accidents involving persons~~,~~;

— ~~e~~Events of a fire and/or smoke~~,~~;

— ~~e~~Evacuation of passengers.

(b) Principles of communication:

— ~~i~~Identify who needs to be contacted and understand communication methods, especially with the signaller during an evacuation incident~~;~~,

— ~~i~~Identify causes/situations and requests to initiate communication~~;~~,

— ~~c~~Communication methods for informing passengers~~;~~,

— ~~c~~Communication methods in degraded operations/emergency situations.

(c) Behavioural skills:

— ~~s~~Situational awareness~~;~~,

— ~~c~~Conscientiousness~~;~~,

— ~~c~~Communication~~;~~,

— ~~d~~Decision-making and action.

3. Ability to put the knowledge into practice

The ability to apply this knowledge in normal, degraded and emergency situations ~~will~~ shall require staff to be fully acquainted with:

— ~~m~~Methods and principles for applying the rules and procedures,

— ~~p~~Process for the use of line-side equipment and rolling stock, as well as any specific safety-related equipment.

In particular with:

(a) Checks before departure, including brake tests if necessary and correct closure of the doors.

(b) Departure procedure.

(c) Degraded operation.

(d) Assess the potential of a defect within the passenger areas and react according to rules and procedures.

(e) Protection and warning measures as required by the rules and regulations or in assistance to the driver.

(f) Communicate with the infrastructure manager's staff when assisting the driver.

(g) Report any unusual occurrences concerning the operation of the train, the condition of the rolling stock and the safety of passengers. If required these reports ~~must~~shall be made in writing, in the language chosen by the railway undertaking.

Appendix G Professional qualifications – preparing trains

Minimum elements relevant to professional qualification for the task of preparing trains

1. General requirements

(a) This Appendix, which ~~must~~shall be read in conjunction with point 4.6, gives a list of the elements that are deemed to be relevant to the task of preparing a train on the network.

(b) The expression '~~"~~professional qualification'~~"~~, when taken within the context of this NTSN, refers to those elements that are important to ensure that operational staff are trained and able to understand and discharge the elements of the task.

(c) Rules and procedures apply to the task being performed and to the person carrying out the task. These tasks may be carried out by any authorised qualified person irrespective of any name, job title or grade used in rules or procedures or by the individual company.

2. Professional knowledge

Any authorisation requires a successfully passed initial examination and provisions for ongoing assessment and training as described in point 4.6.

2.1. General professional knowledge

(a) Principles of organisation's safety management system, relevant to the task.

(b) Roles and responsibilities of the key players involved in operations.

(c) General conditions relevant to the safety of passengers and/or cargo including the carriage of dangerous goods and exceptional loads.

(d) Appreciation of hazards, especially in relation to the risks involving railway operation and electric traction supply.

(e) Conditions of health and safety at work.

(f) General principles of security of the railway system.

(g) Personal safety when on or in the vicinity of rail lines.

(h) Communications principles and formalised messaging procedure including use of communication equipment.

2.2. Knowledge of operational procedures and safety systems relevant to the task

(a) Working of trains in normal, degraded and emergency situations.

(b) Operational procedures at individual locations (signalling, station/depot/yard equipment) and safety rules.

(c) Local operating arrangements.

2.3. Knowledge of train equipment

(a) Purpose and use of wagon and vehicle equipment.

(b) Identification of and arranging for technical inspections.

(c) Appropriate knowledge of safety-critical tasks in respect to procedures and interfaces for rolling stock.

3. Ability to put the knowledge into practice

The ability to apply this knowledge in normal, degraded and emergency situations ~~will~~ shall require staff to be fully acquainted with:

— ~~m~~Methods and principles for applying the rules and procedures~~,~~;

— ~~p~~Process for the use of line-side equipment and rolling stock, as well as any specific safety-related equipment.

In particular:

(a) Application of train composition rules, train braking rules, train loading rules etc. to ensure the train is in running order.

(b) Understanding of marking and labels on vehicles.

(c) Process for determining and making train data available.

(d) Communication with train crew.

(e) Communication with staff responsible for controlling the movement of trains.

(f) Degraded operations especially as it affects the preparation of trains.

(g) Protection and warning measures as required by the rules and regulations or local arrangements at the location in question.

(h) Actions to be taken in respect to incidents involving the carriage of dangerous goods (where relevant).

