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Annex 1 to APTU (Appendix F to COTIF 1999)

Technical Standards and Uniform Technical Prescriptions applicable to all vehicles and other railway material

GENERAL PROVISIONS

1 Scope

1.1 Applicability

The provisions included in this Annex are applicable to <u>all</u> types of railway vehicles and other railway material.

1.2 Content

This APTU Annex¹ contains general regulations which defines the rail system to which the APTU Annexes apply, its sub-systems, essential requirements, assessment procedures, transitional provisions, the requirements if a vehicle is renewed or upgraded, and other general provisions to maintenance (Maintenance File), the Technical File, identification and marking of railway vehicles, noise generated by railway vehicles, etc.

1.3 Other related regulations

Provisions set out in other APTU Annexes may take priority over certain provisions in this Annex, if this is specifically indicated in that other relevant APTU Annex.

2 Definitions and terminology

The definitions included in Article 2 of APTU and ATMF are valid for this Annex and its (sub)-Annexes. Additionally, in this Annex, its sub-annexes and in other APTU Annexes the term

- a) "ATMF" means Appendix G to COTIF 1999;
- b) "RID" means the "Regulations concerning the International Carriage of Dangerous Goods", Appendix C to COTIF 1999, (RID is also Annex to EU Council Directive 96/49/EC);
- c) "RIV" means the agreements between Railway Undertakings governing the exchange and use of wagons between railway undertakings (version 2000 as amended);
- d) "RIC" means the agreements between Railway Undertakings governing the exchange and use of passenger carriages between railway undertakings (version 2000 as amended);
- e) "COTIF rail system" means the railway system likely to carry international traffic in the Contracting States; the system is comprised of the rolling stock and the infrastructure, including traffic management, tracking, and navigation systems, technical installations for data processing and telecommunications intended for long-distance passenger services and freight services;
- f) "third country" means a State which is not a Contracting State;

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¹ This is a preliminary version of the APTU Annex which shall be revised and completed later.



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- "subsystems" means the result of the division of the COTIF rail system, as shown in Annex 1g) B. These subsystems, for which essential requirements must be laid down, are structural and functional;
- "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. The concept of a "constituent" covers both tangible objects and intangible objects such as software:
- "National Safety Authority" (NSA) means an administrative service responsible for technical approval of railway vehicles in accordance with the laws and regulations of each country;
- "suitable body" means an entity to which the competent approving authority has delegated powers according to Article 5 of ATMF; a "Notified Body" notified according to Article 20 of the EU Interoperability Directive is deemed to be considered as a "suitable body".
- "assessing entity" means the entity which assesses that the provisions of the applicable APTU Annexes and RID have been complied with; this entity can be the competent national approval authority itself or a "suitable body" appointed by the competent approval authority of a Contracting State according to Article 5 of ATMF;
- "contracting entity" means the legal person/company that orders a subsystem or his authorised representative;
- m) "manufacturer" means the manufacturer or for an application of a technical admission his authorised representative established within the Contracting State where he applies for technical admission;
- n) "upgrading" means any major modification work on a vehicle or railway material covered by ATMF which improves the overall performance of the vehicle or the railway material;
- o) "renewal" (renovation or refurbishment) means any major substitution work on a vehicle or railway material covered by this Annex which does not change the overall performance of the obiect:
- p) "maintenance-related replacements" means any replacement of components by parts of identical function and performance in the framework of preventive or corrective maintenance;
- "specific case" means any part of the rail system which needs special provisions in the APTU Annexes, either temporary or definitive, because of geographical, topographical or urban environment constraints or those affecting compatibility with the existing system. This may include in particular railway lines and networks isolated from the rest of the rail system, the loading gauge, the track gauge or space between the tracks and rolling stock strictly intended for local, regional or historical use, as well as rolling stock originating from or destined for third countries;
- "TSI" means the European Union Technical Specification for Interoperability for the trans-European conventional or high-speed rail system;
- "maintenance" means the activities, including inspections, tests and repair, necessary to keep the object in a shape fulfilling the requirements of legislation and possible conditions connected to its approval;
- "safety critical spare parts" and "safety critical maintenance processes" means those which may be of danger to the safety of traffic, workers or surroundings if they are not reliable parts or if they do not exist at all;
- u) "maintenance policy" means all actions relevant to the maintenance or restoration of a product to a specified state or such as it is able to provide a determined service on the whole life cycle (such as safety of circulation, reliability, availability, control of costs);
- "maintenance provisions" means the whole of the material and know-how necessary for the design, the realisation, the follow-up and the improvement of maintenance;
- w) "user railway undertaking" (Duty Holder) means any railway undertaking in whose trains or on whose installations the wagon is currently located; [Parked on Infrastructure?]

