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Rail Industry Standard

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NDT Processes on Rail Vehicles

This document sets out requirements and gives guidance for processes and the certification of operatives, equipment, and facilities used to undertake non-destructive testing (NDT) on components on rail vehicles.

NDT Processes on Rail Vehicles

Synopsis

This document sets out requirements and gives guidance for processes and the certification of operatives, equipment, and facilities used to undertake non-destructive testing (NDT) on components on rail vehicles.

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Revisions have not been marked by a vertical black line in this issue because the document has been revised throughout.

Superseded documents

The following Railway Group documents are superseded, either in whole or in part as indicated:

Superseded documents	Sections superseded	Date when sections are superseded
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Supply

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Part 1 Purpose and Introduction

1.1 Purpose

- 1.1.1 This document is a Railway Industry Standard that sets out requirements for non-destructive testing (NDT) processes used on GB main line rail vehicles.
- 1.1.2 This document sets out requirements, and gives guidance, for the certification of operatives, equipment, and facilities used to undertake NDT on components on rail vehicles.
- 1.1.3 This document also provides requirements and guidance on introducing new methods.
- 1.1.4 Some requirements in this document are specific to ultrasonic axle testing and may not be relevant to other forms of NDT, such as dye penetrant testing. An assessment may be undertaken to determine which requirements apply to other methods.
- 1.1.5 This standard is targeted at individuals and organisations that undertake NDT on railway vehicles, NDT operative training, preparation of NDT procedures, and validate and authorise NDT procedures, equipment and facilities. It is also aimed at organisations that own, operate, or maintain rolling stock that requires NDT to be performed on it.

1.2 Application of this document

- 1.2.1 Compliance requirements and dates have not been specified because these are the subject of internal procedures or contract conditions.
- 1.2.2 If you plan to do something that does not comply with a requirement in this document, you can ask a standards committee to comment on your proposed alternative. If you want a Standards Committee to do this, please submit your deviation application form to RSSB. You can find advice and guidance on using alternative requirements on RSSB's website www.rssb.co.uk.

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1.4 Structure of this document

- 1.4.1 This document sets out a series of requirements that are sequentially numbered. This document also sets out the rationale for the requirement, explaining why the requirement is needed and its purpose and, where relevant, guidance to support the requirement. The rationale and the guidance are prefixed by the letter 'G'.
- 1.4.2 Some subjects do not have specific requirements but the subject is addressed through guidance only and, where this is the case, it is distinguished under a heading of 'Guidance' and is prefixed by the letter 'G'.

1.5 Approval and authorisation of this document

- 1.5.1 The content of this document will be approved by Rolling Stock Standards Committee (RST SC) on [18 April 2024] [proposed].
- 1.5.2 This document will be authorised by RSSB on [24 April 2024] [proposed].

Part 2 NDT Procedures

2.1 Approval and use of NDT procedures

2.1.1 NDT of rail vehicle components

- 2.1.1.1 All NDT of rail vehicle components shall be in accordance with an approved NDT procedure.
- 2.1.1.2 The components to be tested, the defect levels to be detected, and the rejection criteria shall be defined.
- 2.1.1.3 An analysis shall be undertaken to determine the minimum detectable defect size required by the NDT procedure.
- 2.1.1.4 The analysis shall take into account the frequency of inspection and the expected stress levels in the component being tested.
- 2.1.1.5 Any limitations of the methods to be used shall also be identified.

Rationale

- G 2.1.1.6 Non-destructive testing is typically performed on safety critical components. Using an approved procedure helps to ensure continued safe use of these components.

2.1.2 Requirements for NDT procedures

- 2.1.2.1 NDT procedures shall be prepared by personnel who are certified to Level 2 or Level 3 in the appropriate method, in accordance with BS EN ISO 9712:2022 or SNT-TC-1A:2020.
- 2.1.2.2 NDT procedures shall include, as a minimum, the following:
 - a) Scope;
 - b) Definitions;
 - c) References;
 - d) Health and safety information and associated precautions;
 - e) Personnel requirements;
 - f) Equipment requirements;
 - g) Equipment control calibration;
 - h) Surface preparation method, if applicable;
 - i) Method of testing;
 - j) Acceptance criteria;
 - k) Reporting;
 - l) Post-test cleaning and control of residual effect, including, for example, demagnetisation; and
 - m) Post-test surface protection.
- 2.1.2.3 Additional content for the procedure may be necessary depending on the process or method being applied.

