Nondestructive Testing —
Qualification and Certification of Personnel

ANSI/ASNT CP-106
(ISO 9712:2012, Modified)

The International Standard ISO 9712:2012 is adopted with national modifications as an American National Standard. The national forward describes the method for making modifications and how they are identified within the text.
Foreword

The ANSI/ASNT CP-106, Nondestructive Testing — Qualification and Certification of Personnel document is a modified adoption of ISO 9712:2012, Non-destructive Testing — Qualification and certification of NDT personnel with modifications made in accordance with ISO/IEC Guide 21-1:2005, Regional or national adoption of International Standards and other International Deliverables. The document is formatted in the style of ISO 9712:2012 and the rationale for each national modification is in an outlined text box titled "national explanatory note" directly after the clause, figure or table that was modified.

The term "International Standard," used in ISO 9712, has been replaced in this document by the term "American National Standard" unless specific reference is being made to the international document.

Prepared by the American Society for Nondestructive Testing, Inc. (ASNT), this document was approved by the ASNT Standards Development Committee, a consensus body organized in accordance with the requirements of the American National Standards Institute (ANSI) for Standards Developing Organizations. The purpose of developing this document was to provide the United States with an American National Standard that would incorporate the provisions of ISO 9712:2012 while recognizing the current national preferences for certification of nondestructive testing personnel.
Introduction
Since the effectiveness of any application of nondestructive testing (NDT) depends upon the capabilities of the persons who perform or who are responsible for the test, a procedure was developed to provide a means for evaluating and documenting the competence of personnel whose duties require the appropriate theoretical and practical knowledge of the nondestructive tests that they perform, specify, supervise, monitor, or evaluate. An added incentive stems from the worldwide comparability of a wide range of industrial applications requiring common NDT approaches.

When certification of NDT personnel is required in product standards, regulations, codes, or specifications, it is important to certify the personnel in accordance with this American National Standard. When latitude is provided in the criteria within this American National Standard, the certification body has the final decision in determining specific requirements.

When there is no requirement in legislation, in standard, or in the order for certification of NDT personnel, it is for employers of such personnel to decide how to ensure themselves that they are competent to do the work assignments. Thus, they may employ people who are already certified or they may apply their own expertise to assure themselves that their employee has the necessary competence. In this last case, prudent employers would no doubt use the American National Standard ANSI/ASNT CP-189, ANSI/ASNT CP-105, or Recommended Practice No. SNT-TC-1A as a reference document.

Any certification body adopting this American National Standard shall comply with current third-party certification requirements contained in this American National Standard for qualification and certification of personnel. A transition period of up to five (5) years to implement Level I, Level II, and Level III requirements is permitted. Details of any transition period must be addressed in the certification body’s implementing procedures.

The aim is to permit the adoption of ISO 9712 requirements or the establishment of a system in an industry with no third-party certification. It is also applicable when the certification body applies the certification scheme to emerging NDT method(s) or industrial sector(s).

National Explanatory Note:
In keeping with national practice, the ANSI/ASNT CP-106 document uses roman numerals to denote the numbered levels of NDT qualification, that is, Level I, Level II, and Level III.
# BSR/ASNT CP-106:2017 (Draft M)

## Foreword

Introduction .............................................................................................................................. vii

## Contents

1.0 Scope .................................................................................................................................... X

2.0 Normative references ........................................................................................................ X

3.0 Terms and definitions ......................................................................................................... X

4.0 Methods and abbreviated terms ........................................................................................ X

5.0 Responsibilities .................................................................................................................. X

5.1 General............................................................................................................................... X

5.2 Certification body ............................................................................................................... X

5.3 Authorized qualification body .......................................................................................... X

5.4 Examination center .......................................................................................................... X

5.5 Employer ............................................................................................................................ X

5.6 Candidate ........................................................................................................................... X

5.7 Certificate holders ............................................................................................................ X

6.0 Levels of qualification ........................................................................................................ X

6.1 Level I ................................................................................................................................ X

6.2 Level II ............................................................................................................................... X

6.3 Level III .............................................................................................................................. X

7.0 Eligibility ............................................................................................................................ X

7.1 General ............................................................................................................................... X

7.2 Training .............................................................................................................................. X

7.3 Industrial NDT experience ............................................................................................. X

7.4 Vision Requirements (all levels) ..................................................................................... X

8.0 Qualification examinations ................................................................................................. X

8.1 General ............................................................................................................................... X

8.2 Examination content and grading for Level I and Level II ............................................. X

8.3 Examination content and grading for Level III ............................................................... X

8.4 Conduct of examinations ................................................................................................ X

8.5 Re-examination ................................................................................................................ X

8.6 Examination exemptions ................................................................................................ X

9.0 Certification ........................................................................................................................ X

9.1 Administration .................................................................................................................. X

9.2 Certificates and/or wallet cards ....................................................................................... X

9.3 Digital certificates ........................................................................................................... X

9.4 Validity .............................................................................................................................. X

10.0 Renewal ............................................................................................................................ X

11.0 Recertification ................................................................................................................ X

11.1 General ............................................................................................................................ X

11.2 Level I and II .................................................................................................................. X

11.3 Level III .......................................................................................................................... X

12.0 Files .................................................................................................................................. X

13.0 Transition period ............................................................................................................... X

13.1 Emerging technologies .................................................................................................... X

13.2 Transition between CP-106:2008 and this American National Standard ..................... X

13.3 Training requirements (all levels) .................................................................................. X

13.4 Experience Requirements (all levels) ............................................................................. X

13.5 Practical (hands-on) experience (Level III) .................................................................. X
Appendices..........................................................................................................................................................X
Appendix A (normative): Sectors ........................................................................................................................................X
Appendix B (normative): Minimum number and type of specimens for Level I and II practical examinations..........................................................................................................................................................X
Appendix C (normative): Structured credit system for Level III recertification .........................................................................................................................................................................................X
Appendix D (normative): Grading practical examination.........................................................................................................................................................................................................................................X
Appendix E (informative): Engineering of NDT .........................................................................................................................................................................................................................................................X
References ........................................................................................................................................................................X
Nondestructive Testing – Qualification and Certification of Personnel

1.0 Scope

1.1 This American National Standard specifies requirements for principles for the qualification and certification of personnel who perform industrial nondestructive testing (NDT).

Note 1: The term “industrial” implies the exclusion of applications in the field of medicine. The system specified in this American National Standard can also apply to other NDT methods or to new techniques within an established NDT method, provided a comprehensive scheme of certification exists and the method or technique is covered by international, regional, or national standards or the new NDT method or technique has been demonstrated to be effective to the satisfaction of the certification body.

Note 2: ANSI/ASNT CP-105[1] and/or CEN/TR 14748[2] can be used as guidance. The certification covers proficiency in one or more of the following methods:

1.1.1 acoustic emission testing (AE),
1.1.2 electromagnetic testing (ET),
1.1.3 ground penetrating radar (GPR),
1.1.4 guided wave testing (GW),
1.1.5 laser testing methods (LTM),
1.1.6 leak testing (LT),
1.1.7 liquid penetrant testing (PT),
1.1.8 magnetic flux leakage (MFL),
1.1.9 magnetic particle testing (MT),
1.1.10 microwave technology (MWT),
1.1.11 neutron radiographic testing (NR),
1.1.12 radiographic testing (RT),
1.1.13 strain gauge testing (ST),
1.1.14 thermal/infrared testing (IR),
1.1.15 ultrasonic testing (UT),
1.1.16 vibration analysis (VA),
1.1.17 visual testing (VT).

Note 3: The American National Standard specifies requirements for what are, in effect, third-party conformity assessment schemes. These requirements do not directly apply to conformity assessment by second or first parties, but relevant parts of this American National Standard can be referred to in such arrangements.

Note 4: Wherever gender specific words such as “his,” “her,” “he,” or “she” appear in this American National Standard, the other gender is also applicable.

National Explanatory Note:
Method titles for eddy current, penetrant, magnetic, and infrared testing were changed to align with current national practice.
Example: The American Society for Nondestructive Testing’s Certification Management Council shall serve as the “Certification Body” to implement the American Society for Nondestructive Testing Central Certification Program (ACCP).

2.0 Normative references

2.1 The following referenced documents are indispensable for the application of this document. For undated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including amendments) applies.

2.1.3 ISO/TR 25107: 2006, Non-destructive testing guidelines for NDT training syllabuses.
2.1.5 ISO/TR 25108: 2006, Non-destructive testing – Guidelines for NDT personnel training organizations.

National Explanatory Note:
Additional references were added to provide clarity.
3.0 Terms and definitions

For the purposes of this American National Standard, the following terms and definitions apply:

3.1 Authorized examination center: center approved by the certification body, either directly or through an authorized qualification body, where qualification examinations are carried out.

3.2 Authorized qualification body: organization, independent of the employer, approved by the certification body to prepare and administer NDT qualification examinations.

3.3 Candidate: individual seeking qualification and certification who gains experience under the supervision of personnel having a qualification acceptable to the certification body.

3.4 Certificate: document issued by the certification body under the provisions of this standard indicating that the named person has demonstrated the competence(ies) defined on the certificate.

3.5 Certification: procedure used by the certification body to confirm that the qualification requirements for a method, level, and sector have been fulfilled, leading to the issuing of a certificate.

3.6 Certification body: body that administers procedures for certification according to specified requirements.

Note: The provisions are specified in this American National Standard.

3.7 Cut score: minimum passing score established using the process.

3.8 Employer: organization for which the candidate works on a regular basis.

Note: An employer can also be a candidate at the same time.

3.9 Examination, basic: written examination, at Level III, which demonstrates the candidate’s knowledge of the materials science and process technology and types of discontinuities, the specific qualification and certification system, and the basic principles of NDT methods as required for Level II. When applicable, condition based maintenance practices, machinery reliability concepts, and machinery design.

Note 1: For an explanation of the three levels of qualification, see paragraph 6.

Note 2: The qualification and certification system is specified in this American National Standard.

3.10 Examination, general: written Level I or Level II examination concerned with the principles of an NDT method.

3.11 Examination, main method: written examination, at Level III, which demonstrates the candidate’s general and specific knowledge, and the ability to write NDT procedures for the NDT method as applied in the industrial or product sector(s) for which certification is sought.

3.12 Examination, practical: assessment of practical skills, in which the candidate demonstrates familiarity with, and the ability to perform, the test.

3.13 Examination, qualification: examination administered by a certification body or by an authorized qualification body, which assesses the general, specific, and practical knowledge, and the skill of the candidate.

3.14 Examination, specific: written examination at Level I or Level II, concerned with testing techniques applied in a particular sector(s), including knowledge of the product(s) tested and of codes, standards, specifications, procedures, and acceptance criteria.

3.15 Examiner: person certified to Level III in the method and product or industrial sector of which he is authorized by the certification body to conduct, supervise, and grade the qualification examination.