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x) "traffic safety" means the control of accident risks connected with the movement of trains and the limitation of their consequences.

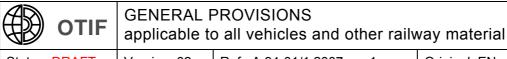
3 Transitional provisions

3.1 Existing vehicles

- 3.1.1 At the time of entry into force of this APTU Annex, a vehicle marked with RIV or RIC as proof of current compliance with the technical provisions of the agreements RIV 2000 (edition 01.07.2000, last amendment of 01.07.2006)² or RIC 2000 (edition 01.01.2001, last amendment of 11.12.2005) respectively, shall be considered admitted to operation on the networks of the Contracting States in accordance with its compatibility with the railway infrastructures (in respect of the markings on the wagon) for which it is admitted by one of the Contracting States. ³
- 3.1.2 Existing vehicles not marked RIV or RIC but, at the time of entry into force of this APTU Annex, admitted and marked according to bi- or multilateral agreements between two or more Contracting States or between Contracting States and other States and notified to the Organisation shall also be deemed to be admitted to operation on the networks covered by the agreement.
- 3.1.3 The transitional admission according to point 3.1.1 or 3.1.2 above is valid until the vehicle requires a new admission according to chapter 9.
- 3.1.4 The inscription RIV, RIC or the "grid" informing of the States where the vehicle is approved to run (see Annex 3-B and Annex 1-P), or another marking on the vehicle accepted by the Committee of Technical Experts, together with the data stored in the data bank indicated in Article 13 of ATMF, shall be considered as sufficient proof of the approval. Unauthorised changing of this marking shall be considered as fraud and shall be prosecuted according to national law.
- 3.1.5 Regardless of this transitional provision, the vehicle and its documentation shall comply with the provisions in force of the APTU Annexes concerning marking and maintenance and with RID.

Section 21.1 of RIV restricts the RIV marking to the case that the wagon is approved by the competent authority in accordance with the rules in force (at the time and place of approval) and that it complies with the TU and UIC standards. Section 31 contains provisions concerning maintenance (overhaul). Similar provisions are included in RIC.

Approval made by a railway undertaking whilst it was a contracting party to RIV or RIC is considered as an approval of the State in the case where there was no other authority with the responsibility for approving railway vehicles at the time of this railway undertaking approval.



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4 Subsystems

- 4.1 The production and cost efficient operation of trains throughout the OTIF Contracting States (the rail-system) requires in particular excellent compatibility between the characteristics of the infrastructure and those of the rolling stock, as well as efficient interconnection of the information and communication systems of the different infrastructure managers and operators. Performance levels, safety, quality of service and cost depend upon such compatibility and interconnection, as does, in particular, the interoperability of the rail system.
- 4.2 In view of the extent and complexity of the rail system, it has proved necessary, for practical reasons, to break this down into subsystems. For each of these subsystems the essential requirements must be specified and the technical specifications determined for the whole of the Community, particularly in respect of constituents and interfaces, in order to meet these essential requirements.
- **4.3** A list of subsystems is included in sub-Annex 1-B to this APTU Annex.

5 Interoperability constituents

- The APTU Annexes applies to interoperability constituents concerning their technical specifications and interfaces. However, the interoperability constituents need only be assessed separately to the extent necessary in order to confirm the compliance of the complete subsystem (the vehicle) with the regulations; e.g. in case of constituents which are hidden and cannot be assessed without disassembling the vehicle.
- 5.2 The issue of "declarations of conformity or suitability for use" for interoperability constituents is not mandatory unless prescribed in national regulations.
- 5.3 The provisions concerning "declarations of conformity or suitability for use" for interoperability constituents are set out in sub-Annex 1-F to this APTU Annex.
- A list of constituents considered as interoperability constituents included in a subsystem is contained in the APTU Annex applicable to the subsystem.