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Rationale

- G 2.1.2.4 The listed contents represent good practice for the completeness of NDT procedures.

Guidance

- G 2.1.2.5 An explanation of the various levels of qualification is set out in [4.1](#).
- G 2.1.2.6 NDT procedures are typically prepared by Level 3 persons.
- G 2.1.2.7 Written NDT instructions may be prepared by Level 2 persons.
- G 2.1.2.8 RIS-2766-RST sets out requirements for the non-destructive-testing of wheelsets, specifically for axles.

2.1.3 Validation of NDT procedures

- 2.1.3.1 The person, or persons, validating and approving the NDT procedure shall not be the author of the procedure.
- 2.1.3.2 Validation and approval of the NDT procedure shall be performed by personnel certified to Level 3 in the proposed NDT method, as set out in BS EN ISO 9712:2022 or SNT-TC-1A:2020.

Rationale

- G 2.1.3.3 Non-destructive testing is typically performed on safety critical components following a process prepared, validated, and approved by suitably certified and competent persons, that helps to ensure consistency and safety.
- G 2.1.3.4 It is good practice for formal procedures and processes to be validated and approved by experts who are independent of the authoring process.

Guidance

- G 2.1.3.5 It is considered that the NDT procedures are more robust if they are validated and approved by personnel in accordance with auditable procedures that incorporate the guidance given in [2.1.4](#) and [2.1.5](#).
- G 2.1.3.6 An explanation of the various levels of qualification is set out in [4.1](#).

2.1.4 Validation process

- 2.1.4.1 A validation process of the NDT method, or methods, shall be undertaken to determine that the defect sizes specified can be detected in the areas defined using the documented NDT procedure.
- 2.1.4.2 The validation process shall be undertaken using the equipment, facilities and methods defined in the NDT procedure on a full-size representative test piece.

Rationale

- G 2.1.4.3 It is important that the process described in the NDT procedure can identify the defects that it is intended to.

Guidance

- G 2.1.4.4 The validation of ultrasonic axle testing procedures uses a full-size test piece that includes all components being fitted that have an effect on the ultrasonic signals, such as wheels, gear wheels and axle mounted brake discs.
- G 2.1.4.5 Where an NDT procedure uses an earlier procedure as its basis, the validation can be restricted solely to the technical justification of the effects of the changes made from the original procedure. It is good practice to formally document the evidence used and retain it for future scrutiny.
-

2.1.5 Endorsement of procedures

- 2.1.5.1 The validated NDT procedure shall be endorsed to state that it has been approved by a member of staff certified to Level 3 in the appropriate NDT method.

Rationale

- G 2.1.5.2 It is good practice for formal procedures and processes to be validated and approved by experts who are independent of the authoring process. This endorsement of the document gives assurance that due process has been followed in validating and approving the procedure.

Guidance

- G 2.1.5.3 An explanation of the various levels of qualification is set out in [4.1](#).
- G 2.1.5.4 Where the process, or method, is covered by BS EN ISO 9712:2022 or SNT-TC-1A:2020, then the approval of the procedure is conducted by a person certified to Level 3 in the same method.
- G 2.1.5.5 The UK manual ultrasonic axle testing (UAT) process is approved by a person certified to personnel certification in non-destructive testing (PCN) Level 3.
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2.2 Approval of new NDT methods

2.2.1 Approval

- 2.2.1.1 New NDT methods shall be approved by a member of staff certified to Level 3 in a similar NDT method.
- 2.2.1.2 NDT equipment specified for use shall be capable of resolving all required defects present within approved test samples, and or reference standards listed for use within the applied written NDT instruction.
- 2.2.1.3 The equipment shall identify defects of the specified size in a full-size representative test piece.
- 2.2.1.4 The equipment shall be evaluated on components that are in a condition in which the test will routinely be applied.
- 2.2.1.5 All limiting conditions of the component being tested that restrict the application of the new method and achievement of identifying the declared defects shall be defined.
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- 2.2.1.6 The materials to which the method is to be applied shall be identified.
- 2.2.1.7 Limitations associated with the conditions or surface coatings of the materials to which the method is applied shall be declared.

