

Making the railway system  
work better for society.

## Operations and traffic management system TSI

### Acceptable means of compliance on safety of load

	<i>Drafted by</i>	<i>Verified by</i>	<i>Approved by</i>
<i>Name</i>	Roberto Mele Gaetano Imperato Pedro Mestre	Beatrijs Claeys Emanuele Mastrodonato Karen Davies Ellen Rogghè Elzbieta Sieczkowska	Pio Guido
<i>Position</i>	Project Officers	Project Officers	Head of Department
<i>Date</i>	18/12/2023	18/12/2023	18/12/2023
<i>Signature</i>			

The present document is a non-legally binding opinion of the European Union Agency for Railways. The purpose of this document is to define ways of establishing compliance with the essential requirements of the relevant EU legislation. It is without prejudice to the decision-making processes foreseen by the applicable EU legislation. Furthermore, a binding interpretation of EU law is the sole competence of the Court of Justice of the European Union.

© European Union Agency for Railways 2021

Reproduction and reuse are authorised provided the source is acknowledged. Third parties' rights shall be respected.

#### Document History

<i>Version</i>	<i>Date</i>	<i>Comments</i>
1	17/12/2021	First publication
2	18/12/2023	Revision following AMOC CR 1/2023 and CR 4/2023: point 2.2

## Contents

1.	Part 1 .....	3
	1.1. Introduction .....	3
	1.2. Legal basis .....	3
	1.3. Concept .....	3
	1.4. Responsibility .....	5
	1.5. List of acronyms used in this text.....	6
2.	Part 2 .....	7
	2.1. Introduction to the relevant part of the TSI OPE .....	7
	2.2. Information on the scope of the AMOC.....	7
	2.3. Links to existing legislation on risk assessment.....	8
	2.4. Safety requirements.....	9
	2.5. EN Standard 16860 .....	9
	2.6. UIC Loading Guidelines – Code of Practice for Loading and Securing of goods on railway wagons – Volume 1 – Principles and Volume 2 – Goods.....	10

# 1. Part 1

## 1.1. Introduction

RUs and IMs shall manage their operations and the traffic among others in accordance with the TSI OPE.

According to Article 2(33) of the Directive on the interoperability of the rail system within the European Union (Directive (EU) 2016/797, as amended), Acceptable Means of Compliance (AMOCs) are “*non-binding opinions issued by the Agency to define ways of establishing compliance with the essential requirements*”. Therefore, AMOCs define good practices also by referring to available standards, which the actors of the railway sector can use in their safety management system as evidence that their operational procedures comply with high-level requirements set out in EU legislation (in this case the TSI OPE and the Common Safety Method on requirements for safety management systems – CSM on SMS (Commission delegated Regulation (EU) 2018/762).

## 1.2. Legal basis

The basis for the development of AMOCs is the TSI OPE, and more precisely section 4.4.3 which requires the Agency to define AMOCs by means of technical opinions<sup>1</sup> on a number of topics. These are:

1. Safety of load
2. Checks and tests before departure, including brakes and checks during operation
3. Passenger safety
4. Train departure
5. Degraded operation.

This AMOC covers the topic “safety of load”.

The AMOC itself constitutes a non-legally binding opinion and its use is strictly voluntary.

## 1.3. Concept

As a general concept, the RUs/IMs are responsible to manage their specific operational and traffic management requirements in their SMS.

Article 4(1) (d) of the Railway Safety Directive (Directive (EU) 2016/798) states as follows:

*“With the aim of developing and improving railway safety, Member States, within the limits of their competences shall:*

*d) ensure that the responsibility for the safe operation of the Union rail system and the control of risks associated with it is laid upon the infrastructure managers and railway undertakings, each for its part of the system, obliging them to:*

- (i) implement necessary risk control measures as referred to in point (a) of Article 6(1), where appropriate in cooperation with each other;*
- (ii) apply Union and national rules;*
- (iii) establish safety management systems in accordance with this Directive”.*

---

<sup>1</sup> In accordance with Article 10 of Regulation (EU) 2016/796.