6 Essential requirements

- The essential requirements to be met in order to ensure the interoperability and safety of the COTIF rail system are set out in sub-Annex 1-A to this APTU Annex.
- The provisions set out in this and the other APTU Annexes, including the standards to which they refer, must implement these essential requirements relevant to the subject (subsystem), including its interfaces to other subjects.

7 Technical File

- 7.1 The technical properties of a vehicle must be specified in a document called the "Technical File". The document must contain the subjects as specified in sub-Annex 1-C to this APTU Annex.
- 7.2 The draft Technical File shall be drawn up by the entity who applies for a technical admission; it shall be signed by the designer/manufacturer of the vehicle or the type of vehicle in question and included in the application documentation for the technical admission.

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7.3 The assessing entity must check the Technical File, correct and supplement it with appropriate information in order that the file reflects the properties of the vehicle and the Technical File must be subsequently signed by the assessing entity.

As part of the admission documentation the Technical File in its approved form shall be annexed to the admission certificate – Design Type Certificate and/or Certificate of Operation (authorisation for placing in service) or unambiguously referred to in the Certificate. It shall form an integral part of the Certificate.

8 Assessments

- Assessments carried out to verify the compliance of a subsystem with the provisions of the APTU Annexes must, unless otherwise prescribed in the applicable APTU Annex or in RID, be carried out by the use of the assessment modules set out in sub-Annex 1-D to this APTU Annex
- **8.2** An assessing entity must comply with the requirements to qualifications and independency set out in sub-APTU Annex 1-E to this APTU Annex.

9 Renewed technical admission

According to Article 10 § 9 c) of ATMF, the admission to operation shall be suspended in case of non-compliance with ATMF and the prescriptions contained in the Annexes to the APTU Uniform Rules. This means that in case of renewal or updating the keeper may not place the vehicle into service before the admitting authority has checked that the wagon in its new condition meets the provisions of ATMF, the APTU Annexes including their (sub)-Annex(es) and RID. If this is not the case, the vehicle will need a new admission to operate ⁴.

10 Maintenance

This chapter will be completed when the ongoing discussions in the EU concerning the definition and role of the keeper including possible certification have been concluded.

NB The text of this chapter below with grey background is therefore <u>for information only</u> and NOT part of this APTU Annex.

10.1 General provisions to maintenance

10.1.1 According to ATMF Article 15, a railway vehicle and other railway material must be in a good state of maintenance in such a way that it complies with the provisions specified in the APTU Annexes and satisfies them permanently and that its condition would not in any way compromise operational safety, and in a way that it does no harm to the infrastructure, environment and public health by its circulation or use in international traffic.

To that end, it must be made available for and undergo the service, inspections and maintenance as prescribed below.

- 10.1.2 Maintenance (including inspections and repair) must be carried out in accordance with the
 - general provisions below,

specific provisions in the other relevant Annexes to APTU,

notified national regulations (APTU Article 12) concerning maintenance,

⁴ If the change is planned for a series of vehicles an admission of a type of construction may be useful.

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- provisions contained in RID,
- Maintenance File attached to the Certificate of Operation, and
- special conditions of an admission under ATMF Article 7 § 3.

If provisions concerning the same subject are contained in more than one of the above, priority shall be given to the provisions under the highest number in the list, provided this would not lower the level of safety.

10.1.3 Maintenance levels

[As specified in the document TSI-CR-RST-Report,]Maintenance actions are classified by level in relation to the improvements, volume and nature of work to be effected:

- The first level includes the actions of verification and monitoring before departure, in use or at the end of a trip. Some of these actions are done by the people in charge of the operations (drivers, other operational personnel) or dependant on automatic on-board or ground systems (hot axle-box detector...). The first level of maintenance is the responsibility of the duty holder (railway undertaking).
- The second level includes inspections, verifications, tests, rapid exchanges of replaceable parts and preventive operations of limited duration carried out between two programmed trips on any adequate track, or on secondary sites listed with the RU.
- The third level corresponds to the operations carried out in establishments specialised in maintenance. It includes preventive maintenance and the planned exchange of parts. The wagon is not in use during this level of maintenance. The substance of the work carried out at this level is that specified in the vehicle's maintenance file, as transmitted by the keeper.
- The fourth level comprises the major maintenance operations, generally described as "over-hauling" (modular sub-systems or complete vehicle). The work effected at this level may include the work relating to work listed previously.
- The fifth level includes transformations or heavy repairs necessitating design work.

