BSS NDT

PERSONNEL CERTIFICATION MANUAL

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Contents

Introduction

The present scheme (NPC) for the certification of competence of non-destructive testing (NPC-Non-destructive Personnel Certification) personnel satisfies the requirements of applicable International Standards cited under External References.

The Certification Body (CB) has constituted a Certification Scheme Committee (CSC) and delegated to the CSC the responsibility for maintaining an overview of the operations of the CB. Membership of committees is open to the participation of individuals and organisations representative of stakeholders in the Scheme.

There is a wide range of qualification examinations available within the Scheme, covering various NDT methods and techniques. Authorised Qualifying Bodies (AQB) are independent organisations (see definition) which have been audited by the CB against published criteria prior to authorization, and which are subject to regular surveillance. Organisations wishing to explore the possibility of being authorised to conduct qualification examinations are encouraged to discuss the potential for their involvement with CB Management.

This document sets out the general requirements and procedures common to all general parts of the scheme. Supplementary appendices are published covering specific examinations applicable to various industry and product sectors. Details of the sector, method and levels are described in this manual.

- NDT of Castings
- NDT of Welds
- NDT of Wrought Products and Forgings

This series of documents is designed to provide comprehensive information for users of the Certification Scheme. The complete list of published documents is available for information and download at www.bssndt.com.

1 Scope

1.0. This document describes a system for the qualification and certification of personnel who perform industrial Non-Destructive Testing.

1.1. Specific details of the certification available at each level in the various NDT methods and industry sectors are contained in the appropriate supplementary appendix to this document.

2 External References

ISO/IEC17024: General requirements for bodies operating certification systems of persons

CEN ISO/TR 25107: Non-destructive testing – Guidelines for NDT training syllabuses (ISO/TR 25107:2006)

CEN ISO/TR 25108: Non-destructive testing – Guidelines for NDT personnel training organizations (ISO/TR 25108:2006)

BS EN ISO 9712:2021: Non-destructive testing - **Qualification and certification of NDT personnel**

ISO 18490:2015-Nondestructive testing evaluation of vision acuity of NDT personal

CEN/TR 14748: Guidance on the methodology for qualification of NDT tests.

3 Terms and Definitions.

For the purposes of this document, the following definitions apply:

3.1. Approved Training Organisation (ATO) – A legal entity assessed against the criteria in CEN ISO/TR 25108and approved by the CB to provide specified training courses for personnel intending to attempt a specified examination. PC 08

3.2. Authorised Examination Centre (AEC) –A location, approved by the CB, where qualification examinations are conducted.

3.3. Authorised Qualifying Body (AQB) - A body, independent of any single predominant interest, satisfying the criteria detailed in document reference PC-09 and authorised by the CB to prepare and administer written and practical examinations to qualify NDT personnel.

3.4. Appropriately Qualified Personnel **-** Individuals carrying out supervision of candidates for certification holding relevant certification issued by a recognised certification body meeting the requirements of ISO/IEC 17024.

Note: The certification concerned must include supervisory competence and have a similar technical scope as that certification which is the subject of surveillance. Where there are insufficient appropriately qualified persons in a country outside of the present field of operations to satisfy the requirement, supervision of candidates may be carried out by persons holding relevant qualification acceptable to the CB.

3.5. Basic Examination - An examination, at Level 3, which demonstrates knowledge of materials science and technology, the qualification and certification system, and of the theoretical principles of at least four NDT methods at level 2.

3.6. Candidate - individual seeking qualification and certification and who gains experience under the supervision of suitably qualified personnel.

3.7. Certificate–document, issued by the certification body under the provisions of the applicable standard, indicating that the named person has demonstrated the competence(s) defined on the certificate

3.8. Certification - procedure used by the CB to confirm that the qualification requirements for a method, level and sector have been fulfilled, leading to the issue of a certificate

3.8.1. Note: The issuing of a certificate does not authorize the holder to operate; this authority can only be given by the employer.

3.9. Certification Body - The body that administers procedures for certification of NDT personnel in accordance with this specification, and fulfils the requirements of ISO/IEC 17024.