3.16 Experience: time, acceptable to the certification body, gained under qualified supervision, in the application of the NDT method in one or more sector(s) concerned, needed to acquire the skill and knowledge to fulfill the provisions of qualification.

3.17 Job-specific training: training, provided by the employer (or his agent) to the certificate holder in those aspects of NDT specific to the employer’s products, NDT equipment, NDT procedures, and applicable codes, standards, specifications, and procedures, leading to the award of operating authorizations.

3.18 Job task analysis: the process of identifying the content of a job in terms of activities involved and attributes needed to perform the work and identifies major job requirements.

3.19 Monitor: person authorized by the certification body to supervise written examinations.

3.20 Choice examination question: wording of a question giving rise to five potential replies, only one of which is correct, the remaining four being incorrect or incomplete.

3.21 NDT instruction: written description of the precise steps to be followed in testing to an established NDT procedure, standard, code, or specification.

3.22 NDT method: discipline applying a physical principle in NDT.

3.23 NDT procedure: written description of all essential parameters and precautions to be applied when nondestructively testing products in accordance with standards, codes, and/or specifications.

3.24 NDT technique: specific way of utilizing an NDT method. Example: immersion ultrasonic testing.

3.25 NDT training: process of instruction in theory and practice in the NDT method in which certification is sought, which takes the form of training courses to an approved syllabus as approved by the certification body.

3.26 Operating authorization: written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks.

Note: Such authorization can be dependent on the provision of job-specific training.

3.27 Practical training: instruction in which the personnel being trained are instructed in the hands-on setup and use of equipment in the applicable test method.
3.28 **Psychometric process**: the science and technology of measurement used to develop and analyze assessments of cognitive and skill ability.

3.29 **Proctor**: same as Monitor. Level III (certified in method) authorized by the certification body to supervise written and/or practical examinations.

3.30 **Qualification**: demonstration of physical attributes, knowledge, skill, training, and experience required to properly perform NDT tasks.

3.31 **Recertification**: procedure for revalidation of a certificate by examination or by otherwise satisfying the certification body that the published criteria for recertification are satisfied.

3.32 **Renewal**: procedure for revalidation of a certification without examination at any time up to five (5) years after success in an initial, supplementary, or recertification examination.

3.33 **Scorable questions**: questions used to judge (score) a candidate’s knowledge of the materials being tested. Non-scorable questions are used in the psychometric process to validate new or revised questions.

3.34 **Sector**: particular section of industry or technology where specialized NDT practices are used, requiring specific product related skill, knowledge, equipment, or training.

Note: A sector can be interpreted to mean a product (welded products, castings) or an industry (aerospace, in-service training). See Annex A.

3.35 **Specification**: document stating requirements.

3.36 **Specimen, test**: sample used in practical examinations, possibly including radiographs and/or data sets, which is representative of products typically tested in the applicable sector.

Note: A specimen can include more than one area or volume to be tested.

3.37 **Specimen master report**: model answer, indicating the optimum result for a practical examination given a defined set of conditions (equipment type, settings, technique, specimen, etc.) against which the candidate’s test report is graded.

3.38 **Significant interruption**: absence or a change of activity which prevents the certified individual from practicing the duties corresponding to his or her level in the method and the industrial sector(s) for which he or she is certified, for either a continuous period in excess of one (1) year or two (2) or more periods for a total time exceeding two (2) years.

Note: Legal holidays or periods of sickness or courses of less than thirty (30) days are not taken into account when calculating the interruption.

3.39 **Supervision, direct**: line-of-sight supervision during the inspection process by a person qualified to Level II or Level III in the applicable test method.

3.40 **Supervision, general**: the act of directing the application of NDT test methods performed by other NDT personnel, which includes the control of actions involved in the preparation of the test, performance of the test, and reporting of the results.

3.41 **Supervision, qualified**: supervision of candidates gaining experience by NDT personnel certified in the same method under supervision or by non-certified personnel who, in the opinion of the certification body, possess the knowledge, skill, training, and experience required to properly perform such supervision.

3.42 **Trainee**: individual who works under the supervision of certified personnel but who does not conduct any tests independently, does not interpret test results, and does not write reports on test results.

3.43 **Validation**: act of demonstrating that a verified procedure works in practice and fulfills its intended function, normally achieved by actual witnessing, demonstration, field, or laboratory tests or selected trials.

**National Explanatory Note:**

Additional definitions have been added to this document: 3.7, Cut score; 3.18, Job task analysis; 3.27, Practical training; 3.28, Psychometric process; and 3.39, Supervision, direct. ISO 9712 definition 3.32, Supervision, has been renumbered 3.40 and renamed Supervision, general. Definitions for Monitor (3.19) and Proctor (3.29) have also been added.
4.0 **Methods and abbreviated terms**

4.1 For the purposes of this American National Standard, the abbreviated terms listed in Table 1 are used to identify NDT methods.

Table 1. Methods and abbreviated terms

<table>
<thead>
<tr>
<th>NDT method</th>
<th>Abbreviated terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic emission testing</td>
<td>AE</td>
</tr>
<tr>
<td>Electromagnetic testing</td>
<td>ET</td>
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<tr>
<td>Ground penetrating radar</td>
<td>GPR</td>
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<tr>
<td>Guided wave testing</td>
<td>GW</td>
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<tr>
<td>Laser testing methods</td>
<td>LTM</td>
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<tr>
<td>Leak testing</td>
<td>LT</td>
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<tr>
<td>Liquid penetrant testing</td>
<td>PT</td>
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<tr>
<td>Magnetic flux leakage</td>
<td>MFL</td>
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<tr>
<td>Magnetic particle testing</td>
<td>MT</td>
</tr>
<tr>
<td>Microwave testing</td>
<td>MWT</td>
</tr>
<tr>
<td>Neutron radiographic testing</td>
<td>NR</td>
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<tr>
<td>Radiographic testing</td>
<td>RT</td>
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<tr>
<td>Strain gauge testing</td>
<td>ST</td>
</tr>
<tr>
<td>Thermal/infrared testing</td>
<td>IR</td>
</tr>
<tr>
<td>Ultrasonic testing</td>
<td>UT</td>
</tr>
<tr>
<td>Vibration analysis</td>
<td>VA</td>
</tr>
<tr>
<td>Visual testing</td>
<td>VT</td>
</tr>
</tbody>
</table>

4.2 When other NDT test methods are added, they shall be given similar abbreviations based on commonly used national or international practices.

5.0 **Responsibilities**

5.1 General

5.1.1 The certification system, which shall be controlled and administered by a certification body (with the assistance, where necessary, of authorized qualification bodies) includes all procedures necessary to demonstrate the qualification of an individual to carry out tasks in a specific NDT method and product or industrial sector, leading to certification of competence.

5.2 Certification body

5.2.1 Fulfills the requirements of ANSI/ISO/IEC 17024 and this American National Standard.

5.2.2 The certification body:

5.2.2.1 shall initiate, promote, maintain, and administer the certification scheme according to ANSI/ISO/IEC 17024 and this American National Standard;

5.2.2.2 shall review, endorse, and verify publication of specifications for training courses that include the syllabi which embody the content of recognized documents, e.g., CP-105\(^\text{[3]}\), ISO/TR 25107\(^\text{[4]}\), or equivalent;

5.2.2.3 may delegate, under its direct responsibility, the detailed administration of qualification to authorized qualification bodies, to which it shall issue specifications and/or procedures covering facilities, personnel, calibration, and control of NDT equipment, examination materials, specimens, conduct of examinations, examination grading, records, etc.;

5.2.2.4 shall conduct an initial audit and subsequent periodic surveillance audits of the authorized qualification body(ies) to ensure their conformity to the specifications;

5.2.2.5 shall monitor, in accordance with a documented procedure, all delegated functions;

5.2.2.6 shall approve properly staffed and equipped examination centers, which it shall monitor on a periodic basis;

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\(^\text{[3]}\) ANSI/ISO/IEC 17024, "Conformity Assessment - General Requirements for the Accreditation of Bodies Performing Conformity AssessmentActivities Related to Products, Processes, Systems and Services".

\(^\text{[4]}\) ISO/TR 25107, "Qualification of Individual NDT Personnel - Terms and Definitions".
5.2.2.7 shall establish an appropriate system for the maintenance of records, which shall be retained for at least shall one (1) certification cycle (ten [10] years);
5.2.2.8 shall be responsible for the issue of all certificates;
5.2.2.9 shall be responsible for the definition of sectors (see Appendix A);
5.2.2.10 shall be responsible for ensuring the security of all examination materials (specimens, master reports, shall question banks, examination papers, etc.) and shall ensure that specimens are not in use for training purposes;
5.2.2.11 shall require all candidates and certificate holders to give a signed or stamped undertaking to abide by a code of ethics, which it shall develop for the purpose and publish; and
5.2.2.12 shall designate (and/or delegate to AQB or AEC) authorized proctors or monitors to supervise the written examination process. Proctors may also supervise the practical examination process. Their duties shall include: verify examinees’ identification, read examination rule/instructions, distribute sealed examination packages or allow access to computer-based examinations, establish examination start and finish times, ensure no additional materials are accessible during the examination process, ensure no interaction occurs during the examination period, announce time milestones, announce when examination time expires, instruct examinees to re-seal their packages, collect sealed packages, and secure packages in appropriate storage until the examination grading process begins. They shall not be allowed to provide any assistance in the interpretation of examination questions or associated materials contained in the examination package. The monitor or proctor role is to ensure the examination process as defined by the certification body is followed by everyone involved in the examination(s) session assigned.

5.2.3 A certification body shall be composed of interested parties (e.g., NDT users, NDT service suppliers, societies, and government agencies) as defined in its implementing procedures. The body shall be responsible for developing and maintaining the technical specifications for the certification process. Its members shall be qualified for the tasks by an appropriate combination of NDT certification and/or experience. The certification body shall ensure qualification examinations validate the knowledge and skills identified in paragraphs 2.1.2, 2.1.3, and/or 2.1.4.

National Explanatory Note:
The participant makeup of the certification body adopted in this American National Standard is the same used by ANSI for Standards Developing Organizations. The no-majority blend of users, suppliers, and manufacturers has proven satisfactory in ensuring that no single influence will predominate in the selection of certification activities.
The certification body has the option to use a monitor or proctor to supervise the written examination process, as defined in paragraph 5.2.1.12. Proctors may also supervise the practical examination process.

5.3 Authorized qualification body (AQB)
5.3.1 Where established, an AQB shall:
5.3.1.1 work under the control of and apply the specifications issued by the certification body;
5.3.1.2 be independent of any single predominant interest;
5.3.1.3 ensure that it is impartial with respect to each candidate seeking qualification, bringing to the attention of the certification body any actual or potential threat to its impartiality;
5.3.1.4 apply a documented quality management system approved by the certification body;
5.3.1.5 have the resources and expertise necessary to establish, monitor, and control examinations centers, including examinations and the calibration and control of the equipment;
5.3.1.6 prepare, supervise, and administer examinations under the responsibility of an examiner authorized by the certification body;

Note: A designated trained monitor or proctor may be used to administer prepared written examinations in accordance with established guidelines approved by the certification body.
5.3.1.7 maintain appropriate qualification and examination records according to the requirements of the certification body.