Rationale

- G 2.2.1.8 NDT is typically applied to safety critical components. It is important that the method described can identify the defects that it is intended to.

Guidance

- G 2.2.1.9 An explanation of the various levels of qualification is set out in [4.1](#).
-

2.2.2 Demonstration

- 2.2.2.1 The new NDT test system shall, by means of a practical demonstration, be proven to identify a defect of known dimensions introduced into a component previously confirmed using a proven, existing NDT method.
- 2.2.2.2 Blind trials shall be undertaken to identify defects in component parts that have previously been rejected by a proven method.
- 2.2.2.3 Where the new method has greater sensitivity than the comparison method, then all defects identified by the comparison method shall be detectable by the new method.

Rationale

- G 2.2.2.4 The demonstration is a practical exercise to confirm that the new method can detect the size of defect as intended.

Guidance

- G 2.2.2.5 It is good practice to undertake the demonstration in a suitable facility or environment representative of the intended application.
-

2.2.3 Repeatability and probability

- 2.2.3.1 The process, or method, shall have a declared probability of detection (POD) taking into account all potential variables.
- 2.2.3.2 Blind trials shall be undertaken to compare the POD of the new method with that of an established one.
- 2.2.3.3 Where a POD is claimed that is greater than the comparison method, a different method shall be used to verify defects that have been identified by the new method that the comparison method has not identified.

Rationale

- G 2.2.3.4 These requirements determine the consistency in the detection of defects between the new method and another existing, proven method.

Guidance

- G 2.2.3.5 The declared POD is used to determine inspection intervals.
- G 2.2.3.6 It is good practice to consider and assess the following factors for their potential effect on the POD - this list is not exhaustive:
- a) Different periods of use
 - b) Different operatives
 - c) Locations
 - d) Orientation of application
 - e) Variation in the components, and
 - f) Environmental conditions within the declared limitations of the method.
- G 2.2.3.7 The blind trials in [2.2.3.2](#) may be combined with those of [2.2.2.2](#).
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2.2.4 Calibration and ease of use

- 2.2.4.1 The setting up of NDT equipment shall be in accordance with the NDT equipment manufacturers instructions.
- 2.2.4.2 Calibration processes for the equipment shall be defined, and clearly identified, within the NDT written instruction and easily applied by the operative.
- 2.2.4.3 The indications of defects and results of tests shall be clearly presented and easy to interpret.
- 2.2.4.4 Where the test results are presented in a form that does not require interpretation, the output shall clearly specify the results.
- 2.2.4.5 Where the operative is required to interpret the test results, instructions shall be provided that are clear and have the necessary detail to permit the operative to interpret the results correctly.
- 2.2.4.6 The operative's knowledge and skills required to successfully operate the system shall be commensurate with those required for existing NDT methods.

Rationale

- G 2.2.4.7 Calibration of equipment gives assurance of dependable results, but the effectiveness of the calibration may depend on the ease of the calibration process.

Guidance

- G 2.2.4.8 The application of the process and analysis of outputs may be affected by human factors, such as, ease of use, risk of fatigue, and ease of interpretation of results.
- G 2.2.4.9 See [4.1](#) for the qualification levels required by NDT operatives.
- G 2.2.4.10 It is good practice to ensure that the skills and knowledge required by an operative to perform the new NDT method are at the same level as those for existing NDT methods.
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2.2.5 **Materials**

- 2.2.5.1 Where materials are used that have the potential to be hazardous, then suitable warnings and protection shall be identified.
- 2.2.5.2 Information on the presence and location of hazardous materials shall be made available to all operatives.

Rationale

- G 2.2.5.3 Operatives need to be protected from harmful substances and materials while performing NDT processes in-line with the employers' responsibilities under the Health and Safety at Work Act.