Appendix H European Vehicle Number and linked alphabetical marking on the bodywork~~EVN and marking~~

~~European Vehicle Number and linked alphabetical marking on the bodywork~~

1. GENERAL PROVISIONS ON THE EUROPEAN VEHICLE NUMBER

The European Vehicle Number (EVN) is assigned according to the codes defined in Commission Decision 2007/756/EC ([8]), Appendix 6.

The ~~European Vehicle Number~~EVN shall be changed when it does not reflect the interoperability capability or technical characteristics according to this Appendix due to technical modifications of the vehicle. Such technical modifications may require a new authorisation to place into service.

Commented [A38]: ***TSI text:***

in accordance with Appendix 6 of Annex II to Commission Decision(EU) 2018/1614.

The EVN shall be changed in accordance with point 3.2.2.8 of Annex II to Implementing Decision (EU) 2018/1614.

The EVN may be changed at the request of the keeper in accordance with point 3.2.2.9 of Annex II to Implementing Decision (EU) 2018/1614.

2. GENERAL ARRANGEMENTS FOR EXTERNAL MARKINGS

The capital letters and figures making up the marking inscriptions shall be at least 80 mm in height, in a sans serif font type of correspondence quality. A smaller height may only be used where there is no option but to place the marking on the sole bars.

The marking is put not higher than 2 metres above rail level.

The keeper ~~can~~ may add, in letters of larger size than the European Vehicle Number, an own number marking (consisting generally of digits of the serial number supplemented by alphabetical coding) useful in operations. The place where the own number is marked is left to the choice of the keeper, however it ~~must~~ shall be always be possible to distinguish easily the European Vehicle Number from the keeper's own number marking.

3. WAGONS

The marking shall be inscribed on the wagon bodywork in the following manner:

23.	TEN		31.	TEN		33.	TEN	
80	D-RFC		80	D-DB		84	NL-ACTS	
7369		553-4	0691		235-2	4796		100-8
Zcs			Tanoos			Slpss		

Where in the examples:

D and NL stand for the registering EU Member State as set out in NVR-decision 2007/756/EC, Appendix 6, part 4.

Commented [A39]: TSI text: *Decision (EU) 2018/1614*

RFC, DB and ACTS stand for the keeper marking as set out in NVR-decision 2007/756/EC, Appendix 6, part 1.

Commented [A40]: TSI text: *Decision (EU) 2018/1614*

For wagons whose bodywork does not offer a large enough area for this type of arrangement, particularly in the case of flat wagons, the marking shall be arranged as follows:

01	87	3320 644-7
TEN	F-SNCF	Ks

When one or more index letters of national significance are inscribed on a wagon, this national marking ~~must~~ shall be shown after the international letter marking and separated from it by a hyphen as follows:

01	87	3320 644-7
TEN	F-SNCF	Ks-xy

4. COACHES AND HAULED PASSENGER STOCK

The number shall be applied to each sidewall of the vehicle in the following manner:

F-SNCF	61 87 20 - 72 021 - 7
	B^{10} tu

The marking of the country in which the vehicle is registered and of the technical characteristics are printed directly in front of, behind or under the twelve digits of the vehicle number.

In case of coaches with driver's cabin, the European Vehicle Number is also written inside the cabin.

5. LOCOMOTIVES, POWER CARS AND SPECIAL VEHICLES

The European Vehicle Number ~~must~~ shall be marked on each sidewall of the tractive stock in the following manner:

92 10 1108 062-6

The European Vehicle Number is also written inside each cabin of the tractive rolling stock.

Appendix I List of open points

Appendix B (see point 4.4)

Common operational principles and rules

Appendix J Glossary

The definitions in this glossary refer to the use of terms in this ~~NTSN~~ OPE NTSN.

For the purpose of this NTSN, the definitions in regulation 2 of the Railways (Interoperability) Regulations 2011 and in point 2.2 of the LOC&PAS NTSN shall apply.

Term	Definition
Accident	As defined in Article 3 of Directive 2004/49/EC.
Authorising train movements	The operation of equipment in signalling centres, electric traction current supply control rooms and traffic control centres that permits train movement. This does not include those staff employed by a railway undertaking who are responsible for management of resources such as train crew or rolling stock.
Competence	The qualification and experience necessary to safely and reliably undertake the task being performed. Experience ~~can~~ may be gained as part of the training process.
Dangerous goods	As covered by Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods
Degraded operation	Operation resulting from an unplanned event that prevents the normal delivery of train services.
Despatch (= dispatch)	See Train despatch
Driver	As defined in Article 3 of Directive 2007/59/EC.
Emergency call	Call set up in some dangerous situations to warn all trains/shunting movements in a defined area.