5.3.2 If there are no AQB, the certification body shall fulfill the requirements of the qualification body.

5.4 Examination center
5.4.1 Authorized examination centers (AECs) may be established or approved by the certification body or through AQB and shall, at a minimum:
5.4.1.1 work under the control of the certification body or AQB;
5.4.1.2 apply a documented quality procedure approved by the certification body;
5.4.1.3 have the resources needed to administer examinations, including the calibration and control of equipment;
5.4.1.4 have adequate qualified staff, premises, and equipment to ensure satisfactory qualification examinations for the levels, methods, and sectors concerned;
5.4.1.5 prepare and conduct examinations under the responsibility of an examiner authorized by the certification body (or using designated/trained examination monitors or proctors), using only those examination questionnaires and specimens established or approved by the certification body for that purpose;
5.4.1.6 use only specimens prepared or approved by the certification body or qualification body for the practical examinations conducted at that center (when more than one examination center exists, each shall have examination specimens of comparable test difficulty containing similar discontinuities); under no circumstances shall specimens be used for training purposes; and
5.4.1.7 maintain appropriate qualification and examination records per the requirements of the certification body.

5.4.2 An examination center may be situated at an employer’s premises. However, in this case, the certification body shall require additional controls to preserve impartiality and examinations shall be conducted only in the presence of, and under the control of, an authorized representative of the certification or AQB. In no case shall an examination center’s employee (monitor, proctor, or examiner) administer examinations to another employee of the examination center.

5.5 Employer

5.5.1 The employer shall introduce the candidate to the certification body or the AQB and document the validity of the personal information provided. This information shall include the declaration of education, training, and experience, and visual acuity needed to determine the eligibility of the candidate. If the candidate is unemployed or self-employed, the declaration of education, training, and experience shall be attested to by at least one (1) independent party acceptable to the certification body.

5.5.2 Neither the employer nor his or her staff shall be directly involved in the qualification examination.

5.5.3 In respect to certified personnel under their control, the employer shall be responsible for:
5.5.3.1 all that concerns the authorization to operate, e.g., providing job-specific training (if necessary);
5.5.3.2 issuing the written authorization to operate;
5.5.3.3 the results of NDT operations;
5.5.3.4 ensuring that the visual acuity requirements of 7.4 are met;
5.5.3.5 verifying continuity in the application of the NDT method without significant interruption;
5.5.3.6 ensuring that personnel hold valid certification relevant to their tasks within the organization; and
5.5.3.7 maintaining appropriate records. It is recommended that these responsibilities be described in a documented procedure.

5.5.4 A self-employed individual shall assume all responsibilities ascribed to the employer.

5.5.5 Certification to this American National Standard provides an attestation of general competence of the NDT operator. It does not represent an authorization to operate, since this remains the responsibility of the employer and the certified employee may require additional specialized knowledge of parameters such as equipment, NDT procedures, materials, and products specific for the employer.

Where required by regulatory requirements and codes, the authorization to operate shall be given in writing by the employer in accordance with a quality procedure that defines any employer-required job-specific training and examinations designed to verify the certificate holder’s knowledge of relevant industry code(s), standard(s), NDT procedures, equipment, and acceptance criteria for the tested products.

5.6 Candidate

5.6.1 Candidates, whether employed, self-employed, or unemployed shall:
5.6.1.1 provide documentary evidence of satisfactory completion of a course of training;
5.6.1.2 provide verifiable documentary evidence that the required experience has been gained under qualified supervision;
5.6.1.3 provide documentary evidence of vision satisfying the requirements of 7.4; and
5.6.1.4 abide by a code of ethics published by the certification body.

5.7 Certificate holders

5.7.1 Certificate holders shall:
5.7.1.1 abide by a code of ethics published by the certification body;
5.7.1.2 undergo a test of visual acuity in accordance with 7.4 and submit the results of tests to the employer; and
5.7.1.3 notify the certification body and the employer if the conditions for validity of certification are not fulfilled.

6.0 Levels of qualification

An individual certified in accordance with this American National Standard shall be classified in one of the following levels.
6.1 Level I

6.1.1 An individual certified to Level I has demonstrated competence to carry out NDT according to written instructions and under the supervision of Level II or Level III personnel. Within the scope of the competence defined on the certificate, Level I personnel may be authorized by the employer to perform the following in accordance with NDT instructions:

- set up NDT equipment;
- perform the tests;
- record and classify the results of the tests according to written criteria;
- report the results.

6.1.2 Level I certified personnel shall neither be responsible for the choice of test method or technique to be used, nor for the interpretation of test results.

6.2 Level II

6.2.1 An individual certified to NDT Level II is qualified to perform and direct NDT in accordance with established or recognized procedures. This may include:

- selecting the NDT technique for the test method to be used;
- defining the limitations of application of the testing method;
- translating NDT codes, standards, specifications, and procedures into practical testing instructions adapted to the actual working conditions;
- setting up and verifying equipment settings;
- performing and supervising tests;
- interpreting and evaluating results per applicable codes, standards, specifications, and procedures;
- preparing NDT instructions;
- carrying out or supervising all Level I and Level II duties;
- training or guiding personnel at or below Level II; and
- reporting results of nondestructive tests.

6.3 NDT Level III

6.3.1 An individual certified to Level III shall have demonstrated competence to perform and direct NDT operations for which he is certified. Level III personnel have demonstrated:

- the competence to evaluate and interpret results in terms of existing standards, codes, and specifications;
- sufficient practical background in applicable materials, fabrication, and product technology to be able to select methods and establish techniques and to assist in establishing acceptance criteria where none is otherwise available; and
- a general familiarity with other NDT methods.

6.3.2 Within the scope of the competence defined on the certificate, Level III personnel may be authorized to:

- assume full responsibility for an NDT facility and staff;
- establish, review for editorial and technical correctness, and validate NDT instructions and procedures;
- interpret codes, standards, specifications, and procedures;
- designate the particular test methods, techniques, procedures, and NDT instructions to be used;
- interpret and evaluate results in terms of existing codes, standards, and specifications;
- carry out and supervise all tasks at all levels;
- provide guidance for NDT personnel at all levels;
- qualification examinations, if authorized for this task by the certification body; and
- carry out or supervise all Level I and Level II duties.

7.0 Eligibility

7.1 General

7.1.1 The candidate shall fulfill the minimum requirements of vision and training prior to the qualification examination and shall fulfill the minimum requirements for industrial experience prior to certification.

7.2 Training

7.2.1 The candidate shall provide documentary evidence acceptable to the certification body of completion of a course of NDT training in the method and level for which certification is sought.

7.2.2 For all levels, the candidate shall satisfactorily complete a course of theoretical and practical training recognized by the certification body.

For Level III, in addition to the minimum training given in Table 1, the preparation for qualification can be completed in different ways dependent on the scientific and technical background of the candidate, including attendance at other training courses, conferences, or seminars, and studying books, periodicals, and other specialized printed or electronic materials.

Note: Guidelines for NDT personnel training organizations are given in ISO/TR 25108[4].
7.2.3 The minimum duration of training undertaken by the candidate for certification shall be as defined in 7.2.4 and Table 2 for the applicable NDT method, with the possible reductions defined in 7.2.5. This duration is based upon candidates possessing adequate mathematical skills and prior knowledge of materials and processes. If it is not the case, additional training may be required by the certification body. Training hours include both practical and theoretical courses.

When creating industrial sectors as defined in Annex A, the certification body should consider whether the training requirements in Table 2 are sufficient or should be increased.

7.2.4 Direct access to Level II requires the total hours shown in Table 2 for Levels I and II. Direct access to Level III requires the total hours shown in Table 2 for Levels I, II, and III. When considering the responsibilities of a certified NDT technician, the minimum duration of training undertaken by the candidate for certification shall be as defined in 7.2.4 and 7.2.5.1. The possible reductions in training duration are as described hereafter, provided that, when several reductions are applicable, the total reduction does not exceed 50% of the training duration. Any reduction requires acceptance by the certification body.

### National Explanatory Note:

Paragraph 13.3 of this American National Standard provides details of training transition.

Table 2 provides guidance on the duration of training for personnel not previously certified.

#### Table 2. Initial training requirements

<table>
<thead>
<tr>
<th>NDT method</th>
<th>Level I hours</th>
<th>Level II hours</th>
<th>Level III hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>40</td>
<td>64</td>
<td>48</td>
</tr>
<tr>
<td>ET</td>
<td>40</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>LT B – pressure method</td>
<td>24</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>LT C – tracer gas method</td>
<td>24</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>MT</td>
<td>16</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>PT</td>
<td>16</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>ST</td>
<td>16</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>IR</td>
<td>40</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>RT</td>
<td>40</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>UT</td>
<td>40</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>VT</td>
<td>16</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>GPR</td>
<td>8</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>GW</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>LTM profilometry</td>
<td>8</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>LTM holography/shearography</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>MWT</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>NR</td>
<td>28</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>VA</td>
<td>24</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>MFL</td>
<td>16</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

Note: For RT, training hours do not include radiation safety training.

7.2.5 The possible reductions in training duration are as described hereafter, provided that, when several reductions are applicable, the total reduction does not exceed 50% of the training duration. Any reduction requires acceptance by the certification body.

#### 7.2.5.1 For all levels:

- **7.2.5.1.1** For candidates seeking certification in more than one method (e.g., MT, PT), or for those already certified and seeking certification in another method, when the training syllabus concerned duplicates certain aspects (e.g., product technology), the total number of training hours for these methods (e.g., PT, MT, VT) may be reduced in line with the training syllabus;
7.2.5.1.2 for candidates who have graduated in a relevant subject from a technical college or university, or have completed at least two (2) years of relevant engineering or science study at college or university, the total required number of training hours may be reduced by up to 50%.

Note: It is appropriate for the subject to be relevant to the NDT method (chemistry, mathematics, or physics) and/or to the product or industry sector (chemistry, metallurgy, engineering, etc.).

7.2.5.2 For Levels I and II, when the certification sought is limited:

7.2.5.2.1 in application (e.g., automated ET, UT of bar, tube, and rod, or normal beam ultrasonic thickness and lamination testing of rolled steel plate);
7.2.5.2.2 in technique (e.g., RT using only radioscopy); the training duration may be reduced by up to 50%.

7.2.5.3 For direct access to Level II RT when certification is restricted to the film interpretation and to only one sector, a minimum training requirement of 56 h applies.

7.3 Industrial NDT experience

7.3.1 General

7.3.1.1 The minimum duration of experience to be gained in the sector where the candidate is seeking certification shall as given in Table 3, with the possible reductions given in 7.3.3. When the candidate is seeking certification in more than one sector, a minimum training requirement of 56 h applies.