Guidance

- G 2.2.5.4 Suitable warnings and protection means identifying the materials in an appropriate manner to the operative, their employer, and other personnel nearby on site. If the NDT service is mobile and visiting the location, this means through relevant paperwork or signage, and the provision of suitable personal protective equipment (PPE).
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2.2.6 **Report**

- 2.2.6.1 The results from the demonstrations and trials shall be written up in a report.
- 2.2.6.2 The report shall document the evidence gathered during the demonstrations and trials.
- 2.2.6.3 The report shall contain sufficient information, data, results, and analysis to be able to determine the suitability of the new method.
- 2.2.6.4 The report shall be approved by a competent person.

Rationale

- G 2.2.6.5 The report provides a record and evidence of the integrity of the method.

Guidance

- G 2.2.6.6 If the competent person is not able to satisfy themselves as to the fitness for purpose of the new method they may request further information, or evidence, from the submitter.
 - G 2.2.6.7 A competent person, for the purposes of this requirement, may be considered to be a member of staff certified to Level 3 in a similar NDT method.
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2.3 **Use of new NDT methods**

2.3.1 **Training and certification of operatives**

- 2.3.1.1 There shall be training and certification programmes for operatives specific to each new NDT method.

- 2.3.1.2 Details of the new training and certification programmes shall be included in the approval submission set out in [2.2.6](#).

Rationale

- G 2.3.1.3 The training and certification programmes are critical to the implementation of the new NDT method.

2.3.2 Implementation

- 2.3.2.1 Before a new NDT test method can be put into use, the following shall be in place:
- a) Procedures to implement the new methods as set out in [2.1](#);
 - b) Certification of equipment as set out in [3.2](#);
 - c) Certification of facilities as set out in [3.3](#); and
 - d) Certification of operatives as set out in [4.1](#) to [4.3](#).

Rationale

- G 2.3.2.2 These are the same as for existing NDT methods.

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Part 3 NDT Equipment and Facilities

3.1 Specification

- 3.1.1 Equipment used for NDT shall be manufactured in accordance with relevant procedures and standards.
- 3.1.2 Equipment used for NDT shall be compatible with the appropriate validation documentation used.

Rationale

- G 3.1.3 Using correctly manufactured and validated equipment in appropriate facilities helps to ensure the consistency and repeatability of the NDT processes.

Guidance

- G 3.1.4 It is good practice to pack portable NDT equipment in appropriate enclosures with adequate carrying facilities to ensure that it is suitable for the environment in which it will operate.
- G 3.1.5 The requirements for the approval of NDT facilities for the use made of them can be found in [3.3](#).

3.2 Certification of NDT equipment

- 3.2.1 NDT equipment shall be approved by a member of staff certified to Level 3 in a similar NDT method.
- 3.2.2 A certificate of type approval shall be issued for NDT equipment after satisfactory assessment to the appropriate standards.
- 3.2.3 The certificate shall clearly state the make, model, and modification level of the NDT equipment and identify the scope of application of the equipment.
- 3.2.4 The capability for detecting specified defect sizes and, where required, locations, shall be verified by a competent person.
- 3.2.5 Periodic calibration and maintenance checks of the NDT test equipment shall be approved by the competent person as being adequate for the equipment application.

Rationale

- G 3.2.6 Certification of NDT equipment gives confidence that the equipment is able to perform as required.
- G 3.2.7 The minimum detected defect size needs to be consistent with the design requirements of the component being tested.
- G 3.2.8 It is good practice to make sure the NDT equipment remains in good working order, to ensure continued confidence in the results it produces.