Article 4(3) (a) and (b) of the Railway Safety Directive states as follows:

*“Railway undertakings and infrastructure managers shall:*

- a) implement the necessary risk control measures referred to in point (a) of Article 6(1), where appropriate in cooperation with each other and with other actors;*
- b) take account in their safety management systems of the risks associated with the activities of other actors and third parties;”*

The same concept has been detailed in the CSM on SMS, ANNEX I Point 3.1.1.1 (for RUs) and ANNEX II point 3.1.1.1 (for IMs):

According to these provisions, the organisation shall:

- a) identify and analyse all operational, organisational and technical risks relevant to the type, extent and area of operations carried out by the organisation. Such risks shall include those arising from human and organisational factors such as workload, job design, fatigue or suitability of procedures, and the activities of other interested parties (see Annex I, Section 1. Context of the organisation);
- b) evaluate the risks referred to in point (a) by applying appropriate risk assessment methods;
- c) develop and put in place safety measures, with identification of associated responsibilities (see Annex I, Section 2.3. Organisational roles, responsibilities, accountabilities and authorities);
- d) develop a system to monitor the effectiveness of safety measures (see Annex I, Section 6.1. Monitoring);
- e) recognise the need to collaborate with other interested parties (such as railway undertakings, infrastructure managers, manufacturer, maintenance supplier, entity in charge of maintenance, railway vehicle keeper, service provider and procurement entity), where appropriate, on shared risks and the putting in place of adequate safety measures;
- f) communicate risks to staff and involved external parties (see Annex I, Section 4.4. Information and communication).

Therefore, it is the responsibility of RUs and the IMs to identify, assess, eventually mitigate, monitor and review continually their own operational risks.

Based on that, the AMOC is a proposed way addressed to the RUs to demonstrate compliance with the TSI OPE as a mean to manage operational risks, taking into account that the provisions of the TSI OPE cover the entire operational and traffic management subsystem, whilst every single RU or IM manages only part(s) of the subsystem.

The RUs should in compliance with the EU and national legal requirements define their operational context and consequently they should identify the risks occurring in their activities. Then, on a voluntary basis, they are free to assess and decide for themselves whether an AMOC is applicable to the part of the subsystem they manage. An AMOC could be entirely or partially applicable to the RUs operational context; for example a RU could be involved in the freight transport but not in the transport of dangerous goods, whilst an AMOC could deal with both.

If an RU evaluates this AMOC as applicable to the operational context and decides to use this AMOC, the RU should assess the risks the AMOC could cover within the operational activities to be performed. For example, initially and according to the applicable legislation, loading risks should be identified and mitigated – then the relevant part of the good practice in the AMOCs should be cross referenced with the risk in the RUs’ risk assessment processes. This should regularly be kept up to date as part of the monitoring activities for their operations.

As AMOCs are non-binding opinions issued by the Agency to define ways of establishing compliance with the essential requirements, the RUs are free to decide whether to apply the AMOC/part of the AMOC, or not to apply the AMOC. In any case, the RUs are responsible for managing their operational risks.

AMOCs should be accepted throughout the EU by Member States and National Safety Authorities as examples of good practice.

According to TSI OPE point 4.4.2 and Appendix I, national rules<sup>2</sup> on the defined AMOC topics are generally not permitted. Therefore, if a Member State (MS) and/or a NSA or any other entity requires a RU or IM to comply with additional national requirements, then that MS or NSA or the other entity will have to provide, in line with Article 8 of Railway Safety Directive, evidence as to why their national requirements provide a higher degree of risk control than that set out in the AMOC. However, AMOCs are not national rules and if a RU decides not to apply the AMOC and develop its own processes, it may do this and does not have to prove that its processes are as good or better than the good practice set out in the AMOC and it should ensure that its processes are adequate in controlling/ mitigating the risks that it has identified.

As a result, the substantiated use of this AMOC can be taken into consideration by the Agency or the NSAs when a RU applies for a safety certificate or authorisation, when the certification body assesses compliance of the applicant with the requirements of the CSM on SMS and the TSI OPE.

The certification body will check the sufficiency of the RUs processes in controlling the risks and will check how the AMOC is used, if it is the case, by reviewing the risk assessment process of the RU to ensure that the AMOC good practice has been identified as a relevant control measure for the identified risk.

#### 1.4. Responsibility

Each RU remain responsible for how the AMOC is used in their SMS. They should ensure that they can identify which risks the AMOC provides controls against. The AMOC should not just be included in the SMS without the RU and justifying its use through their risk management procedures and their document management system.