10.2 Responsibility for maintenance

- 10.2.1 The keeper of a vehicle or a piece of railway material is responsible for its maintenance and the quality thereof, and for ensuring that the maintenance work is undertaken by the dates due.
- The keeper's responsibility cannot be delegated, but the keeper may outsource some of the tasks provided that a legal written contract is concluded and that the keeper supervises that the tasks are carried out, on time and having the correct quality; the contract must include requirements concerning the qualifications of the staff performing work, the quality of the work and the safety critical spare parts to be used, the necessary tests to be performed and the documentation. Some tasks can only be outsourced to contractors who are certified or accredited as specified below or in other relevant Annexes to APTU.
- 10.2.3 A single workshop must be main responsible for the maintenance of a vehicle. Other entities performing maintenance activities must be agreed in writing with this workshop and report to it.
- In order that the keeper can assume this responsibility, all users, be they RUs, fleet managers, loaders, un-loaders, etc., must immediately report to the keeper any damage or wear/use which makes maintenance necessary. This includes mileage (km or ton-km) for objects where this is a criterion for the maintenance.
- 10.2.5 The keeper must furnish proof to user railway undertakings on request that the maintenance of his vehicles complies with the legislation in force.



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10.2.6 The keeper must allow the railway undertakings to conduct any inspections on vehicles that may be necessary, in particular those referred to in [Appendix 9 to the GCU].

10.3 Maintenance File

The Maintenance File is composed of:

The **Maintenance Design Justification File,** which shall contain descriptions of the methods used to design the maintenance; descriptions of the tests, investigations, calculations carried out in the design, the relevant data used for this purpose. The body responsible for the foregoing shall be indicated in the file.

This file shall contain:

- A description of the organisation in charge of the design of the maintenance.
- Precedents, principles and methods used to design the maintenance of the vehicle.
- Utilisation profile (Limits of the normal utilisation of the vehicle ((ton)-km/month, climatic limits, authorised types of loads...) taken into account for the design of the maintenance).
- o Tests, investigations, calculations carried out.
- Relevant data used to design the maintenance and origin of these data (return of experience, tests...).
- Responsibility and traceability of the design process (name, skills and position of the author and approver of each document).

and

10.3.2 The **Maintenance Documentation** which shall contain all detailed instructions and documents necessary to plan and carry out the maintenance of the vehicle, including specifications of inspection and overhaul activities, criteria for their frequency, the means, methodology and quality.

The maintenance documentation shall be composed of the following;

a) Organic/functional description (breakdown structure)

The breakdown structure sets up the borders of the freight wagon by listing all the items belonging to the structure of that freight wagon and using an appropriate number of discrete levels to distinguish the relationships existing between different areas of the rolling stock. The last item identified along a branch shall be a Replaceable Unit.

b) Parts List

Containing the technical descriptions of the spare parts (replaceable units), in order to allow identification and procurement of the correct spares.

c) Safety/interoperability-relevant limits

For the safety/interoperability relevant components or parts, this document shall give the measurable limits not to be exceeded in service (to include operation in degraded mode).

d) Legal obligations



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Some components or systems are subject to legal obligations (for instance brakes reservoirs, dangerous goods tanks ...). These obligations shall be listed.

e) Maintenance plan

- List, schedule and criteria of planned preventative maintenance operations,
- List and criteria of conditional preventative maintenance operations,
- List of foreseeable corrective maintenance operations,
- Maintenance operations governed by specific conditions of use.

The level of the maintenance operations shall be described. Maintenance tasks to be carried out by the Railway Undertaking (servicing, inspections, brake tests, etc...) shall also be described.

Note: Some maintenance operations such as overhauls (level 4) and refurbishment, transformation or very heavy repairs (level 5) may not be defined at the moment when the vehicle is put into service. In this case, the responsibility and the procedures to define such maintenance operations shall be described.

Maintenance manuals and leaflets

For each maintenance operation listed in the maintenance plan, the manual explains the list of the tasks to be carried out.

Some maintenance tasks may be common to different operations or common to different vehicles. These tasks are explained in specific maintenance leaflets.

