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Foreword

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Introduction

Several of the terms used in the field of railway rolling stock maintenance have had different meanings in different languages and at different periods in history. This document intends to standardize the definitions of railway rolling stock maintenance terms for clear future use in the industry.

Railway applications — Rolling stock maintenance — Vocabulary

1 Scope

This document defines common terms used in railway rolling stock maintenance.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 General terms

3.1.1
maintenance system
complete set of technical, organisational and other specifications for fulfilment of the vehicle maintenance to ensure that the vehicles which are maintained are in a safe state of running

3.1.2
maintenance file
structured collection of all required documents or data for the maintenance of an *entity treated* (3.1.13)

3.1.3
maintenance manual
compiled set of information for the maintenance of an *entity treated* (3.1.13)

Note 1 to entry: The maintenance manual is part of the maintenance file.

3.1.4
maintenance plan
railway vehicle or component based structured document containing a set of planned maintenance activities and their *maintenance interval limits* (3.2.1) based upon information in the maintenance manual

Note 1 to entry: The assignment of the *maintenance activity* (3.4.3) to *maintenance steps* (3.4.4) is optional.

3.1.5
step frequency table
document, as part of a maintenance plan, assigning *maintenance interval limits* (3.2.1) and their sequence to planned maintenance activities

Note 1 to entry: For an example of a step frequency table, see Annex A.

Note 2 to entry: *Maintenance activities* (3.4.3) may be grouped into *maintenance steps* (3.4.4).

3.1.6
periodicity table
document, as part of a maintenance plan, with all planned maintenance activities to be performed on an *entity treated* (3.1.13)

Note 1 to entry: For an example of a periodicity table, see Annex B.

Note 2 to entry: *Maintenance activities* (3.4.3) may be grouped into *maintenance steps* (3.4.4).

Note 3 to entry: This term is sometimes referred to as a star chart.

3.1.7
unplanned maintenance activity
maintenance activity not foreseen in the maintenance plan

Note 1 to entry: This term is sometimes referred to as an unscheduled *maintenance activity* (3.4.3).

3.1.8
work arising
work to be done as a result of findings of deviations from the *target condition* (3.3.4) during maintenance activities

3.1.9
deferred work
maintenance task (3.4.2) not carried out

Note 1 to entry: Maintenance tasks can only be deferred, if the safe state of running of a vehicle is not affected. This may require a temporary restriction of use.

3.1.10
vehicle file
collection of documents containing evidence to prove that the maintenance has been performed in accordance with the maintenance plan information on the vehicle configuration and other vehicle specific information

Note 1 to entry: There may be an individual file per vehicle.

Note 2 to entry: Beside the vehicle file, there may be a file for individual components e.g. wheelset.

3.1.11
verification
confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

Note 1 to entry: The term "verified" is used to designate the corresponding status.

Note 2 to entry: Design verification is the application of tests and appraisals to assess conformity of a design to the specified requirement.

Note 3 to entry: Verification is conducted at various life cycle phases of development, examining the system and its constituents to determine conformity to the requirements specified at the beginning of that life cycle phase.

[SOURCE: IEC 60050-192:2015, 192-01-17, modified — Note 3 to entry has been modified.]

3.1.12
validation
confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled

Note 1 to entry: The term "validated" is used to designate the corresponding status.

Note 2 to entry: The use conditions for validation can be real or simulated.

Note 3 to entry: In design and development, validation concerns the process of examining an item to determine conformity with user needs.

[SOURCE: IEC 60050-192:2015, 192-01-18, modified — Notes 4 and 5 to entry have been deleted.]

3.1.13
entity treated
part, component, device, subsystem, functional unit, object, system or vehicle including hardware and/or software that can be individually described and considered

3.2 Terms related to limit values

3.2.1
maintenance interval limit
maximum period for a particular *maintenance activity* (3.4.3) or *maintenance step* (3.4.4) consisting of an appropriate value and a suitable unit of measurement

Note 1 to entry: The maintenance interval limit includes all possible tolerances, e.g. for planning purposes.