Each RU should perform analysis to understand which part of the AMOC is applicable to their operational context and, by the mean of a risk analysis, they are responsible for defining how to integrate the AMOC or part of that within their own SMS.

The Agency is not responsible for how the AMOC is used. It is particularly important that when the RU use this AMOC, that they provide return of experience and/or information from accidents and incidents to ensure that the content of the AMOC remains relevant and up to date.

The Agency should be informed of any return of experience which should be used to update the AMOC.

This AMOC is specifically for RUs and how they take forward the issue of the safety of loading.

When applying this AMOC the RU should identify the hazards and the responsibilities in relation to the safety of loading. This information should be shared with the contractors, partners and suppliers when they have a role in the loading process. Contractors, partners and suppliers arrangements are to be managed according to the CSM on SMS, Annex I – requirement 5.3.

There are other areas of responsibility in relation to:

---

<sup>2</sup> With the meaning of Article 8 of Directive (EU) 2016/798.

- the design of the wagons;
- the maintenance of the wagons and exchange of information (ECMs);
- the planning of the route (communication between the RU and IM); and to
- the planning of the transport (communication between RU and client (loader/filler)

which are not part of this AMOC but need to be managed by those having the related responsibilities, as part of their Safety Management System.

### 1.5. List of acronyms used in this text

- AMOC: Acceptable Means of Compliance
- CSM: Common safety method
- ECM: Entity in Charge of Maintenance
- ERA: European Union Agency for Railways or the Agency
- EU: European Union
- FOP: Fundamental Operational Principles
- IM: Infrastructure Manager
- NSA: National Safety Authority
- RU: Railway Undertaking
- SMS: safety Management System
- TSI: Technical Specification for Interoperability
- TSI OPE: Technical Specification for interoperability relating to the operation and traffic management subsystem (Commission Implementing Regulation (EU) 2019/773)
- UIC: Union Internationale des Chemins de fer

## 2. Part 2

### 2.1. Introduction to the relevant part of the TSI OPE

The TSI OPE point 4.2.2.4.1. *Safety of load* states that the RU shall make sure that freight vehicles are safely and securely loaded and remain so throughout the journey.

### 2.2. Information on the scope of the AMOC

This AMOC provides guidance for RUs on preventing the risks of unsafe load of a freight wagon (for train speeds up to and including 120 km/h) before and during the train journey.

Competence and who is responsible for undertaking the tasks are not covered in this AMOC, they should be covered as part of the RU's SMS. These topics should also take into account any risks and control measures that are part of the RU's strategy on Human and organisational factors.

The checking process is a key part of the safety of load for freight however, this is covered by the AMOC on Checks and tests. Information from this AMOC may be used as an input into the Checks and tests process.

The exceptional transport requirements are not part of this AMOC and should be discussed with the infrastructure manager.

The RU should consider in the process the following aspects:

#### Planning

Planning of the transportation of the load, includes the type of load and securing, the design and use of the correct wagon, route compatibility checks and if relevant, any contractual arrangements with other RUs who also transport the load.

#### EN<sup>3</sup> line category

The RU shall ensure that the payload does not exceed the limit in the load table<sup>4</sup> marked on the wagon corresponding to the EN line category(ies) of the intended route. In the case where more than one value is to be taken into account, the lowest limit should be respected unless the concerned IM(s) have authorized the movement.

#### Loading of the wagons and weight distribution

The RU should guarantee the appropriate distribution of load over all the axles and the wheels of the wagon when running in operation, as well as satisfying the obligation that the permissible payload, marked on a load table affixed to the wagon, is not exceeded<sup>5</sup>.

The payload limits of the load limit table are only valid if the permissible payload is evenly distributed over the length of the wagon and centrally loaded transversely.

---

<sup>3</sup> EN 15528 Railway applications - Line categories for managing the interface between load limits of vehicles and infrastructure.

<sup>4</sup> If a wagon is not marked with a load table showing the permissible maximum payload for each Line Category, the payload limit or the limit table can be calculated according to EN 15528 section 6.

<sup>5</sup> The RUs shall ensure that vehicles are not loaded beyond the load limit value of the load table imposed by the lowest line category of the concerned sections of line.

Vehicles should be loaded to ensure the even distribution of the weight of the load over all the axles and the wheels (front-back and left-right equilibrium).