Guidance

- G 3.2.9 BS EN ISO 22232 series of standards sets out suitable requirements for the assessment of NDT equipment.
- G 3.2.10 NDT equipment is assessed and, if successful, issued with a certificate of type approval for the conditions identified below:
- a) New equipment
 - b) Existing equipment that has been modified or changed.
- G 3.2.11 The assessment of the NDT equipment defines the approval processes that demonstrate the equipment functions in accordance with its requirements.
- G 3.2.12 The assessment of the equipment includes a clear and unambiguous means of indicating the presence and location of a defect in the component.
- G 3.2.13 The assessment of NDT equipment is conducted in all applications, environments, and situations where it is intended to be used in service.
- G 3.2.14 A competent person, for the purposes of this requirement, may be considered to be a member of staff certified to Level 3.
- G 3.2.15 An explanation of the various levels of qualification is set out in [4.1](#).
-

3.3 Certification of NDT facilities

- 3.3.1 NDT facilities that support the use of NDT equipment provided at a site, or NDT equipment that is used at more than one location, shall have a certificate of approval issued by an organisation accredited by a nationally recognised body, in accordance with BS EN ISO/IEC 17024:2012.
- 3.3.2 The scope of approval for NDT testing facilities shall include use of, and compliance with, approved procedures, certified operatives, and certified equipment.
- 3.3.3 The assessment of the NDT testing facility shall include a special process audit of the NDT facilities by a competent NDT specialist in the applicable method.
- 3.3.4 An NDT facility assessment by an independent assessor shall be completed at least every two years to re-certify the facility.

Rationale

- G 3.3.5 Ensuring that the facilities where NDT is undertaken are suitable for that purpose helps to achieve consistent results.

Guidance

- G 3.3.6 A competent person, for the purposes of this requirement, may be considered to be a member of staff certified to Level 3.
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Part 4 Requirements for Certification of NDT Operatives

4.1 Ultrasonic NDT testing of rail vehicle wheelset axles

4.1.1 Training

- 4.1.1.1 Operatives who undertake manual ultrasonic NDT axle testing of railway wheelset axles shall:
- a) Complete a course of training covering the relevant methods on the appropriate components; and
 - b) Pass an examination in accordance with BS EN ISO 9712:2022 at an examination centre approved by a certification body.
- 4.1.1.2 Training programmes for operatives covering ultrasonic axle testing of rail vehicle axles shall include the following minimum requirements:
- a) Calibration procedures
 - b) Axle familiarisation
 - c) Classical trajectories
 - d) Trace pattern prediction
 - e) Axle scanning methods.
- 4.1.1.3 Where specialist semi-automatic axle testing is used and the NDT operative is required to have a Level 1 or Level 2 qualification in ultrasonic axle testing, it is permissible for the training programme to be job specific, in accordance with BS EN ISO 9712:2022.
- 4.1.1.4 The training programme, or scheme, shall be approved by an independent competent person.

Rationale

- G 4.1.1.5 NDT is typically performed on safety critical components. It is therefore necessary to have the reassurance that the training programme is properly reviewed and approved by competent persons.
- G 4.1.1.6 Operatives who undertake manual ultrasonic NDT testing of railway wheelset axles need to be trained in the appropriate methods and have an understanding of the components they are testing.
- G 4.1.1.7 Operatives who successfully pass the examination are deemed to be competent and capable of undertaking ultrasonic NDT testing of railway wheelset axles.
- G 4.1.1.8 The degree of interpretation required of a trained operative is dependent on the ability of the equipment to perform semi-automatic processes and the provision of results that do not require interpretation.

Guidance

- G 4.1.1.9 The recognised certification body in the UK for ultrasonic axle testing is the British Institute for Non-Destructive Testing (BINDT), which owns and operates the personnel certification in non-destructive testing (PCN) Certification Scheme.