3.10. Certification cycle: Maximum period of time permitted from the date of certification to the date of *recertification*

3.11. **Certification process**: activities by which a *certification body* determines that a person fulfils *certification requirements*, including application, assessment, decision on certification, *renewal*, *recertification* and use of *certificates* and logos/marks

3.12. **Certification requirements:** set of specified requirements, including requirements of the scheme to be fulfilled in order to establish or maintain certification

3.13. **competence:** ability to apply knowledge and skills to achieve intended results

3.14. **Employer** - The organisation for which a candidate or holder of certification works on a regular basis. An employer may also be a candidate.

3.15. **Examination**: mechanism that is part of the assessment which measures a *candidate's competence* by one

3.16. **Examination centre**: centre approved by the *certification body* where *examinations* are carried out

3.17. **Examiner** - An individual certificated to Level 3 in the method and sector for which he or she is to conduct, supervise and grade examinations and who is authorised so to do by the CB.

3.18. **General Examination** –a written examination, at Level 1 or 2, concerned with the principles of an NDT method.

3.19. **Higher education:** formal learning that occurs after completion of secondary education in the field of engineering or science

3.20. **Industrial NDT Experience** –the experience needed to acquire the skill and knowledge to fulfil the provisions of qualification in the appropriate sector, and which is gained under the supervision of Appropriately Qualified Personnel, in the application of the NDT method in the sector concerned.

3.20.1. Note: In the event that the qualification examination has been passed by a candidate lacking the experience required for certification, the CB *will issue a letter of attestation to the successful candidate indicating that he or she has passed the qualification examination and needs only to meet the experience requirement in order to be certificated. Records of experience obtained post examination shall be presented on form F-179.*

3.21. **Invigilator** - An individual, trained by an AQB in the process of examination invigilation to requirements, who is impartial with respect to the candidate(s) under examination. Invigilators shall be authorized in writing by the CB on the AQB schedule of authorization.

3.22. **Job-specific training** - training, provided by the employer (or his agent) to the candidate or certificate holder in those aspects of non-destructive testing specific to the employer's products, NDT equipment, NDT procedures, and applicable codes, standards and specifications, leading to the award of operating authorisation.

3.22.1. Note: A job specific examination, which is often solely of a practical nature, may be conducted by the employer as a part of the NDT personnel authorisation procedure (the CB publishes guidance for employers in conducting and recording such examinations), or by an Authorized Qualifying Body.

3.23. **Main NDT Method Examination** - written examination, at Level 3, which demonstrates the candidate's general and specific knowledge of the applicable NDT method, 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.

3.24. **Multiple choice examination question** - A question worded in a manner giving rise to four potential replies, only one of which is correct, the remaining three being incorrect or incomplete

3.25. **NDT Instruction** - A written description of the precise steps to be followed in testing to an established standard, code, specification or NDT procedure.

3.26. **NDT media:** Testing products used to create visible indications caused by imperfections or flaws. Example Magnetic powder, contrast aid paints, colour contrast penetrant, developer.

3.27. **NDT Technique** - A specific way of utilizing an NDT method (for example, ultrasonic immersion technique).

3.28. **NDT personnel -** personnel who perform non-destructive testing

3.29. **NDT Procedure** - A written description of all essential parameters and precautions to be observed when applying an NDT technique to a specific test, following an established standard, code or specification. An NDT Procedure can involve the application of more than one NDT Method or Technique.

3.30. **NDT Method** - Discipline applying a physical principle in Non-Destructive Testing (for example, Ultrasonic Testing).

3.31. **NDT Training** - a process of instruction in theory and practice in the NDT method in which certification is sought, which takes the form of training courses to a syllabus approved by the CB.

3.32. **Operating Authorisation** - written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks. Authorisation may be dependent on the provision of job-specific training.

3.33. **Practical Examination** - assessment of practical skills in which the candidate demonstrates familiarity with and the ability to operate the necessary test equipment, to test the prescribed specimens, and to record and to analyse the resulting information to the degree required.

3.34. **Psychometric process:** Statistical process to verify *examinations* are fair, reliable and discriminate between a competent and non-competent individual

3.35. **Qualification** - Evidence of training, professional knowledge, skill and experience as well as physical fitness to enable NDT personnel to properly perform NDT tasks

3.36. **Qualification Examination** - An examination administered directly by the CB or by an Authorised Qualifying Body, which assesses the general, specific and practical knowledge and skill of the candidate.