The manuals and leaflets shall contain the following information:

- Specific tools and facilities
- Standardised or statutory specific staff competencies required (welding, non destructive testing...)
- General requirements relative to mechanical, electrical, fabrication and other engineering competencies (basic, specific and in-service education and training)
- Occupational and operational health and safety provisions (including, but not limited to applicable legislation appertaining to the controlled use of substances hazardous to health and safety)
- Environmental provisions
- Details of the task to be carried out as a minimum:
 - ⇒ Disassembly/assembly instructions
 - ⇒ Maintenance criteria
 - ⇒ Checks and tests
 - ⇒ Parts required to undertake the task
 - Consumables required to undertake the task
- Tests and procedures to be undertaken after each maintenance operation before reentering service.
- Requirements concerning traceability and records.
- Troubleshooting (fault diagnosis) manual

Including functional and schematic diagrams of the systems.

10.3.3 A Maintenance File may be common to series (types) of vehicles.



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10.3.4 The draft Maintenance File shall be drawn up by the entity who applies for a technical admission; it shall be signed by the designer/manufacturer of the vehicle or of the type of vehicle in question and included in the application documentation for the technical admission. As part of the admission documentation the Maintenance File in its approved form shall be annexed to the admission certificate – Design Type Certificate and/or Operating Certificate (authorisation for placing in service) or unambiguously referred to in the Certificate.

- 10.3.5 A Maintenance File may only be amended by the authority that has carried out the technical admission of which the Maintenance Plan is part.
- 10.3.6 A keeper may request an adjustment to the Maintenance File if the proven safety performance of the object over a sufficient period, mileage and climatic conditions, etc., concerning the relevant parameters, is demonstrated through operation to be better than the level set in the existing Maintenance File.
- 10.3.7 Conversely to the provision in 1.7.3.6, the requirements in a Maintenance File must be made more stringent, if the safety performance of the object does not achieve the level intended or if the use, especially concerning a higher intensity of use or a rougher climate, differs from the Utilisation profile in the Maintenance Design Justification File. If this is the case, the keeper of the object must on his own initiative and without delay inform the admitting authority.
- The keeper of a vehicle or a piece of railway material approved according to the transitional provision in 1.3.1 must for each vehicle type ensure that the Maintenance Documentation according to 1.8.3.2 is composed from retrievable documentation; the Parts List (1.8.3.2 b)) and the Maintenance Plan (1.8.3.2 e)) are mandatory.
- The keeper must ensure that the (internal) procedures and instructions used by the entity performing maintenance (e.g. the workshop) are adapted to the provisions of this APTU Annex, especially those that are/will be included in the Maintenance Plan and its Manuals and Leaflets specific to the (type of) vehicle according to 1.8.3.8 e) above.
- 10.3.10 For each individual vehicle the keeper must set up and follow a plan for the maintenance activities to be performed on it.

10.4 Maintenance record file

- 10.4.1 The keeper shall ensure processes are in place to manage the maintenance and operational integrity of the Rolling Stock, including:
 - Information in the Rolling Stock Register,
 - Asset Management, including records of all Maintenance undertaken and due on the Rolling Stock (which shall be subject to specified time periods for differing levels of archive storage).
 - Software where relevant.
 - Procedures for the receipt and processing of specific information related to the operational integrity of Rolling Stock, arising as a result from any circumstance including but not limited to operational or Maintenance incidents that have a potential to affect the safety integrity of Rolling Stock.
 - Procedures for the identification, generation and dissemination of specific information related to the operational integrity of Rolling Stock, arising as a result from any circumstance including but not limited to operational or Maintenance incidents, with a potential to affect the safety integrity of Rolling Stock, and which is identified during any Maintenance activity.