Commented [A41]: TSI text: *List of areas for which national rules may continue to apply according to Article 8 of Directive (EU) 2016/798*

1. AREAS FOR NATIONAL RULES
Shunting
Signalling rules
Rules related to the operational use of the national signalling system
Maximum speeds in degraded mode including running on sight
Running at caution
Local operational rule
Relating to specific local conditions where additional information may be needed — this is limited to requirements not covered by this Regulation
Operation during works
Safe operation of test train
Train visibility — Front end (see 4.2.2.1.2)
Existing Non TSI conform vehicles
Managing an emergency situation and emergency responses (see point 4.2.3.7)
Role of local/national authorities and emergency services
Notification of accidents and incidents: national instructions on modalities for notifications to authorities
Safety-related communications terminology (see Appendix C)
National operational instructions
Requirements on route knowledge under the national transposition of Directive 2007/59/EC (Train Driver Directive)

2. LIST OF OPEN POINTS
Exceptional transport
Timetable (see 4.2.1.2.3)
Additional information
Recording of supervision data outside the train (see 4.2.3.5.1)
Additional information
Recording of supervision data on-board the train (see 4.2.3.5.2)
Additional information
Professional competences (see point 4.6)
—Staff with safety critical tasks other than train drivers;
—Additional information for staff undertaking the safety critical tasks associated with accompanying a train other than train driver;
—Additional information for staff undertaking the safety critical tasks associated with the last preparation of a train before it is scheduled to cross a border and work beyond any location(s) designated as the 'frontier' in the network statement of an infrastructure manager and included in its safety authorization.
Health and safety conditions (see point 4.7)
—Staff with safety critical tasks other than train drivers;
—Additional information for staff undertaking the safety critical tasks associated with accompanying a train other than train driver;
—Alcohol limits (see 4.7.1).
Common operational principles and rules (See 4.4 and Appendix B)

Commented [A42]: TSI text: *Article 2 of Directive (EU) 2016/797*

Commented [A43]: TSI text: *Directive (EU) 2016/798*

Term	Definition
End of authority passed without permission	An end of authority passed without permission is any occasion when a train proceeds beyond the end of authority in the following circumstances: — A trackside signal at danger, or an order to STOP where an ATP is not operational, — The end of a movement authority provided in an ATP, — A point communicated by verbal or written authorisation laid down in regulations, — Stop boards, — Hand signals. This covers movement authority as described in ETCS and authority to move covered by instructions/signalling. Any case in which a vehicle without any traction unit attached or a train that is unattended runs away is not included.
European instruction	An operational instruction giving similar content to train drivers in the UK and the European Union in order for them to answer in a similar manner to similar situation.
Evacuation	Evacuation of a train is when all passengers are instructed to leave the train and go on to the infrastructure under the supervision of on-board staff. On-board staff having agreed with the signaller or other responsible infrastructure manager staff, that it is safe to do so.
Exceptional ~~loads~~transport	A vehicle and/or the load carried which because of construction/design, dimensions or weight does not meet the parameters of the route and requires special authority for the movement and may require special conditions over part or its entire journey.~~A load carried on a rail vehicle, for example a container, swap body or other traffic where the rail vehicle size and/or axle loading requires special authority for the movement and/or the application of special conditions of travel for all or part of the journey.~~
Health and S~~s~~afety C~~c~~onditions	In the context of this NTSN, this refers only to the medical and psychological qualifications required to operate the relevant elements of the subsystem.
Hot axle box	An axle box and bearing that has exceeded its maximum designed operating temperature.
Incident	As defined in Article 3 of Directive 2004/49/EC.