For Level II certification, the intent of this standard is that work experience consists of time as a Level I. If the individual is being qualified directly to Level II, with no time at Level I, the experience shall consist of the sum of the times required for Level I and Level II. No reduction in the period of experience shall be allowed.

For all levels, a minimum period of experience prior to examination shall be defined by certification body (a fraction or percentage of the total requirement in Table 3, as appropriate). In the event that a part of the experience is sought following successful examination, the results of the examination shall remain valid for two (2) years or for the total experience time required for the methods concerned, whichever is greater.

Documentary evidence of experience shall be confirmed by the employer and submitted to the certification body.

### Table 3. Minimum industrial experience

<table>
<thead>
<tr>
<th>Examination method</th>
<th>Level I experience</th>
<th>Level II experience</th>
<th>Level III experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum hours method</td>
<td>Total hours NDT</td>
<td>Minimum hours method</td>
</tr>
<tr>
<td>AE, ET, LT, UT, IR, RT, MWT</td>
<td>210</td>
<td>400</td>
<td>630</td>
</tr>
<tr>
<td>GPR</td>
<td>60</td>
<td>120</td>
<td>420</td>
</tr>
<tr>
<td>GW</td>
<td>240</td>
<td>460</td>
<td>240</td>
</tr>
<tr>
<td>LTM profilometry</td>
<td>70</td>
<td>130</td>
<td>140</td>
</tr>
<tr>
<td>LTM holography/shearography</td>
<td>210</td>
<td>400</td>
<td>630</td>
</tr>
<tr>
<td>NR, VA</td>
<td>420</td>
<td>800</td>
<td>1680</td>
</tr>
<tr>
<td>MT, PT, ST, VT, MFL</td>
<td>70</td>
<td>130</td>
<td>210</td>
</tr>
</tbody>
</table>

### National Explanatory Note:

The experience requirements and notes have been modified to reflect current national practice and this American National Standard. Current national certification programs require experience in hours, not months. This allows accumulation of total hours required if the candidate is working more than 40 h per week. The certification body shall establish a process to convert and confirm/validate experience claims.

7.3.1.1.1 Experience shall be based on the actual hours worked in the specific method.

7.3.1.1.2 A person may be qualified directly to NDT Level II with no time as a certified NDT Level I. No reductions of these hours shall be allowed, except as specified in 7.3.1.7 or 7.3.1.8.
7.3.1.1.3 The required minimum experience shall be documented by method and by hour with supervisor or NDT Level III approval.

7.3.1.1.4 While fulfilling total NDT experience requirements, experience may be gained in more than one (1) method. Minimum experience hours must be met for each method.

7.3.1.1.5 To qualify in a single method, the hours in the Total hours column must be satisfied.

7.3.1.1.6 If an individual is currently certified in an ET technique and a full-course format was used to meet the initial qualifications in that technique, the minimum training hours to qualify in another ET technique at the same NDT Level may be reduced up to 40% if so defined in the certification body’s certification procedure. If an individual is certified in an ET technique, the minimum experience to qualify for another ET technique at the same level or to the next level may be reduced by up to 50% if so defined in the certification body’s certification procedure.

7.3.1.1.7 If an individual is currently certified in a radiographic testing technique and a full-course format was used to meet the initial qualifications in that technique, the minimum training hours to qualify in another technique at the same level should be 24 h (of which at least 16 h should be equipment familiarization) determined by the certification body. If an individual is certified in a technique, the minimum additional experience to qualify for another technique at the same level may be reduced by up to 50%, as defined in the certification body’s certification procedure.

7.3.1.1.8 Time of flight diffraction and phased array require Ultrasonic Level II certification as a prerequisite.

7.3.2 Level III

7.3.2.1 Level III responsibilities require knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through a variety of combinations of education, training, and experience. Table 3 details minimum experience for candidates who have successfully completed a technical school or at least two (2) years of engineering or science study at an accredited college or university. If this is not the case, the duration has to be multiplied by a factor of 2.

To be considered for Level III certification, a candidate should satisfy one of the following criteria for the applicable NDT level:

7.3.2.1.1 Have graduated from a minimum four (4) year college or university curriculum with a baccalaureate degree in engineering or science, plus one (1) additional year of experience beyond the Level II requirements in NDT in an assignment comparable to that of an NDT Level II in the applicable NDT method(s); or

7.3.2.1.2 Have completed with passing grades at least two (2) years of engineering or science study at a university, college, or technical school, plus two (2) additional years of experience beyond the Level II requirements in NDT in an assignment at least comparable to that of NDT Level II in the applicable NDT method(s); or

7.3.2.1.3 Have four (4) years of experience beyond the Level II requirements in NDT in an assignment at least comparable to that of an NDT Level II in the applicable NDT method(s).

7.3.2.2 For Level III certification, the intent of this American National Standard is that work experience consists of time as a Level II. If the individual is being qualified from Level I to Level III, with no time at Level II, the experience shall consist of the sum of the times required for Level II and Level III. No reduction in the period of experience shall be allowed.

National Explanatory Note:
Personnel with degrees from accredited educational systems conferring baccalaureate degrees in less than four (4) years may be considered provided the degree is demonstrated to be equivalent to a U.S. bachelor’s degree.

7.3.3 Possible reductions

7.3.3.1 The possible reductions in duration of experience are as described hereafter, if, when several reductions are applicable, the total reduction does not exceed 50% of the experience duration. Any reduction does require acceptance by the certification body. When considering possible reduction in the duration of experience, the certification body should take into consideration the following elements:

7.3.3.1.1 The quality of experience can be variable, and skills may be assimilated more quickly in an environment where the experience is concentrated and has a high degree of relevance to the certification sought.

7.3.3.1.2 When gaining experience simultaneously in two (2) or more surface NDT methods, i.e., MT, PT, and VT, the experience gained in the application of one NDT method may be complementary to the experience gained in one (1) or more other surface methods.
7.3.3.1.3 Experience in one sector of an NDT method for which certification is already held may be complementary to the experience in a different sector of the same NDT method.

7.3.3.1.4 The level and quality of education possessed by the candidate should also be considered. This is particularly the case for the Level III candidate but it can also be applicable for other levels.

7.3.3.2 Credit for work experience may be gained simultaneously in two (2) or more of the NDT methods covered by this National Standard, with the reduction of total required experience as follows:

- 7.3.3.2.1 two (2) testing methods: reduction of total required time by 25%;
- 7.3.3.2.2 three (3) testing methods: reduction of total required time by 33%;
- 7.3.3.2.3 four (4) or more testing methods: reduction of total required time by 50%.

In all cases, the candidate shall be required to show that, for each of the testing methods for which he seeks certification, he has a minimum of 50% of the time required in Table 3.

7.3.3.3 In all cases, the candidate shall be required to show that for each of the NDT method and sector combinations for which he seeks certification, he has at least half of the experience required, and this shall never be less than one (1) month in duration.

7.3.3.4 When the certification sought is limited in application (e.g., thickness measurement or automated testing), experience duration may be reduced by up to 50% but shall not be less than one (1) month.

7.3.3.5 Up to 50% of the practical experience time may be achieved by an appropriate practical course, the duration of which may be weighted by a maximum factor of 5. This procedure shall not be used in conjunction with that specified in 7.3.3.4. The course shall concentrate on practical solutions of frequently occurring testing problems and should involve a significant element of testing known defective specimens. The program shall be approved by the certification body.

Paragraph 7.3.3.2 only addresses reduction of experience in an NDT Method. Requirements for Total hours in NDT shall not be reduced.

7.3.4 Alternate method – experience validation

7.3.4.1 An alternate method of experience validation may be developed by industrial sectors if approved by the industry’s regulatory authority.

7.3.4.2 The industrial sectors may use ISO/TS 11774 Non destructive testing – Performance-based qualification as a guide to develop the validation process.

7.3.4.3 In lieu of documented experience in months/hours the sector shall develop a qualification cards process (or equal), which identifies activities and associated tasks elements required to be completed by the candidate prior to certification. The activities and associated tasks elements shall be based on a detailed job task analysis (by NDT method) of qualified NDT personnel working within the industry. Using the qualification card as a guide, the candidate shall be trained in the field or simulated under the direct supervision of qualified NDT examiner (Level II or III) as defined by the sector. The candidate shall be evaluated to be proficient by task to the satisfaction of a designated evaluator certified Level II or III (as defined by the industrial sector) in the applicable NDT method.

7.4 Vision requirements (all levels)

7.4.1 The candidate shall provide documented evidence of satisfactory vision in accordance with the following requirements:

7.4.1.1 Near vision acuity shall be demonstrated by reading a minimum of Jaeger J-1 or equivalent with one or both eyes, either corrected or uncorrected. The distance for this examination shall be as listed on the reading card but shall not be less than 12 in. (30 cm). This examination shall be conducted annually.

7.4.1.2 Color vision (and if required, the ability to differentiate between shades of gray) shall be such that the candidate can distinguish and differentiate contrast between the colors used in the NDT method concerned as specified by the certification body. This examination shall be conducted upon initial certification and at five (5) year intervals thereafter.

7.4.1.3 If the person being examined cannot pass the color differentiation test(s), the certification body shall identify additional examinations that demonstrate the person can differentiate contrast between the colors (and if required, the ability to differentiate between shades of gray). These additional examinations shall be documented by the certification body.

*Equivalent eye examination results for Jaeger J-1 acuity are: Snellen 20/22; Times Roman 3.5 pt. text; OrthoRater #9; or Titmus (SAB-1, SAL-1, or SAR-1) #10.

7.4.1.4 Annual verification of visual acuity shall be carried out by the employer or the responsible agency (see 5.5.3.4). Documentation of the current annual examination results shall be included in the information provided to the certification body with the application for certification. Annual verification of visual acuity shall be maintained in the certification file for each certified person by the employer.

National Explanatory Note:
The above vision requirements have been modified to reflect current requirements of nationally recognized certification programs. Clarification of the distance requirement for reading cards has been clarified to prevent unintentional misuse of the reading cards. Equivalent eye examination result values were incorporated based on nationally recognized optical references and input from independent professional experts in the field of optical medicine.
8.0 Qualification examinations

8.1 General

8.1.1 The qualification examination shall cover a given NDT method as applied in one industrial sector or one (1) or more product sectors. The certification body shall define and publish the maximum amount of time allowed for the candidate to complete each examination, which shall be based upon the number and difficulty of the questions. The average time allowed for questions requiring narrative answers shall be determined by the certification body.

Note: No Level III person shall be the examiner (monitor or proctor) for any candidate he has personally trained for that examination.

8.2 Examination content and grading for Level I and Level II

8.2.1 General examination

8.2.1.1 The general examination shall include only questions selected in an unpredictable way from the certification body’s or authorized qualification body’s collection of general examination questions valid at the date of examination. The candidate shall be required, as a minimum, to give answers to the number of multiple-choice scorable questions shown in Table 4.