3.36.1. Note: No documentary material, other than that provided by the examination Centre, is to be accessible to the candidate under any circumstances during a qualification examination. In an open book examination, the candidate is provided with all necessary reference material by the examination Centre; during a closed book examination, the candidate is not allowed access to any reference material whatsoever.

3.37. **Qualified supervision** - supervision of candidates gaining experience by NDT personnel certificated under the Certification Scheme or by non-certificated personnel who, in the opinion of the CB, possess the knowledge, skill, training and experience required to properly perform such supervision

3.38. **Record of Certification** - Document listing all certification issued under the rules specified in this document and its antecedents, indicating that the named individual has demonstrated proficiency in performing NDT within the scope of the certification.

3.39. **Referee**: Individual that at tests the validity of the *candidate's industrial experience*

3.40. **Sector** - A particular section of industry or technology where specialized NDT practices are used, requiring specific product related knowledge, skill, equipment or training. A sector may be interpreted to mean a product (castings, welds or wrought products) or an industry (in-service testing).

3.41. **Significant Interruption** - absence from (or a change of) work activity which prevents the holder of certification from practising the duties corresponding to his or her level in the method and sector(s) for which certification was issued, for (a) a continuous period in excess of one year or (b) two or more periods for a total time exceeding two years.

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

3.42. **Specific Examination** - written examination, at Level 1 or Level 2, 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.

3.43. **Specification** - document stating requirements

3.44. **Specimen** - a sample used in practical examinations, which may include radiographs and data sets, and which are representative of products typically tested in the applicable sector, and which may include more than one area or volume to be tested.

3.45. **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 will be graded.

3.46. **Structured credit system**: Point system based on the NDT activities of the candidate used as an alternative to examination for renewal or recertification

3.47. **Structured experience program (SEP):** Program approved by the certification body to reduce industrial experience

3.48. **Supervision** - Act of directing the application of NDT 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.

3.49. **Validation** - Act of demonstrating that a verified procedure will work in practice and fulfil its intended function, normally achieved by actual witnessing, demonstration, field or laboratory tests or selected trials.

3.50. **Written Practice** – Documented procedure detailing the employer's requirements for qualification, certification and authorization of NDT employees.

3.51. **Renewal** – Process for revalidation of a certificate without examination at any time up to five years after success in an initial, supplementary or recertification examination.

3.52. **Re certification** – Process for re validation of certificate by examination or by otherwise satisfying the CB that the published criteria for recertification are satisfied.

4 Abbreviations

The abbreviations used within this document or its appendices are as follows:

AEC	Authorised Examination centres
ATO	Approved Training Organisations
AQB	Authorised Qualifying Bodies
AUT	Automated Ultrasonic Testing
BRS	Basic Radiation Safety
CB	Certification Body
ET	Electromagnetic Testing (Eddy Current Testing)
MT	Magnetic Particle Testing
NDT	Non-Destructive Testing
OJT	On job training
PA	Phased array (of eddy current or ultrasonic transducers)
PT	Penetrant Testing
QA	Quality Assurance
QC	Quality Control

RI	Radiographic Interpreter
RPS	Radiation Protection Supervisor
RT	Radiographic Testing
TOFD	Time of Flight Diffraction
UT	Ultrasonic Testing

5 Duties and responsibilities

5.1 General

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

5.2.1 The certification body shall fulfil the requirements of ISO/IEC 17024 and will ensure that the NPC (Non-destructive Personnel Certification) for qualification and certification of personnel

5.2.2 The certification body (CB)

Shall initiate, promote, maintain and administer the certification scheme according to ISO/IEC17024 and this document;

Shall be independent of any single interest;

a) shall be responsible for the definition of sectors

b) shall publish information regarding the scope of the certification scheme and a general description of the certification process;

c) shall provide information for training courses that include the syllabi which embody the content of recognized documents; ISO/TS 25107 or equivalent can be used as guidance;