Commented [A44]: TSI text: *An harmonised operational instruction giving a similar content to train drivers across the European Union*

Commented [A45]: TSI text: *Directive (EU) 2016/798*

Term	Definition
Length of train	Total length of all vehicles over buffers including locomotive(s)
Loop	Track, connected to the main track, used for passing, crossing and stabling.
National instruction	An instruction defined by an infrastructure manager which covers situations specific to a Class B system or the transition between class A and class B systems.
Operating language	The language or languages used in daily operation an infrastructure manager and published in his Network Statement, for the communication of operational or safety- related messages between the staff of the infrastructure manager and the railway undertaking.
Operational instruction	Formal information exchanged between signaller and train driver so as to ensure/continue railway operation in specific situations.
Passenger	Person (other than an employee with specific duties on the train) travelling by train or on railway property before or after a train journey.
Performance monitoring	The systematic observation and recording of the performance of the train service and the infrastructure for the purpose of bringing about improvements in the performance of both.
Qualification	The physical and psychological suitability for the task together with the required knowledge.
Real time	The ability to exchange or process information on specified events (such as arrival at a station, passing a station or departure from a station) on the train's journey as they occur.
Reporting point	A point on the train's schedule where reporting of the arrival, departure or passing time is required.
Route	The particular section or sections of line
Safety-critical task	Task performed by staff when they control or affect the movement of a train, which could affect ~~the health, and safety of persons~~railway safety.
Scheduled stop	Planned stop for commercial or operational reasons.
Siding	Any track(s) within an operational point which is not used ~~only~~ for operational routing of a train ~~movement other than train movement~~.

Commented [A46]: TSI text: *at national level or*

Commented [A47]: TSI text: *The operational instruction exists at both national and European levels.*

Term	Definition
Signaller	Performer in charge of the route setting of trains / shunting movements and of issuing instructions to drivers.
Staff	Employees working for a railway undertaking or an infrastructure manager, or their contractors, undertaking tasks as specified in this NTSN.
Stop aspect	Any signal aspect that does not allow the driver to pass the signal.
Stopping point	A location identified in the schedule of a train where the train is planned to stop, usually to carry out a specific activity such as allowing passengers to join and leave the train.
Timetable	Document or system that gives details of a train(s) schedule over a particular route.
Timing point	A location identified in the schedule of a train where a specific time is identified. This time may be an arrival time, departure time or in the case of a train not scheduled to stop at that location the passing time.
Traction unit	A powered vehicle able to move itself and other vehicles to which it may be coupled.
Train	A train is defined as (a) traction unit(s) with or without coupled railway vehicles with train data available operating between two or more defined points.
Train despatch	The indication to the person driving the train that all station or depot activities are completed and that, as far as the staff responsible are concerned, movement authority has been granted for the train.
Train crew	Members of the on-board staff of a train, who are certified as competent and appointed by a railway undertaking to carry out specific, designated safety-related tasks on the train, for example the driver or the guard.
Train preparation	Ensuring that a train is in a fit condition to enter service, that the train equipment is correctly deployed and ~~that the formation of~~ the train composition matches the train's designated ~~pathway~~route(s). Train preparation also includes technical inspections carried out prior to the train entering service.

Abbreviation	Explanation
AC	Alternating current

Commented [A48]: TSI text: includes abbreviation for
- ERATV (European Register of Authorised Types of Vehicles)
- EC (European Community)
- RINF (Register of Infrastructure)
- TSI (Technical Specification for Interoperability)

Abbreviation	Explanation
ATP	Automatic Train Protection
CCS	Control-Ceommand and sSignalling
CEN	European Committee for Standardisation (Comité Européen de Normalisation)
COTIF	Convention Concerning International Carriage by Rail (Convention relative aux Transports Internationaux Ferroviaires)
dB	Decibels
DC	Direct cCurrent
DMI	Driver mMachine iInterface
ECG	Electrocardiogram
EIRENE	European Integrated Railway Radio Enhanced Network
EN	Euro-norm
ENE	Energy
ERA	European ~~Railway~~ Union Agency for Railways
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
FRS	Functional Requirement Specification
GSM-R	Global System for Mobile Communications — Rail
~~HABD~~	~~Hot axle box detector~~
~~Hz~~	~~Hertz~~
IM	Infrastructure Mmanager
INF	Infrastructure
OPE	Operation and traffic management
OSJD	Organisation for Co-operation ~~of~~ between Railways
RST	Rolling stock

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Abbreviation	Explanation
RU	Railway ~~u~~Undertaking
SMS	Safety ~~m~~Management ~~s~~System
SPAD	Signal ~~p~~Passed ~~a~~At ~~d~~Danger
SRS	System Requirement Specification
TAF	Telematic Applications for Freight
TEN	Trans-European Network
TPS	Train Protection System
UIC	International Union of Railways (Union Internationale des Chemins de fer)
~~VKM~~	~~Vehicle keeper marking~~

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