3.2.2
maintenance limit value
maximum or minimum value not to be exceeded after maintenance has been carried out

Note 1 to entry: For an illustration of maintenance limit value, see Annex C.

Note 2 to entry: It may also be a criteria (e.g. surface condition) or a tolerance (e.g. defined minimum and maximum value).

3.2.3
service limit value
maximum or minimum value not to be exceeded in service

Note 1 to entry: For an illustration of service limit value, see Annex C.

Note 2 to entry: It may also be a criterion (e.g. surface condition) or a tolerance (e.g. defined minimum and maximum value).

3.2.4
potential limit of use
limit of use expressed in cycles, time, distance defined for a component or part in order to keep reliability at an acceptable level during the life time

3.3 Terms related to configuration management and condition

3.3.1
current configuration of a vehicle
record to enable traceability of parts, components or software actually on a specific vehicle

Note 1 to entry: The requirements for the traceability are defined in the *maintenance file* (3.1.2).

Note 2 to entry: If required, the serial number should be recorded.

3.3.2
target configuration of a vehicle
specification of the parts, components or software permitted on a vehicle

3.3.3
current condition
present state of an entity treated

3.3.4
target condition
defined state of an entity treated to be achieved following maintenance

Note 1 to entry: This may be specified in terms of dimension and quality criteria.

3.4 Terms related to elements of maintenance plans

3.4.1
work instruction
detailed description created for the maintenance delivery on how to carry out *maintenance task* (3.4.2)

Note 1 to entry: A work instruction is produced, if necessary, by the maintenance delivery considering available facilities.

Note 2 to entry: This term is sometimes referred to as a maintenance procedure.

3.4.2
maintenance task
description of work within the delivery of maintenance which contains information on the work to be done, quality criteria, special tools and useful information required to perform the work

Note 1 to entry: Terms related to writing of maintenance tasks are given in 3.6.

3.4.3
maintenance activity
collection of maintenance tasks to be carried out on an entity treated which contains maintenance limit values, quality criteria and information necessary to define the activity

3.4.4
maintenance step
collection of maintenance activities that are planned as a group and are to be carried out at the same maintenance interval limit

3.5 Terms related to documentation of maintenance delivery

3.5.1
maintenance record
true, accurate and retrievable documentation of the maintenance ordered and performed

Note 1 to entry: Maintenance records are also comprising proofs of maintenance.

3.5.2
maintenance order
information that defines the scope of work for the maintenance delivery

3.5.3
maintenance order file
collection of all documents and data in relation to the maintenance order

3.5.4
maintenance order report
summary of documents and data from the maintenance order file required by the fleet maintenance management of the vehicle, for example, for the return to operation

3.5.5
maintenance work order
allocation of maintenance work to staff

3.6 Terms related to writing of maintenance tasks

3.6.1
assemble
put parts or components together

3.6.2
change
replace
remove a part or component and mount a new, *repaired* (3.6.8) or checked part or component with the same characteristics

3.6.3
disassemble
separate into parts or components

3.6.4
discard
take action to ensure that an *entity treated* (3.1.13) is withdrawn permanently from service

3.6.5
mount
fit
install individual parts or components in an *entity treated* (3.1.13)

3.6.6
put back
return an *entity treated* (3.1.13) to its original position without any other attention

3.6.7
renew
remove then *discard* (3.6.4) a part or component, and replace it with a new part or component with the same characteristics in the same place

3.6.8
repair
perform physical action taken to restore the required function of an *entity treated* (3.1.13) either in position or removed

Annex A
(informative)