- G 4.1.1.10 The PCN manual sets out other information with respect to training which is recommended as good practice.
- G 4.1.1.11 The term PCN Manual refers to the documents PCN Gen: general requirements for qualification and PCN certification of NDT personnel, and PCN24 Gen also titled general requirements for qualification and PCN certification of NDT personnel.
- G 4.1.1.12 The training programme, covering both practical and theory, for Level 1 applicants is typically a minimum of 80 hours.
- G 4.1.1.13 The elements *c)* and *d)* in 4.1.1.2 are not required for operatives that exclusively operate semi-automated procedures which do not require personnel to interpret the test results. The training programme is therefore likely to be of reduced duration as a consequence of the removed elements, and the limited scope indicated on the certificate of competence (railway axles) issued to such operatives.
- G 4.1.1.14 Level 1, Level 2, and Level 3 are the categories of qualification, further defined in BS EN ISO 9712:2022, to which an individual can be certified, once they have demonstrated appropriate competence, by an organisation accredited to issue Level 1, 2, or 3 certification in accordance with BS EN ISO 9712:2022 and the relevant parts of the BS EN ISO/IEC 17021 series of standards.
- a) Level 1: An individual certified to Level 1 is able to perform NDT according to written instructions under the supervision of individuals certified to Level 2 or Level 3. Individuals certified to Level 1 are not deemed competent to determine the choice of test method, or to interpret test results.
 - b) Level 2: An individual certified to Level 2 is able to perform NDT according to NDT procedures or instructions. They are able to select the NDT method, interpret, evaluate, and report the results.
 - c) Level 3: An individual certified to Level 3 is able to perform and direct NDT operations. They are able to select the NDT methods, establish NDT methods, establish acceptance criteria where these do not exist, evaluate and interpret results, and prepare and validate NDT instructions and procedures.
- G 4.1.1.15 The requirements for certification at Levels 1, 2, and 3 defined within BS EN ISO 9712:2022, includes the requirement for aspirant certificate holders to demonstrate that they have accrued documented evidence of satisfactory practical industrial experience for the purpose of confirming competence.
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4.1.2 **Reassessment of newly certified operatives**

- 4.1.2.1 Within three months of gaining a certificate of competence in ultrasonic axle testing of rail vehicle axles, newly certified holders shall be reassessed to determine that they are correctly interpreting the methods and documentation.
- 4.1.2.2 Reassessment, in the context of this document, shall be a practical 'on site' evaluation of an operative's ability to carry out axle testing to the required standards.
- 4.1.2.3 Operatives holding a Level 1 certificate of competence shall be reassessed by operatives certified to Level 2 or 3.
- 4.1.2.4 Operatives holding a Level 2 certificate of competence shall be reassessed by operatives certified to Level 3.

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4.1.2.5 Operatives holding a Level 3 certificate of competence shall be reassessed by operatives certified to Level 3.

4.1.2.6 The re-assessor shall be certified in the appropriate method.

Rationale

G 4.1.2.7 It is important to ensure that operatives that are newly certified are correctly following the instructions, processes, and procedures for the appropriate method.

G 4.1.2.8 Operatives re-assessed by assessors certified in the appropriate method to a higher level of certification gives re-assurance about the appropriateness and validity of the re-assessment.

Guidance

G 4.1.2.9 It is current practice for these re-assessments to be undertaken as an on-the-job assessment, while the operative is actually performing the task in a live situation.

4.1.3 Validity of certification and maintenance of competence

4.1.3.1 NDT operatives shall maintain their competence in the ultrasonic testing of rail vehicle axles and undertake recertification at the following frequency:

- a) Yearly for operatives undertaking a minimum of 60 hours ultrasonic axle testing in each twelve-week period.
- b) Every two years for operatives undertaking a minimum of 30 hours ultrasonic axle testing in each twelve-week period using semi-automated methods where the operative is not required to interpret the results of the tests.
- c) At least every five years for all NDT operatives, as set out in BS EN ISO 9712:2022.

4.1.3.2 Auditable records of NDT operatives' qualifications shall be maintained to demonstrate that competence is being maintained in accordance with the requirements set out in this document.

4.1.3.3 Where an operative has not maintained competence, as set out in [4.1.3.1](#), a competent person shall determine if a further assessment or re-training is required.

4.1.3.4 When operatives have not maintained their competence beyond 12 months the PCN scheme owner shall be advised and the necessary actions implemented.

Rationale

G 4.1.3.5 It cannot be assumed that a certified operative will remain competent without periodic checking to confirm that they have maintained sufficient practical experience and that training is still valid.

Guidance

G 4.1.3.6 The twelve-week period set out in [4.1.3.1](#) excludes periods of absence of less than one month.