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

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

f) shall approve properly staffed and equipped examination centres, which it shall monitor on a periodic basis;

g) shall administer examinations through approved examination centres;

h) shall bear full responsibilities for examinations conducted on temporary basis at external premises;

i) shall be responsible for ensuring the security of all examination materials (examination specimens, specimen master reports, question banks, examination papers, etc.) and shall ensure that these materials are not in use for training purposes;

j) shall be responsible for granting, extension, suspension, withdrawal or revalidation of certification;

k) shall establish an appropriate system for the maintenance of records, which shall be retained for at least one certification cycle;

l) 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;

m) shall establish a process to authorize examiners;

n) shall establish the conditions for the supervision of work activities, which candidates may claim experience under7.3;

o) shall establish a process for the recognition of higher education;

p) shall establish a process for the approval of non-certified individuals as a referee;

q) shall establish a process for the approval of a structured credit system, where used;

r) shall maintain and update the question bank and the examination specimens along with their specimen master report;

s) shall conduct the examination only in the presence of, and under the control of, an authorized invigilator of the certification body, to ensure that impartiality is maintained;

t) shall establish a process for the approval of a structured experience program, where used.

5.2 Authorized qualification body (AQB)

Where established, the authorized qualification body shall:

a) Work under the control of and apply the specifications issued by the certification body;

b) be independent of any single predominant interest;

c) 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;

d) apply a documented quality management system approved by the certification body;

e) have the resources and expertise necessary to establish, monitor and control examinations centres, including examinations and the verification and control of the equipment;

f) conduct qualification of candidates including review of application and decision on eligibility;

g) prepare, supervise and administer examinations;

h) provide the certification body with the results of qualification needed to make a decision on certification by the certification body;

i) maintain appropriate qualification and examination records according to the requirements of the certification body.

5.3 Examination centre

5.3.1 The examination centre shall:

a) Work under the control of the certification body or authorized qualification body;

b) apply a documented quality procedure approved by the certification body;

c) have the resources needed to prepare and conduct examinations, including the verification and control of equipment;

d) have adequate qualified staff, premises and equipment to ensure satisfactory examinations for the levels, methods, and sectors concerned; the use of external premises is allowed;

e) prepare and conduct examinations under the responsibility of an examiner authorized by the certification body, using only examination questionnaires and specimens established or approved by the certification body for that purpose;

f) maintain appropriate examination documents according to the requirements of the certification body.

5.3.2 An examination centre may operate within the certification body; or within an authorized qualification body; or bean independent legal entity or part of a legal entity. An examination centre can be situated at an employer's premises. In this case, the certification body shall require controls to preserve impartiality and protect confidentiality of the examinations. The examinations shall be conducted only in the presence of, and under the control of, an authorized representative of the certification body.

5.4 Employer

5.4.1 The employer shall document the personal information which shall include the declaration of education, training and industrial experience and visual acuity needed to determine the eligibility of the candidate. If the candidate is self-employed, the industrial experience shall be attested to by a referee.

All documentation obtained from the employer shall be verified by the certification body.

5.4.2 In respect of certified NDT personnel under their control the employer shall be responsible for:

a) All that concerns the authorization to operate, i.e. providing job-specific training (if necessary);

b) issuing the written authorization to operate;

c) the results of NDT activities;

d) ensuring that the annual vision requirements are met;

e) maintaining documentary evidence confirming the continuous application of the NDT method in the relevant sector(s) without significant interruption; this action shall be done every 12 months;

f) ensuring that personnel hold valid certification relevant to their tasks within the organization;

g) maintaining appropriate records.

These responsibilities shall be described in a documented procedure.

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

5.4.4 Certification to this document provides an attestation of general competence of the certified NDT personnel. It does not represent an authorization to operate, since this remains the responsibility of the employer; and the certified NDT personnel 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 specifies 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.

5.5 Candidate

Candidates shall:

a) Provide documentary evidence of training in accordance with BSS NDT requirements

b) provide documentary evidence that the required experience has been gained under supervision;

c) provide documentary evidence of vision satisfying the requirements of ISO 9712 /BSS NDT requirements

d) abide by a code of ethics published by the certification body;

e) provide other requisites requested by the certification body.