8.2.1.2 The time allowed to the candidates for completion of each examination shall be based upon the number and difficulty of the questions. The certification body or authorized qualification body shall establish criteria for examination time limits.

8.2.1.3 Where not otherwise addressed by national regulations, there shall be an additional examination on radiation safety for the radiographic test method.

8.2.1.4 Examinations on the radiographic test method may include either X-radiation or gamma radiation, or both, depending upon the procedure of the certification body.

8.2.1.5 The period of validity for a successfully completed general examination is two (2) years. If a candidate does not become certified within that period, the general examination must be retaken.

8.2.2 Specific examination

8.2.2.1 The specific examination shall include only questions selected from the certification body’s or authorized qualification body’s current collection of specific questions related to the sector(s) concerned.

8.2.2.2 The time allowed to the candidates for completion of each examination shall be based upon the number and difficulty of the questions. The average time allowed for written questions shall be determined by the certification body or authorized qualification body. During the specific examination, the candidate shall be required to give answers to at least thirty (30) scorable questions, including questions involving calculations, written procedures, codes, standards, and specifications.

8.2.2.3 If the specific examination covers two (2) or more industrial sectors, the minimum number of scorable questions shall be at least thirty (30), evenly spread between the sectors concerned (see Appendix A).

8.2.2.4 The period of validity for a successfully completed specific examination is two (2) years. If a candidate does not become certified within that period, the specific examination must be retaken.

**Table 4. Required minimum number of questions – general examinations**

<table>
<thead>
<tr>
<th>NDT method</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE, ET, IR, RT, UT, GW, GPR, NR, MT, MWT, PT, VA, VT LT, ST, LTM MFL</td>
<td>40 30 20</td>
</tr>
</tbody>
</table>

National Explanatory Note:
The numbers of required scorable examination questions shown in paragraph 8.2.1 are intended to be minimum values for each category.
The period of validity for the general and specific examinations has been added to address current national practices.
8.2.3 Practical examination

8.2.3.1 The practical examination shall involve applying the NDT method to prescribed specimens, recording and interpreting the resulting information to the degree required, and reporting the results in the required format. Specimens used for training purposes shall not be used for examination.

8.2.3.2 Each specimen shall be uniquely identified and have a master report that includes all of the equipment settings used to detect specified discontinuities contained within the specimen, which shall be uniquely identified by an appropriate permanent marking to ensure that it is completely traceable. Such marking shall not interfere with the practical testing or inspection of the specimen and shall, wherever practicable, be concealed from the candidate while the specimen is being used for examination. The master report shall be compiled based upon at least two (2) independent tests, and shall be validated by a Level III certificate holder for use in grading examinations. The independent test reports from which the master report is compiled shall be retained as records.

8.2.3.3 Specimens shall be sector specific, simulating field geometries and shall contain discontinuities representative of those likely to occur during manufacturing or in service. They may be natural, artificial, or implanted. For Level II evaluation tasks, data sets or films can be used instead of real specimens. Specimens used for calibration or for measurement tasks (e.g., thickness or coating measurement) do not need to contain discontinuities. For RT, the specimen need not contain discontinuities since these are exhibited in the radiographs for interpretation. Similarly, for AT, TT, and ST the specimen(s) need not contain discontinuities since these are exhibited in the data sets for Level II interpretation.

Note: Guidelines on discontinuity types in examination specimens can be found in ISO/TS 22809[6].

8.2.3.4 The certification body shall ensure that the number of areas or volumes to be tested is adequate to the level, NDT method and sector concerned, and that those areas or volumes contain reportable discontinuities. The requirements for the number of specimens and number of areas or volumes to be tested in the Level I and Level II practical examinations are given in Annex B.

8.2.3.5 The Level I candidate shall follow the NDT instruction(s) provided by the examiner.

8.2.3.6 The Level II candidate shall select the applicable NDT technique and determine the operating conditions related to a given code, standard, or specification.

8.2.3.7 For those examinations where discontinuities are normally replaced by artificial sources or data, the Level I candidate shall demonstrate the ability to set up and calibrate the equipment, verify its sensitivity and record the test data; the Level II candidate shall also demonstrate the ability to interpret and evaluate previously recorded test data.

8.2.3.8 The time allowed for the examination depends on the number of specimens and on their complexity. The average time allowed shall be defined by the certification body. The recommended maximum time allowed for each area or volume tested is:

- 8.2.3.8.1 for Level I: 2 h;
- 8.2.3.8.2 for Level II: 3 h.

8.2.3.9 Level II candidates shall draft at least one (1) NDT Instruction suitable for Level I personnel, for a specimen selected by the examiner.

The recommended maximum time allowed for this part of the examination is 2 h.

8.2.3.10 For radiographic testing (RT) examinations, candidates shall demonstrate the ability to set up a suitable radiographic exposure for the applicable technique. Level II candidates shall interpret radiographs of test specimens typical of those found in the applicable industrial sector (see Table B.1 for the number of radiographs required).

National Explanatory Note:
Paragraph 8.2.3.2 was modified to include data on discontinuity size, type, and location.
Paragraph 8.2.3.10 was modified to delete the requirement for making an actual radiographic exposure due to state and federal regulations prohibiting the use of exposure devices by personnel not directly employed by the licensee for the exposure equipment.

8.2.3.11 Level II candidates shall draft at least one (1) NDT instruction that would permit another inspector to recreate or duplicate the examination being performed. The type of instruction, written technique sheet, etc., is to be determined by the certification body.

8.2.3.12 The period of validity for a successfully completed practical examination is two (2) years. If a candidate does not become certified within that period, the practical examination must be retaken.

8.2.4 Grading of Level I and II qualification examinations

8.2.4.1 The grading of qualification examinations shall be done in accordance with psychometric principles approved by the certification body. When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparison with model answers. At the option of the certification body, e-assessment systems that automatically
score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used.

National Explanatory Note:
Grading of qualification examinations are in keeping with nationally accepted practices using psychometric processes approved by the certification body.

8.3.1 Examination content and grading for Level III

8.3.1.1 General

All candidates for Level III certification in any NDT method shall have successfully completed the practical examination for Level II in the relevant sector and method, except for the drafting of NDT instructions for Level I (8.2.3.9) A candidate who is Level II in the same NDT method and product sector or who has successfully passed a Level II practical examination for the NDT method in an industrial
sector, as defined in Annex A is exempt from passing again the Level II practical examination. This exemption is only valid for the product sectors covered by the industrial sector concerned and, in any other circumstances, the relevant sector is the sector in which the candidate seeks Level III certification.

8.3.2 Basic examination
8.3.2.1 This written examination shall assess the candidate’s knowledge of the basic subjects using at least the number of multiple choice questions shown in Table 6. Examination questions shall be selected in an unpredictable way from the current collection of questions approved by the certification body at the time of examination.

Table 6. Minimum required number of basic examination questions

<table>
<thead>
<tr>
<th>Part</th>
<th>Subject</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A B</td>
<td>Technical knowledge in materials science and process technology. Knowledge of the certification body’s qualification and certification system based on this International Standard. This may be an open book examination.</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>General knowledge of at least four methods as required for Level II and chosen from the methods given in Paragraph 1. These four methods shall include at least one volumetric method (UT or RT).</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 for each test method (total 60)</td>
</tr>
</tbody>
</table>

8.3.2.2 It is recommended that the basic examination be passed first (or concurrently with a method examinations) and remain valid, provided that the first main method examination is passed within five (5) years after passing the basic examination.

8.3.3 Method examination
8.3.3.1 This written examination shall assess the candidate’s knowledge of the main method subjects using the minimum required number of multiple choice questions shown in Table 7. Examination questions shall be selected in an unpredictable way from the current collection of questions approved by the certification body at the time of the examination.

8.3.3.1.1 The method examination shall be in multiple-choice format and shall be a minimum of fifty (50) scorable questions approved by the certification body and drawn from the current certification body database for the applicable test method at the time of the examination.

8.3.3.1.2 The first method examination should be taken concurrently with the basic examination but may be taken prior to the basic examination. The period of validity for a successfully completed method examination is two (2) years. Additional test methods may be added to the certification by passing the applicable method examination provided the applicant holds a currently valid certification under this document.

8.3.4 Procedure preparation examination
8.3.4.1 Each Level III candidate shall draft one (1) NDT procedure per applicable test method based on specifications and instructions provided by the certification body (Table 7, Part 2).

8.3.5 Practical examination
8.3.5.1 Level III candidates that have not previously passed the full Level II practical examination for the applicable test method as detailed in section 8.2.3 shall be required to do so, but the requirement for drafting an NDT instruction shall be waived.

8.3.5.2 Level III candidates that have previously passed the full Level II practical examination for the applicable test method as detailed in section 8.2.3 shall not be required to retake that examination.

8.3.6 Grading of Level III qualification examinations
8.3.6.1 General
8.3.6.1.1 The grading of the basic and method examinations shall be done separately. To be eligible for certification, a candidate shall pass both the basic and the method examinations.
8.3.6.1.2 The grading of qualification examinations shall be done in accordance with nationally accepted psychometric principles.

**Table 7. Minimum required number of main method examination questions**

<table>
<thead>
<tr>
<th>Part</th>
<th>Subject</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Level III knowledge relating to the test method applied.</td>
<td>30</td>
</tr>
<tr>
<td>E</td>
<td>Application of the NDT method in the sector concerned, including the applicable codes, standards, specifications, and procedures. This may be an open book examination in relation to codes, standards, specifications, and procedures.</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>Drafting of one or more NDT procedures in the relevant sector. The applicable codes, standards, specifications, and other procedures shall be available to the candidate. For a candidate who has already drafted a NDT procedure in a successfully passed Level III examination, the certification body may replace the drafting of a procedure with the critical analysis of an existing NDT procedure covering the relevant method and sector, and containing errors and/or omissions.</td>
<td>–</td>
</tr>
</tbody>
</table>

**National Explanatory Note:**
Grading of Level III qualifications examinations are in keeping with nationally accepted practices using psychometric process approved by the certification body.

For the three parts A, B, and C of the basic examination and parts D and E of the main method, the following requirements apply.
When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparing the replies given by the candidate against answer keys approved by the certification body. Each correct reply scores one (1) point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.
At the option of the certification body, e-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used.

8.3.6.2 Basic examination: In order to pass the basic examination, the candidate shall obtain a minimum cut score in each of the parts A, B, and C.

8.3.6.3 Main method examination: In order to pass the main method examination, the candidate shall obtain a minimum grade of 70% in each of parts D, E, and F.

See Table D.2 for the recommended weighting of the written examination procedure.

8.4 Conduct of examinations

8.4.1 All examinations shall be conducted at examination sites established, approved, and monitored by the certification body, either directly or through authorized monitors or proctors.