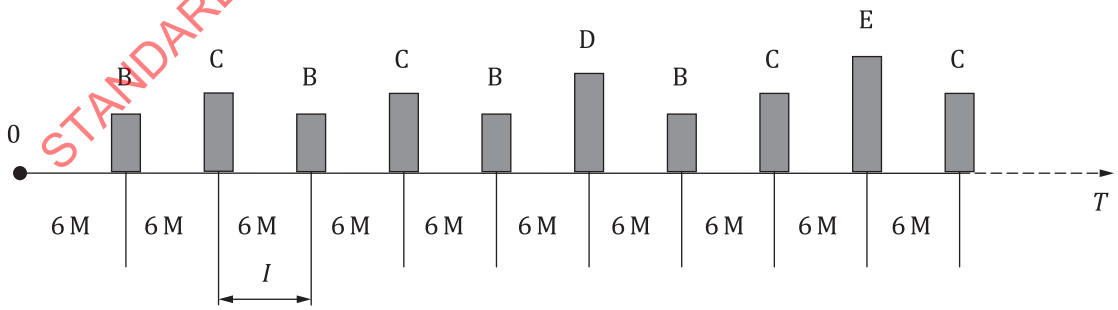
Example of a step frequency table

Table A.1 shows an example of a step frequency table in tabular form and Figure A.1 provides its graphical representation.

NOTE For the definition of step frequency table, refer to 3.1.5.

Table A.1 — Example of a step frequency table

Calendar year *Y*	Calendar month *M*	Maintenance step *S*
1	6	B
	12	C
2	18	B
	24	C
3	30	B
	36	D
4	42	B
	48	C
5	54	E
	60	C
6	66	B
	72	F
7	78	B
	84	C
8	90	B
	96	C
9	102	B
	108	G



Key

0	start of the maintenance plan (see 3.1.4)	*I*	maintenance interval limit (see 3.2.1)
B, C, D, E	maintenance step (see 3.4.4) examples	*T*	time

Figure A.1 — Illustration of the step frequency table in months

Annex B
(informative)

Example of a periodicity table

Table B.1 shows an example of a list of maintenance activities for an air compressor.

NOTE For the definition of periodicity table, refer to 3.1.6.

Table B.1 — Example of a periodicity table

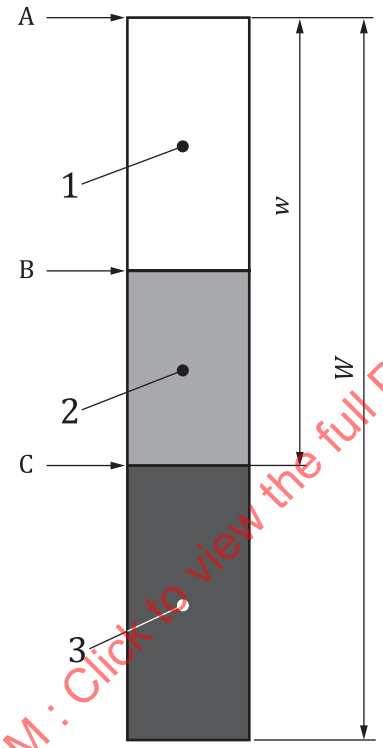
No.	Maintenance activity	Maintenance step					
		B	C	D	E	F	G
AC01	Air compressor intercooler safety valve - change					X	X
AC02	Air compressor oil level and drive shaft guard - check	X	X	X	X	X	X
AC03	Air compressor air filter element - renew	X		X		X	
AC04	Air compressor filter and oil - change			X	X	X	X
AC05	Air compressor and drive shaft coupling - renew						X
AC06	Air compressor leakage - check	X	X	X	X	X	X

Annex C
(informative)

Maintenance limit value and service limit value

Figure C.1 illustrates the terms maintenance limit value and service limit value.

NOTE For the definitions of maintenance limit value and service limit value, refer to 3.2.2 and 3.2.3, respectively.



Key

A new item
B maintenance limit value (3.2.2)
C service limit value (3.2.3) (wear limit)
w permitted wear
W wear
1 no specific action required on the entity treated (3.1.13) during maintenance
2 action(s) on the entity treated (3.1.13) required before the service limit value is exceeded
3 immediate action(s) required on entity treated (3.1.13)

Figure C.1 — Illustration of maintenance limit value and service limit value