5.6 Certificate holders shall

5.6.1 Undertake to abide by the Code of Ethics published as F171.

5.6.2 Submit to an annual test of visual acuity, and provide the results of tests on Form F 183 to the employer.

5.6.3 notify certification Services and the employer in the event that the conditions for validity of certification are not fulfilled

5.7 Examiners

5.7.1 Examiners shall:

5.7.1.1 be authorized by the certification body (BSS NDT) to conduct, supervise and grade examinations;

5.7.1.2 be certified to Level 3 in the NDT method in the product and/or industrial sector for which they are authorized.

5.8.2 An examiner shall not be permitted to examine any candidate:

5.8.2.1 that they have trained for the examination for a period of two years from the date of the conclusion of the training;

5.8.2.2 who is working (permanently or temporarily) in the same facility as the examiner unless the certification body has established a documented confidentiality and impartiality management procedure for such a situation.

5.8 Referee

A referee shall be:

a) Certified to Level 2 or 3 in any NDT method; or
b) non-certified personnel who, approved by the certification body, possess the knowledge, skill,

training and experience required to attest to the candidate's industrial experience.

6 Levels of Qualification

6.1 Level 1

6.1.1 personnel are qualified to carry out NDT operations according to written instructions under the supervision of Appropriately Qualified Level 2 or Level 3 Personnel. Within the scope of the competence defined on the certificate, Level 1 personnel may be authorized by the employer to perform the following in accordance with NDT instructions:

- set up equipment;
- carry out the test;
- record and classify the results in terms of written criteria;
- report the results.

6.1.2 Level 1 personnel have not demonstrated competence in the choice of test method or technique to be used, nor for the assessment, characterisation or interpretation of test results.

6.2 Level 2

personnel have demonstrated competence to perform and supervise non-destructive testing according to established or recognized procedures. Within the scope of the competence defined on the certificate, level 2 personnel may be authorised by the employer to:

- select the NDT technique for the test method to be used;
- define the limitations of application of the testing method;
- translate NDT standards and specifications into NDT instructions;
- set up and verify equipment settings;
- perform and supervise tests;
- interpret and evaluate results according to applicable standards, codes or specifications;
- prepare written NDT instructions;
- carry out and to supervise all level 1 duties;
- provide guidance for personnel at or below level 2, and
- Organise and report the results of non-destructive tests.

1.3 Level 3

1.3.1 personnel are qualified to direct any NDT operation for which they are certificated and may be authorized by the employer to:

- assume full responsibility for a test facility or examination centre 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 and procedures to be used;
- provide guidance and supervision at all levels.

1.3.2 Level 3 personnel have demonstrated:

- a competence to interpret and evaluate test results in terms of existing codes, standards and specifications;
- possession of the required level of knowledge in applicable materials, fabrication and product technology sufficient to enable the selection of NDT methods and techniques, and to assist in the establishment of test criteria where none are otherwise available;
- a general familiarity with other NDT methods.

7 Eligibility

7.1 General

The candidate shall fulfil the minimum requirements of vision and NDT training prior to the examination and shall fulfil the minimum requirements for industrial experience and, where applicable, has reached a minimum age as specified by the certification body prior to certification.

7.2 Training

7.2.1 To be eligible for examination, candidates must have successfully completed, prior to making application for examination, a CB validated course of training at an ATO which covers the relevant part of the published syllabus (covered in the annexure of this document based on CEN ISO/TR 25107).

7.2.2 Candidate holding a valid training certificate issued by a third-party certification training body (approved by Certification bodies coming under IAS) meeting the requirements of ISO9712 shall be acceptable and considered as a completion of qualification training.

7.2.3 Where qualification examinations are to be conducted for candidates in an overseas location and CB validated training is not available through an existing ATO, any training that covers the relevant syllabus may be granted interim recognition for up to two years as meeting the CB's requirements for pre-certification training.