8.4.2 At the examination site, candidates shall have a government-issued identity card with their photograph and signature for identification verification. Such identification and an official notification of the examination shall be shown to the examination monitor or proctor prior to sitting for any examination.

8.4.3 Any candidate who, during the examination, does not abide by the examination rules or who perpetrates, or is an accessory to, fraudulent conduct shall be excluded from further participation.

8.4.4 Examination questions shall be validated by the certification body. When conventional pre-prepared paper-based examinations are used, the examination papers shall be validated and approved by an examiner, and the grading shall be done in accordance with procedures approved by the certification body (see 8.2.4 and 8.3.4). When e-assessment systems that select questions present the “written” examination to a candidate on a computer and grade the examinations, are used, the certification body shall validate and approve the e-assessment system.

8.4.5 Written (whether e-assessment or conventional) and practical qualification examinations shall be monitored by an examiner or by one (1) or more trained proctors placed under an examiner’s responsibility.
8.4.6 An examiner shall not be permitted to examine any candidate:
8.4.6.1 That he has trained for the examination for a period of two (2) years from the date of the conclusion of the training activities;
8.4.6.2 Who is working (permanently or temporarily) in the same facility as the examiner.
8.4.7 With the approval of the certification body, a candidate for a practical examination may use his own equipment.
8.4.8 Candidates shall not be permitted to bring into the examination area personal items, unless specifically authorized to do so by the examiner.

National Explanatory Note:
In keeping with national usage, the terms “examiner” and “invigilator” have been replaced with “monitor” and “proctor” in paragraph 8.4.

8.5 Re-examination
8.5.1 A candidate failing for reasons of unethical behavior shall at a minimum wait at least twelve (12) months before reapplying for examination. Additional sanctions may be imposed by the certification body.
8.5.2 A candidate who fails to obtain the pass grade for any examination part may be re-examined twice in the failed part(s), provided that the re-examination takes place not sooner than one (1) month, unless further training acceptable to the certification body is satisfactorily completed, nor later than two (2) years after the original examination.
   Note: “Examination parts” in this context refers to: for Levels I and II, the general, specific, and practical examinations; for the Level III basic examination, Parts A, B, and C; for the Level III main-method examination, Parts D, E, and F.
8.5.3 A candidate failing re-examinations or exceeding the period of validity for any examination shall apply for and take the applicable examination(s) in accordance with the procedure established for new candidates.

National Explanatory Note:
Because certification cannot be attained until all examination requirements have been met, periods of validity for each examination type have been assigned to each type of qualification examination. The Level II general examination and Level III basic examination have been assigned five (5) year periods of validity (which is in keeping with the current national practice for the basic examination), and the specific, practical, and method examinations have been assigned a two (2) year period of validity as they are more time sensitive.
8.6 Examination exemptions
8.6.1 A certified Level I or II individual changing sectors or adding another industrial sector to the same NDT method shall be required to take only the specific and practical examinations for the applicable method or technique relating to the new industrial sector.
8.6.2 A certified Level III individual changing from one industrial sector to another in the same NDT method exempt from the need to retake the basic examination and the Level III part D of the main method examination (Table 7).

9.0 Certification
9.1 Administration
A candidate fulfilling all conditions shall be certified and evidence of this certification shall be made available by the certification body. This can be achieved with the issue of hard copy certificate(s) and/or wallet card(s) (9.2), and/or by electronically uploading and displaying the relevant information on the certification body’s website.

9.2 Certificates and/or wallet cards
9.2.1 Certificates and/or corresponding wallet cards shall bear at least:

9.2.1.1 the full name of the individual certified;
9.2.1.2 the date of certification;
9.2.1.3 the date upon which certification expires;
9.2.1.4 a reference to this American Standard ( ANSI/ASNT CP-106 );
9.2.1.5 the level of certification;
9.2.1.6 the name of the issuing certification body;
9.2.1.7 the NDT method(s) (and technique[s], where applicable);
9.2.1.8 the industrial sector(s) concerned;
9.2.1.9 if applicable, the scope of limitations to the certifications and/or the special applications;
9.2.1.10 a unique identification number;
9.2.1.11 the signature of the individual certified;
9.2.1.12 a photograph of the individual certified (wallet card only);
9.2.1.13 the cold seal of the certification body; and
9.2.1.14 the signature of a representative of the certification body.

Note: By issuing the certificate and/or corresponding wallet card, the certification body attests to the qualification of the individual but does not give any operating authorization. There may be a special space on the certificate and/or wallet card for the signature of the employer or responsible agency authorizing the certificate holder to operate (3.26) With this the employer demonstrates taking responsibility for the test results.

National Explanatory Note:
Current technology allows the issuance of wallet cards on which the certificate holder’s photograph is electronically imprinted on the card negating the need for a physical imprint over the photograph to prevent falsification of the card.

9.3 Digital certificates
9.3.1 Digital certification may be provided as well as physical (hard copy) certificate(s). In this case, subject to compliance with national regulations, the following data are available without request (online, at the website of the certification body) to interested parties:

9.3.1.1 the legal name, contact information and, where applicable, accreditation status of the certification body;
9.3.1.2 the family name and forename of the certified individual;
9.3.1.3 a unique personal identification number for the certified individual;
9.3.1.4 a photographic image of the certified individual (taken within the past ten [10] years);
9.3.1.5 the dates of issue and expiry of the certification;
9.3.1.6 the scope of certification, including the level, NDT method(s), and applicable sector(s);
9.3.1.7 any limitations to the certification, if applicable.
9.3.2 Where the data listed in 9.3.1 can be printed directly from the certification body’s website, the printed output shall include a date of print and a statement that the current certification status can be verified at the relevant website.

9.4 Validity
9.4.1 General
The maximum period of validity of the certification is five (5) years. The period of validity shall commence (date of issue of the certification) when all of the requirements for certification (training, experience, satisfactory vision test, success in examination are fulfilled.

Certification shall be invalid:
9.4.1.1 at the discretion of the certification body, e.g., after reviewing evidence of unethical behavior incompatible with the certification procedures or failure to abide by a code of ethics;
9.4.1.2 if the individual becomes physically incapable of performing his duties based upon failure of the visual acuity examination taken annually under the responsibility of his employer;
9.4.1.3 if a significant interruption (3.38) takes place in the individual’s work in the method for which the individual is certified; and/or
9.4.1.4 if the individual fails recertification, until such time as the individual meets the requirements for recertification or initial certification.

9.4.2 Revalidation
9.4.2.1 The certification body shall define the conditions for revalidation in the case of 9.4.1.1 and 9.4.1.2. For revalidation of the certification after a significant interruption, the individual shall pass a recertification examination. The certification is revalidated for a new period of validity of five (5) years from the date of the revalidation.

10.0 Renewal
10.1 Prior to the completion of the first five (5) year period of validity and at ten (10) year intervals thereafter, certification may be renewed by the certification body for a new period not to exceed five (5) years, provided the following conditions are met:
10.1.1 documentary evidence of a satisfactory visual acuity examination taken within the preceding twelve (12) months;
10.1.2 verifiable documentary evidence of continued satisfactory work activity without significant interruption (3.38) in the method and sector for which certificate renewal is sought.

If the criterion 10.1.2 for renewal is not met, the individual shall follow the same rules as for recertification (see 11.0).
10.2 It is the responsibility of the certificate holder to initiate the procedure required for renewal. The renewal files shall be presented within six (6) months before the date of expiration of the certification. As an exception, and based upon decision of the certification body, files presented within twelve (12) months after the date of expiration may be considered. Over this period, no exception is admitted and the candidate shall be permitted to attempt a recertification examination.

11.0 Recertification
11.1 General
11.1.1 Prior to the completion of each second period of validity (every ten [10] years), the certified individual may be recertified by the certification body for a new period of five (5) years or less, provided the individual meets the criterion for renewal specified in 10.1.1 and meets the applicable conditions described in the following.
11.1.2 It is the responsibility of certificate holders to initiate the procedures required to obtain recertification. If the recertification is applied for more than twelve (12) months after expiry of the period of validity, a complete examination (general, specific, and practical) for Level I and Level II and a main method examination for Level III shall again be passed successfully.

11.2 Level I and II
11.2.1 Levels I and II certificate holders seeking recertification shall meet the criterion for renewal specified in 10.1.2 and satisfy 11.2.2.
11.2.2 The individual shall successfully complete a practical examination that demonstrates continued competence to carry out work within the scope defined on the certificate. This shall include testing specimens (Table B.1) appropriate to the scope of certification to be revalidated and in addition, for Level II, the production of a written instruction suitable for the use of Level I personnel (see 8.2.3.9). If the individual fails to achieve a grade of at least 70% for each specimen tested (weighted according to the guidance in Table 5), and, for Level II, for the instruction, two (2) retests of the whole recertification examination shall be allowed after at least seven (7) days and within six (6) months of the first attempt at the recertification examination.

In the event of failure in the two (2) allowable retests, the certificate shall not be revalidated and, to regain certification for that level, sector and method, the candidate shall apply for new certification. In this case, no examination exemptions shall be awarded by virtue of any other valid certification held.

11.3 Level III
11.3.1 Level III certificate holders seeking recertification shall provide evidence of continued qualification confirmed by:
11.3.1.1 satisfying the Level III requirements of 11.3.2 for a written examination;
11.3.1.2 meeting the requirements for a structured credit system, as given in Appendix C.

The individual may decide between the examination and credit system for recertification. If the credit system is chosen and requires submission of employer’s documents or access to an employer’s premises, the individual shall provide to the certification body a written statement of approval from the employer. In both cases (written examination or credit system), the individual shall either provide appropriate documented evidence, acceptable to the certification body, of his continued practical competence in the method or pass a Level II practical examination, as specified in 11.2.2 except for the drafting of NDT instructions.

11.3.2 The individual shall successfully complete an examination that includes a minimum of twenty (20) questions on the application of the test method in the sector(s) concerned which demonstrates an understanding of current NDT
techniques, standards, codes, or specifications, and applied technology and, at the option of the certification body, five (5) additional questions on the requirements of the certification scheme.

11.3.3 If the individual fails to achieve the minimum cut score in the recertification examination, a maximum of two (2) retests of the recertification examination shall be allowed. The time within which all tests are to be taken shall be twelve (12) months, unless otherwise extended by the certification body. In the event of failure in the two (2) allowable retests, the certificate shall not be revalidated and, to regain certification for that sector and method the candidate shall be required to achieve success in the appropriate main method examination.

11.3.4 A candidate who applies for and does not meet the requirements of the credit system shall be recertified in accordance with 11.3.2. In the event of failure at the first attempt at recertification by examination, only one (1) retest of the recertification examination shall be allowed within twelve (12) months of the date of application for recertification via the structured credit system.