4.2 Rail vehicle wheelset axle testing by other NDT methods

- 4.2.1 The training programmes for NDT operatives that test rail vehicle wheelset axles, by other than ultrasonic testing, shall include the following minimum requirements:
- a) Compliance with BS EN ISO 9712:2022 and/or SNT-TC-1A:2022;
 - b) Calibration procedures appropriate to the method;
 - c) Rail vehicle wheelset axle familiarisation; and
 - d) Defect and scanning methods appropriate to the method.

Rationale

- G 4.2.2 These requirements set out the minimum level of content for training programmes for alternative NDT methods to demonstrate an equivalence to the training for ultrasonic testing.

Guidance

- G 4.2.3 Training to SNT-TC-1A:2022 is appropriate where the methods being used and the training of the Operative concerned are in accordance with that scheme. In some cases, both types of certification, in accordance with both the ISO and SNT, can be held.

4.3 NDT of other rail vehicle components

- 4.3.1 Operatives that test components other than rail vehicle wheelset axles shall be trained and certified in accordance with PCN, BS EN ISO 9712:2022, or SNT-TC-1A:2020 by an organisation accredited by a nationally recognised body, or in accordance with the ANST scheme.
- 4.3.2 The operative qualification levels shall be either Level 1 or Level 2, as appropriate according to the qualification scheme used.
- 4.3.3 The validity of certificates shall be in accordance with PCN, BS EN ISO 9712:2022, or SNT-TC-1A:2020 as appropriate.

Rationale

- G 4.3.4 Thorough and comprehensive training and certification of operatives helps to ensure the consistent application of NDT to safety critical components.

Guidance

- G 4.3.5 Further information on Level 1, Level 2, and Level 3 qualifications can be found in BS EN ISO 9712:2022 or SNT-TC-1A:2020.

NDT Processes on Rail Vehicles

Definitions

blind trial	Tests of the capability of equipment where the size and shape of the defect to be measured is not known before the trial starts.
competent person	A person who has passed as being qualified and has the required knowledge and skills to carry out a particular rule, regulation, instruction or procedure.
Good practice	A process or method that has been shown to work well; succeeds in achieving its objective(s); is widely accepted; and therefore can be recommended as an approach.
NDT Certification body	An accredited body that administers procedures for certification in the area of NDT according to the requirements of BS EN ISO 9712:2022 and BS EN ISO/IEC 17021.
NDT Facility	A facility used to undertake NDT of safety critical components fitted to rolling stock such as a depot, workshop, or other location, or mobile apparatus regularly used to undertake NDT.
non-destructive testing (NDT)	The process of examination of a component to enable its integrity to be assessed by a means which does not compromise the service life or the design life of the component.
procedure	An approved document that specifies the method to be applied for a specific testing regime, including the equipment, calibration requirements, areas to be examined, orientation of the component and the acceptance criteria.
safety critical	Directly influencing safety (when applied to equipment or systems).
semi-automatic process (for NDT)	A process that once commenced will complete the examination of the component without intervention from the operative.

References

The Standards catalogue gives the current issue number and status of documents published by RSSB: <http://www.rssb.co.uk/standards-catalogue>.

RGSC 01	Railway Group Standards Code
RGSC 02	Standards Manual

RSSB documents

RIS-2766-RST	Rail Industry Standard for Wheelsets
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Other references

BS EN ISO 9712:2022	Non-destructive testing. Qualification and certification of NDT personnel
BS EN ISO 22232:2020 (series)	Non-destructive testing. Characterization and verification of ultrasonic test equipment
BS EN ISO/IEC 17021 (series)	Conformity assessment. Requirements for bodies providing audit and certification of management systems
BS EN ISO/IEC 17024:2012	Conformity assessment. General requirements for bodies operating certification of persons
British Institute for Non-Destructive Testing (BINDT)	Personnel certification in non-destructive testing (PCN) certification scheme PCN Manual
PCN/GEN	General requirements for qualification and PCN certification of NDT personnel
PCN24/GEN	General requirements for qualification and PCN certification of NDT personnel
SNT-TC-1A:2020	Personnel qualification and certification in nondestructive testing