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- Operational duty profiles of Rolling Stock. (including, but not limited to Ton-kilometres and total kilometres).
- Processes for the protection and validation of such systems.
- The keeper of a vehicle or a piece of railway material must store information required by 1.8.4.1 in a Maintenance Record File in order to demonstrate the operating history and the inspections and maintenance operations that have been carried out upon it. The Maintenance Record File must also contain information on the traceability of safety critical components.
- 10.4.3 The Maintenance Record File must at least contain information on
 - when the object was delivered from the manufacturer and when it entered into service;
 - where (networks) the object has been running (climate, very bad tracks, etc.);
 - in case of a performance (run) based maintenance programme, the mileage (km or ton-km), minimum by the end of each month;
 - when the object has been taken out of and re-entered service a list indicating date/time and place;
 - inspections carried out a list indicating date, place, responsible company and unit/inspector;
 - maintenance work carried out a list indicating the category5, the description of maintenance work and/or components concerned, date, place, responsible company, unit/operative worker;
 - tests carried out (before re-entering service) a list indicating date, place, responsible company and unit/tester;
 - next inspection due, date (or month), allowed excess, type (overhaul-category)
 - replacement of safety critical parts a list indicating the traceability, including old and new spare parts' serial number, the supplier of the new part and certificates/test performed tests on it;
 - accidents/incidents in which the vehicle/material has been involved, with indication of date, place, type of accident/incident and damage to the object; in addition the cause if established.
 - Information in the Rolling Stock Register,
 - Change of software, where relevant.
- 10.4.4 The Maintenance Record File must be kept continuously up to date.

10.5 Change of keeper

10.5.1 The Technical File, the Maintenance Plan, all (additional) detailed instructions for maintenance and operations used by former keeper(s), and the Maintenance Record File must, without delay, be handed over to the new keeper in case of a change of keeper.

10.6 Spare parts

10.6.1 Spare parts must in general be of the same type as the original or equally good substitutes according to the requirements.

10.6.2 Safety critical spare parts may only be substituted by parts as indicated in the Technical File and/or Maintenance File. Only spare parts delivered from an accredited supplier may be used.

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⁵ See list of categories in



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- 10.6.3 If no list of safety critical spare parts exists e.g. for old vehicles admitted according to transitional provisions spare parts listed below are considered as critical:
 - Wheels and Axles
 - Axle boxes and Bearings (including lubrication)
 - Bogies
 - Springs
 - Suspension Components
 - Draw gear
 - Buffers
 - Brake Equipment
 - Equipment for command control systems
 - High tension electric equipment
 - Head and tail lights and acoustic alarms
 - Fire alarms, systems and devices for fire fighting
 - Safety valves and pressure measuring equipment
 - Software, which relates to one or more of the items above.

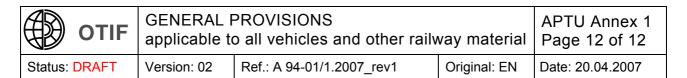
Other equipments shall be considered as safety critical if a failure of it may lead to a major safety risk.

10.7 General provisions concerning qualifications for performing maintenance

- 10.7.1 Specific provisions included in the Maintenance File on a subject shall take priority over the general provisions in this section.
- 10.7.2 Any person performing maintenance must have the necessary qualifications to do so, i.e. he shall have received appropriate education, instruction and training. The qualifications must be kept up to date.
- A log of the staff qualifications must be kept by the employer and kept up to date; it must be available for inspection. The employee must be entitled to a verified personal copy.
- Spot checks of the theoretical qualifications and skills must be made at regular intervals; the checks must be documented, including the results, and entered into the log.
- 10.7.5 Instruction manuals must be available to the persons performing maintenance; they must be kept up to date.
- Maintenance manuals and leaflets must be subject to a document management system, securing that the correct, updated information is available to the staff and at the places where the work concerned is performed.
- 10.7.7 The tools used must be in accordance with the Maintenance Documentation and must currently be correctly calibrated.

10.8 Accreditation for maintenance

10.8.1 If a RU performs the function of keeper, the safety certification of the RU must include the railway undertaking's keeper function. The Safety Certificate shall then be considered as an accreditation of the RU's keeper function.



10.8.2 A keeper that is not a RU must hold a valid accreditation.

The 4 following points: see proposals from UIP.

- 10.8.3 Accreditation of a workshop
- 10.8.4 Accreditation of a supplier of safety critical spare parts.
- 10.8.5 Accreditations of auditors
- 10.8.6 Rules for accreditation

10.9 Maintenance reports and audits

10.9.1 All certified or accredited entities performing maintenance must produce an annual report of its activities and it must be subject to audits at regular intervals.

Further regulations: see proposal from UIP

11 Identification and marking of railway vehicles

See sub-Annex 1-P.

Remark: This sub-Annex may be renamed to be a sub-Annex of APTU Annex Operation once that APTU Annex has been adopted.

12 Noise generated by railway vehicles

See sub-Annex 1-N

(End of document)