Where, due to the size or shape of a particular load this is not possible, the RU should apply special conditions of travel to the load for the entire journey<sup>6</sup>, considering the relevant interface with the concerned IM(s).

In the case of displaced or unevenly distributed loading, the payload (determined from the load-table) should be reduced, so that the value of the permissible axle load is not exceeded by any axle. The reduced payload should comply with the requirements in the UIC Loading Guidelines Volume 1 Principles for distribution of the load for longitudinally and laterally displaced loading and the maximum offset for the center of gravity of the load across the wagon.

### **Load securing**

The RUs should ensure by their own SMS, that freight vehicles are safely and securely loaded and remain so during the journey. Therefore, they should implement the appropriate risk control measures, and when necessary cooperate to this end with other involved actors. Without prejudice to the responsibilities defined for the Entity in Charge of Maintenance, this should include the monitoring of risks arising from the use of load securing equipment and sharing the relevant information with other involved actors to ensure that the load securing equipment is and remains in a safe state.

### **Profile of the vehicle gauge**

The vehicle-loading gauge permitted by the infrastructure manager should be within the maximum permissible gauge for routes during the whole train journey.

### **Load covering**

RUs should ensure that any materials used to provide a cover for a load on a vehicle are safely attached either to the vehicle or to the load. These coverings should be made of materials that are suitable to cover the load in question taking in to account the forces that are liable to be experienced during the journey.

In case of a load already equipped with a covering, such as a semi-trailer, the RU should identify the hazards and the responsibilities in relation to the covering. This information should be shared with the contractors, partners and suppliers when they have a role in the loading process.

### **Dangerous goods**

In case of the transport of dangerous goods the appropriate legislation (the RID, Directive 2008/68/EC and the relevant national law) applies.

## **2.3. Links to existing legislation on risk assessment**

### **Fundamental operational principle**

---

<sup>6</sup> Further information can be found in the Guide for the application of TSI OPE, EN 15528 and the UIC Loading Guidelines



The fundamental operational principle most relevant to the activity of safety of loading is FOP 3:

### **FOP3: Before a train begins or continues its journey, it shall be ensured that passengers, staff and goods are carried safely.**

This principle concerns the train and its readiness for movement. It includes, as examples: the braking capacity of the train, the speed that the train is permitted to travel, the formation and coupling of the train, identification, loading and securing of freight, the provision of adequate information to train preparation and operational staff. The aim is to prevent collisions, derailments due to a number of risks.

## **Risk assessment**

The Safety management system operational process shall cover how the safety of the load will be ensured.

### **Requirement 5.1.3 of Regulation 2018/762 states:**

*To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:*

- (c) **preparation of trains or vehicles before movement**, including pre-departure checks and train composition;*
- (d) **running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency);***

Information from the output of the risk assessment should set out how, when preparing the train, the safety of the load is ensured before it commences its operation and secondly, that it will continue to be safe throughout the journey. It should include information for staff involved in train preparation or other staff including the driver. This information should form the basis of SMS processes, procedures and instructions for staff.

## **2.4. Safety requirements**

- The RU should make sure that vehicles are safely and securely loaded and remain so throughout the journey;
- All vehicles that are part of a train including their load — should be compatible with all the requirements applicable on the routes over which the train is planned to operate. This includes respecting the following:
  - the mass limit permitted by the infrastructure manager for the respective lines as part of the route where the train is intended to run;
  - the mass limit permitted by each vehicle of the train;
  - the vehicle-loading gauge permitted by the infrastructure manager for the respective lines as part of the route where the train is intended to run;
- All vehicles that are part of a train including their load should be technically operational taking into account the characteristics of the wagon, the load and the infrastructure and remain so throughout the journey.

## **2.5. EN Standard 16860**

EN 16860 “Railway applications - Requirements and general principles for securing payload in rail freight transport” describes the principles of cargo securing.

## **2.6. UIC Loading Guidelines – Code of Practice for Loading and Securing of goods on railway wagons – Volume 1 – Principles and Volume 2 – Goods**

The UIC Guidelines on the safety of load provides information that will help RUs in managing and controlling the risks by using the guidance.

Whilst this AMOC provides a presumption of conformity, RUs are always required under the applicable legislation to provide evidence in their own SMSs of the hazards that they have identified and how the risks are controlled.