11.3.5 Failure of recertification examinations shall follow the re-examination process (see 8.5).

12.0 Files
12.1 The certification body or its authorized qualification bodies shall keep:
12.1.1 an updated list of all individuals certified, classified according to level, test method, and industrial sector;
12.1.2 an individual file for each candidate who has not been certified for at least five (5) years from the date of application;
12.1.3 an individual file for each certified individual and for each individual whose certification has lapsed containing:
   12.1.3.1 photograph or digital image taken within the past ten (10) years;
   12.1.3.2 application forms;
   12.1.3.3 examination documents such as questionnaires, answers, description of specimens, records, results of tests, NDT procedures, and grade sheets;
   12.1.3.4 evidence of visual acuity and continuous activity; and
   12.1.3.5 reasons for any withdrawal of certification.

Individual files shall be kept under suitable conditions of safety and confidentiality for as long as the certificate remains valid and for at least one (1) full certification cycle after the certification has lapsed.

13.0 Transition period
13.1 Emerging technologies
13.1.1 The aim of this clause is to permit the initiation of the system when a certification body applies the certification scheme to an NDT method, which is not yet covered within its scheme or when a new sector is created. The certification body may temporarily appoint, for a period not exceeding five (5) years from the date of implementation of the new method or sector, duly qualified personnel as examiners (see 3.15) for conducting, supervising, and grading the qualification examinations. The five (5) year implementation period is not to be used by the certification body as a means to certify candidates who do not meet all the qualification and certification requirements of this American National Standard.

13.1.2 Duly qualified personnel means that such personnel:
   13.1.2.1 have the knowledge of the principles of NDT and the specific knowledge in relation to the sector and/or product forms;
   13.1.2.2 have industrial experience of the application of the NDT method;
   13.1.2.3 can conduct qualification examinations;
   13.1.2.4 can interpret the questionnaire and results of qualification examinations.

13.1.3 Within two (2) years of the date of appointment, these examiners shall have gained certification by satisfying the requirements for recertification as described in 11.0.

13.2 Transition between CP-106:2008 and this American National Standard
13.2.1 Certifications per CP-106:2008 awarded before publication of this American National Standard remain valid until the next mandatory step in the certification process, i.e., renewal or recertification, which shall be carried out according to this American National Standard.

13.2.2 Certification per this American National Standard is considered as fulfilling the requirements of both CP-106:2008 and ISO 9712:2012 and remains valid until the next mandatory step in the certification process, i.e., renewal or recertification, which shall be carried out per this American National Standard.

13.2.3 The certification body may perform gap analysis between the certification program referenced on the candidate’s certification and this standard. Based on the identified gap, additional examination(s) may be used at the time of renewal or recertification.

13.3 Training requirements (all levels)
13.3.1 The certification body shall develop and implement a process to recognize training submitted for review. If training occurred before the time of implementation of this American National Standard the certification body shall review documents submitted by the candidate and investigate to the extent necessary to determine if the documented training meets the training requirements of this document.
13.3.2 Training can be completed in different ways dependent on the scientific and technical background of the candidate, including attendance at other training courses, conferences, or seminars, and studying books, periodicals, and other specialized printed or electronic materials.

Note: Guidelines for NDT personnel training organizations are given in ISO/TR 25108\(^{(4)}\) and may be used to judge the quality of the training organization providing the documented training.

13.4 Experience requirements (all levels)

13.4.1 Prior to the next recertification interval the applicant shall provide, if necessary, to the certification body additional documented evidence of documented experience. The certification body shall evaluate previous and additional documented experience for compliance to experience requirements specified in this American National Standard. The certification body can consider experience gained since experience was documented for initial certification. If the evaluation determines additional experience is required, the certification body shall provide feedback to the applicant addressing the specific shortfalls of documented experience. The results of the evaluation will be documented in the certification file.

13.5 Practical (hands-on) experience (Level III)

13.5.1 Level III is certified to previous editions of third-party certification programs where method practical (hands-on component evaluation) examinations (Level II or higher) were not required shall provide documented evidence of successful application/performance by method. The experience may include experience since initial certification. The certification body shall evaluate documentation to determine compliance with requirements of this American National Standard. If the evaluation identifies that additional hands-on experience is required, the certification body shall specify the necessary actions to satisfy the applicable requirements. The evaluation may range from successful performance of the entire Level II practical examination for the method to designated techniques and/or components to be examined. If the certification body determines sufficient documented evidence of practical experience, the body will document approved experience in the candidate’s certification file.

National Explanatory Note:
Transition period modified to include ANSI/ASNT CP-106. Paragraph 13.3 provides the transition recognition process for training courses conducted before approval of this American National Standard.
Appendices

National Explanatory Note:
The certification body shall perform a technical comparison of sectors listed in this standard and sectors identified in other national or international certification programs.

Appendix A (normative)
Sectors

A.1 General
When creating a sector, the certification body may standardize per the reference lists of sectors in A.2 and A.3. This does not preclude the development of additional sectors to satisfy national needs.

A.2 Product sectors
These include:

a) castings (c): ferrous and nonferrous materials;
b) forgings (f): all types of forgings (ferrous and non-ferrous materials);
c) welds (w): all types of welds, including soldering, for ferrous and non-ferrous materials;
d) tubes and pipes (t): seamless, welded, ferrous, and non-ferrous materials, including flat products for the manufacturing of welded pipes;
e) wrought products (wp): except forgings (e.g., plates, bar, rods);
f) composite materials (p).

A.3 Industrial sectors
The following sectors are recommended for inclusion in certification programs developed under this Standard:

a) Manufacturing;
b) Pre- and in-service testing, which includes manufacturing;
c) Railroad maintenance;
d) Aviation/aerospace;
e) Pressure equipment;
f) General industry;
g) Petrochemical;
h) Nuclear power generation;

When creating an industrial sector, the certification body shall precisely define in its published documentation the scope of the new sector concerned in terms of product, object, or item.

An individual certified in an industrial sector shall be regarded also as holding certification in the individual sectors from which the industrial sector is composed.

Sector certification may be available at all three levels of competence in all NDT methods or may be limited to methods or levels. However arranged, the scope of certification shall be defined on the certificate.

For composite materials, the certification body shall define the requirements for qualification examination.

In an effort to transition into additional sectors and/or product forms, the certification body may establish a hierarchy of the above industrial sectors and/or product forms. The hierarchy would identify the extent one sector and/or product form could be used to certify a candidate to a lower sector. If the candidate requested certification to a higher sector or product form the body may use bolt-on examination(s) to transition or qualify individuals.

National Explanatory Note:
The industrial sector list has been modified to separate industries from product forms. Under current national central certification programs, industrial sectors may have certifications relating to specific product forms but that do not address product forms only. This modification addresses that condition. The certification body will be responsible for the evaluation of compliance to industrial sectors listed in applicable edition of ISO 9712 or other National Standards that implement ISO 9712.
Appendix B (normative)
Minimum number and type of specimens for Level I And II practical examinations

Table B.1. Minimum number and type of specimens for the Level I and II practical

<table>
<thead>
<tr>
<th>Product sector</th>
<th>Method and level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UTI</td>
</tr>
<tr>
<td>Coatings</td>
<td>2</td>
</tr>
<tr>
<td>Forgings</td>
<td>2</td>
</tr>
<tr>
<td>Welds</td>
<td>2</td>
</tr>
<tr>
<td>Tubes and pipes</td>
<td>2</td>
</tr>
<tr>
<td>Wrought products</td>
<td>2</td>
</tr>
<tr>
<td>Industrial sectors</td>
<td>(combining two or more product sectors)</td>
</tr>
<tr>
<td>Metal manufacturing</td>
<td>2</td>
</tr>
<tr>
<td>Pre- and in-service testing</td>
<td>3 c/f W</td>
</tr>
<tr>
<td>Railway maintenance</td>
<td>2</td>
</tr>
<tr>
<td>Aerospace</td>
<td>3</td>
</tr>
<tr>
<td>General industry (GI)</td>
<td>2</td>
</tr>
<tr>
<td>Pressure equipment (PE) (pre- and in-service testing)</td>
<td>2</td>
</tr>
<tr>
<td>Petrochemical (PC)</td>
<td>2</td>
</tr>
<tr>
<td>Nuclear power generation (NPG)</td>
<td>2</td>
</tr>
</tbody>
</table>

Key: c = casting; f = forging; w = weld; t = tube; c/f = casting or forging; n = radiographic; d = dactisw.
Notes: for TE, the minimum number of specimens is 1 for Level I and 2 for Level II. For TT, the minimum number of specimens is 1 + 2 ds per industrial application.

Appendix B – continued (normative)
Minimum number and type of specimens for Level I and II practical examinations

Table B.2. Minimum number and type of specimens for the Level I and II practical

<table>
<thead>
<tr>
<th>Product sector</th>
<th>Method and level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GFRI</td>
</tr>
<tr>
<td>Coatings</td>
<td>2</td>
</tr>
<tr>
<td>Forgings</td>
<td>2</td>
</tr>
<tr>
<td>Welds</td>
<td>2</td>
</tr>
<tr>
<td>Tubes and pipes</td>
<td>2</td>
</tr>
<tr>
<td>Wrought products</td>
<td>2</td>
</tr>
<tr>
<td>Industrial sectors</td>
<td>(combining two or more product sectors)</td>
</tr>
<tr>
<td>Metal manufacturing</td>
<td>2</td>
</tr>
<tr>
<td>Pre- and in-service testing</td>
<td>2</td>
</tr>
<tr>
<td>Railway maintenance</td>
<td>2</td>
</tr>
<tr>
<td>Aerospace</td>
<td>2</td>
</tr>
<tr>
<td>General industry (GI)</td>
<td>2</td>
</tr>
<tr>
<td>Pressure equipment (PE) (pre- and in-service testing)</td>
<td>2</td>
</tr>
<tr>
<td>Petrochemical (PC)</td>
<td>2</td>
</tr>
<tr>
<td>Nuclear power generation (NPG)</td>
<td>2</td>
</tr>
</tbody>
</table>

Key: c = casting; f = forging; w = weld; t = tube; c/f = casting or forging; n = radiographic; d = dactisw.
Notes: for TE, the minimum number of specimens is 1 for Level I and 2 for Level II. For TT, the minimum number of specimens is 1 + 2 ds per industrial application.

Where the practical examination requires the testing of more than one specimen, the second or any subsequent specimens shall be different in character, e.g., in product form, material specification, shape, size, and discontinuity type, from those tested previously.
Where, after the number of specimens required, product sectors are indicated by appropriate letters, this means that specimens from these sectors shall be included in the practical examination.

For radiographic examination, Level I and Level II candidates shall radiograph at least two (2) volumes as defined in paragraph 8.2.3.10 (Table B.1)—except for Level II candidates having passed an approved third-party Level I qualification examination, where at least one (1) volume was radiographed.

For leak testing examination involving both pressure change and tracer gas, at least one (1) specimen shall be tested for each.

Where a sector examination involves the testing of more than one product type, then the specimens tested shall be representative of all products or shall be selected at random by the examiner from the product range or materials that make up the sector.

A set of radiographs (12 or 24) shall be considered as one (1) specimen.
Appendix C (normative)
Structured credit system for Level III recertification
In this system, the Level III candidate gains credit for participation, during the five (5) year prior to recertification, in the various NDT activities shown in Table C.1. Limits are placed on the maximum number of points that can be gained in each year, and in any activity over the five (5) years, to ensure an even spread of activities.

To be eligible for recertification:
   a) a minimum of 70 points shall be accrued during the five (5) year validity of the certificate;
   b) a maximum of 25 points per year are accepted.

In addition to the recertification application, the candidate shall submit evidence of satisfying the criteria of Table C.1 as follows:
   a) agenda and proof of attendance for the meetings under items 1 to 4;
   b) a brief description of research and development under item 5;
   c) references of technical or scientific publications authored under item 5;
   d) a summary of training delivered under item 6;
   e) for each certificate, evidence of work activity per year under item 7.

Table C.1. Structured credit system for Level III recertification

<table>
<thead>
<tr>
<th>Item</th>
<th>Activity</th>
<th>Points accorded for each item (or function)</th>
<th>Maximum points per year per item</th>
<th>Maximum points per 5-year period per item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Membership of an NDT society, attendance at seminars, symposia, conferences, and/or courses covering NDT and related sciences and technologies</td>
<td>1</td>
<td>3</td>
<td>8*</td>
</tr>
<tr>
<td>2.1</td>
<td>Attendance at international and national standardization committees</td>
<td>1</td>
<td>3</td>
<td>8*</td>
</tr>
<tr>
<td>2.2</td>
<td>Convenorship of standardization committees</td>
<td>1</td>
<td>3</td>
<td>8*</td>
</tr>
<tr>
<td>3.1</td>
<td>Attendance at sessions of other NDT committees</td>
<td>1</td>
<td>3</td>
<td>8*</td>
</tr>
<tr>
<td>3.2</td>
<td>Convenorship of sessions of other NDT committees</td>
<td>1</td>
<td>3</td>
<td>8*</td>
</tr>
<tr>
<td>4.1</td>
<td>Attendance at sessions of NDT related working groups</td>
<td>1</td>
<td>5</td>
<td>15*</td>
</tr>
<tr>
<td>4.2</td>
<td>Convenorship of NDT related working groups</td>
<td>1</td>
<td>5</td>
<td>15*</td>
</tr>
<tr>
<td>5.1</td>
<td>NDT related technical/scientific contributions or publications</td>
<td>3</td>
<td>6</td>
<td>20*</td>
</tr>
<tr>
<td>5.2</td>
<td>NDT related research work published</td>
<td>3</td>
<td>6</td>
<td>15*</td>
</tr>
<tr>
<td>5.3</td>
<td>NDT research activity</td>
<td>3</td>
<td>6</td>
<td>15*</td>
</tr>
<tr>
<td>6</td>
<td>NDT technical instructor (per 2 h) and/or NDT examiner (per examination)</td>
<td>1</td>
<td>10</td>
<td>30*</td>
</tr>
<tr>
<td>7</td>
<td>Professional activity</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7.1</td>
<td>Within an NDT facility, NDT training center, or NDT examination facility or for Engineering of NDT (see Annex E) (for each full year)</td>
<td>10</td>
<td>10</td>
<td>40*</td>
</tr>
<tr>
<td>7.2</td>
<td>Dealing with disputes referring to clients</td>
<td>1</td>
<td>5</td>
<td>15*</td>
</tr>
<tr>
<td>7.3</td>
<td>Development of NDT applications</td>
<td>1</td>
<td>5</td>
<td>15*</td>
</tr>
</tbody>
</table>

\* = maximum points for items 1 to 4: 20.
\* = points to be given for both convenorship and attendance.
\* = if there is more than one author, the lead author shall define points for the other authors.
\* = maximum points for each of items 5 and 6: 30, and 7: 50.
Appendix D (normative)
Grading practical examination

D.1 Grading of Level I and II practical examination — guidance on the percentile weighting

Table D.1. Guidance on the percentile weighting for practical examination of Levels I and II

<table>
<thead>
<tr>
<th>Subject</th>
<th>Level I</th>
<th>Level II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 – Knowledge of the NDT apparatus:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) system control and functional checks;</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>b) verification of settings</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Part 2 – Application of the NDT method:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) preparation of the specimen</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>(e.g., surface condition), including visual examination;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) for Level II, the selection of the NDT technique and determination of operating conditions;</td>
<td>n/a</td>
<td>7</td>
</tr>
<tr>
<td>c) setting up of the NDT apparatus;</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>d) performance of the test;</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>e) post test procedures (e.g., demagnetization, cleaning, preservation)</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Part 3 — Detection of discontinuities and reporting(\wedge):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) detection of mandatory reportable discontinuities;</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>b) characterisation (type, position, orientation, apparent dimensions, etc.);</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>c) Level 2 evaluation against code, standard, specification or procedure criteria;</td>
<td>n/a</td>
<td>15</td>
</tr>
<tr>
<td>d) production of the test report.</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Part 4 – NDT instruction writing (Level II candidates):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) foreword (scope, reference documents);</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>b) personnel;</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>c) apparatus to be used, including settings;</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>d) product [description or drawing, including area of interest and purpose of the test];</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>e) test conditions, including preparation for testing;</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>f) detailed instructions for application of the test;</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>g) recording and classifying the results of test;</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>h) reporting the results.</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>–</td>
<td>15</td>
</tr>
<tr>
<td>Overall grade for practical examination</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

To be successful, the candidate should achieve not less than 70% in the NDT instruction writing part, i.e. 10.5

a) the candidate failing to report a discontinuity specified on the specimen master report as “Mandatory for candidates to report” when performing the test under the conditions specified in the master report shall be awarded zero marks for part 3 of the practical examination relating to the specimen tested. For RT, this condition applies to radiographic interpretation, i.e., failing one “mandatory to report” discontinuity on one radiograph leads to zero marks for the set of radiographs in part 3.
b) the Level II candidate is required to produce an NDT instruction, suitable for Level I personnel, for a specimen selected by the examiner. When the Level II candidate is testing a specimen for which no NDT instruction is required, the grade is calculated as a percentage of the 85 remaining marks.
### D.2 Weighting of Level III NDT procedure examination

Table D.2. Guidance on the percentile weighting for the Level III NDT procedure examination

<table>
<thead>
<tr>
<th>Subject</th>
<th>% maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 – General:</td>
<td></td>
</tr>
<tr>
<td>a) scope (field of application, product);</td>
<td>2</td>
</tr>
<tr>
<td>b) document control;</td>
<td>2</td>
</tr>
<tr>
<td>c) normative references and complementary information.</td>
<td>4</td>
</tr>
<tr>
<td>Subtotal</td>
<td>8</td>
</tr>
<tr>
<td>Part 2 – NDT personnel</td>
<td>2</td>
</tr>
<tr>
<td>Part 3 – Materials and equipment:</td>
<td></td>
</tr>
<tr>
<td>a) main NDT equipment (including defining calibration status and pre-test serviceability checks);</td>
<td>10</td>
</tr>
<tr>
<td>b) ancillary equipment [reference and calibration blocks, consumables, measuring equipment, viewing aids, etc.;]</td>
<td>10</td>
</tr>
<tr>
<td>Subtotal</td>
<td>20</td>
</tr>
<tr>
<td>Part 4 – Test piece:</td>
<td></td>
</tr>
<tr>
<td>a) physical condition and surface preparation (temperature, access, removal of protective coatings, roughness, etc.);</td>
<td>1</td>
</tr>
<tr>
<td>b) description of area or volume to be tested, including reference datum;</td>
<td>1</td>
</tr>
<tr>
<td>c) discontinuities sought.</td>
<td>3</td>
</tr>
<tr>
<td>Subtotal</td>
<td>5</td>
</tr>
<tr>
<td>Part 5 – Performance of the test:</td>
<td></td>
</tr>
<tr>
<td>a) NDT method(s) and technique(s) to be used;</td>
<td>10</td>
</tr>
<tr>
<td>b) setting up the apparatus;</td>
<td>10</td>
</tr>
<tr>
<td>c) conducting the test [including reference to NDT instructions];</td>
<td>10</td>
</tr>
<tr>
<td>d) characterization of discontinuities.</td>
<td>10</td>
</tr>
<tr>
<td>Subtotal</td>
<td>40</td>
</tr>
<tr>
<td>Part 6 – Acceptance criteria</td>
<td>7</td>
</tr>
<tr>
<td>Part 7 – Post test procedure:</td>
<td></td>
</tr>
<tr>
<td>a) disposition of non-conforming product [labelling, segregation];</td>
<td>2</td>
</tr>
<tr>
<td>b) restoration of protective coatings (where required);</td>
<td>1</td>
</tr>
<tr>
<td>Subtotal</td>
<td>3</td>
</tr>
<tr>
<td>Part 8 – Production of the test report</td>
<td>5</td>
</tr>
<tr>
<td>Part 9 – Overall presentation</td>
<td>10</td>
</tr>
<tr>
<td>Grand total</td>
<td>100</td>
</tr>
</tbody>
</table>
Appendix E (informative)
Engineering of NDT

E.1 Definition
Engineering of NDT covers all the activities linked to NDT, from the design of the equipment to the responsibility of preparation, implementation, and verification of NDT (in manufacturing and in service) of the same equipment belonging to industrial or technical installations.

E.2 Non-exhaustive list of activities covered
The activities covered include:
   a) at design stage, definition of requirements to be taken into account and/or verification of inspectability during manufacturing and, where applicable, in service, of equipment;
   b) selection of NDT techniques to be implemented in manufacturing and/or in service;
   c) comparison of specific prescriptions of different codes and standards;
   d) establishment or validation of the NDT procedures;
   e) technical evaluation of NDT suppliers;
   f) evaluation of NDT techniques, notably in the frame of expertise;
   g) treatment (technical evaluation) of nonconformity;
   h) justification to the customers and, where applicable, to the associated safety authorities, of practices implemented;
   i) responsibility for an NDT facility;
   j) coordination and supervision of NDT personnel activities;
   k) qualification – validation of NDT techniques:
      1) establishment of input information including the inspection objectives,
      2) definition of the necessary mock-ups for open and, where necessary, blind tests,
      3) implementation of practical tests,
      4) preparation of technical justification including when necessary, modeling,
      5) preparation or validation of NDT procedures,
      6) preparation or validation of qualification dossiers;
   l) establishment of in-service inspection programs for industrial installations or definition of rules for the establishment of such programs.
References
2. CEN/TR 14748: Non-destructive testing – Methodology for qualification of non-destructive tests
3. ISO/TR 25107: 2006 Non-destructive testing – Guidelines for NDT training syllabuses
4. ISO/TR 25108: 2008 Non-destructive testing – Guidelines for NDT personnel training organizations
5. ISO/TS 11774: 2011 Non-destructive testing – Performance-based qualification