7.2.4 For mature candidates, with at least 5 years documented experience without significant interruption (see definitions) in the NDT method and sector for which certification is sought, who can provide evidence of completion of a course of training (covering the relevant syllabus) which was of at least the duration specified in Table 1, the need to have attended an approved course of training may be waived. Such candidates should apply to the Authorized Qualifying Body as 'mature candidates', attaching evidence of that status. If a significant interruption in continuity in the application of the NDT method exists, the candidate shall undertake further training determined by CB. The minimum required duration of any training, which includes both theoretical and practical elements, is shown in Table 1 below:

Table 1 – minimum required durations of training[5]

NDT method	Level1 days[a]	Level2 days[a]	Level3 days[a]
PAUT		15	6
ET		11	6
TOFD		11	6
MT		5	4

PT		5	3
RT[b]		15	5
BRS	2		
RI	N/A	8	N/A
UT		18	5
Basic knowledge	Direct Access to level 3 examinations parts A, B, & C		Part A-3 days Part B- 1 day Part C- 8 days Total -12 days

[a] One-day duration is at least seven hours, which can be achieved on a single day or by accumulating hours.

[b] for RT, training days does not include radiation safety training. NOTE 1 In the case of specific techniques, see Annex E.

Note *The 12 days (80 hours) training required for Level 3 Basic qualification may be accrued through a combination of classroom training at an approved training organisation (minimum 50%), self-study and distance learning. However, accrued, candidates should record the training undertaken for presentation to the CB. This note relates to the Level 3 Basic Examination (see 3.5), and reductions in training duration up to 50% maximum, may be granted based on holding:*

a) *Product Technology*

The candidate holds a certificate covering:

a multi-sector (Casting, Welding and Forging) - *02 days Reduction*

castings - *01 Day reduction*

welds - *01 Day Reduction*

wrought products - *01 Day Reduction*

b) *Level 2 general theory in four NDT methods, one of which is a volumetric method The Level 3 candidate holds Level 2 certification in*

Four NDT methods - *04 Days reduction*

Three NDT methods - *03 Days reduction*

Two NDT methods - *02 Days reduction*

One NDT methods -*01 Day reduction*

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 and shall ensure that competence is maintained.

a) For level 3:

— for candidates seeking certification in more than one method (i.e. MT, PT), or for those already certified and seeking certification in another method, when the training syllabus concerned duplicates certain aspects (i.e. product technology), the total number of training days for these methods (i.e. PT, MT, VT) may be reduced in line with the training syllabus;

— for candidates who have graduated in a relevant subject from technical college or university, or havecompletedatleasttwoyearsofrelevantengineeringorsciencestudyatcollegeoruniversity (or equivalent formal education), the total required training duration may be reduced by up to 50 %; the certification body shall specify relevant subjects and their qualification.

b) For Levels 1 and 2, when the scope of activity is limited in application and/or in technique (and not covered in Annex E)the training scope and duration may be reduced by up to 50 %.

NOTE Examples of such limitations include those related to application (e.g. automated ET, UT of bar, tube, and rod or normal beam ultrasonic thickness and lamination testing of rolled steel plate) and to technique (e.g. yoke for magnetic particle).

7.3Industrial NDT Experience

7.3.1 General

The minimum duration of industrial experience to be gained in the method where the candidate is seeking certification shall be as given in Table 2 , with the possible reductions. When the candidate is seeking certification in more than one method, the total time of experience shall be the sum of the experience in each method.

For all levels, a minimum period of experience prior to examination shall be specified by certification body (a fraction or percentage of the total requirement in Table 2 , 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 a maximum of five years.

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

Level 3 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 2 details minimum experience for candidates who have successfully completed higher education, as well as candidates without higher education.

Table 2: Minimum Duration of Experience for certification

NDT method	Experience in days[a]					
	Level 1	Level 2		Level 3		
		with Level1	direct access	Higher education, with Level 2	withLevel2	direct access with higher education
ET, RT, UT	45	135	180	270	450	540
RI	N/A	135	180	N/A	-	-
MT, PT	15	45	60	180	240	360
PAUT, TOFD	-	90	120	270	450	540

[a] One-day duration is at least seven hours, which can be achieved on a single day or by accumulating hours. The maximum allowable hours in any one day is 12 hours. Experience in days is achieved by dividing the total accumulated hours by 7.

7.3.2 Level 3

Level 3 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 2 details minimum experience for candidates who have successfully completed higher education, as well as candidates without higher education.

7.3.3 Possible reductions

7.3.3.1 The possible reductions in duration of experience are as described hereafter. Any reduction shall require acceptance by the certification body.

7.3.3.2 A certified Level 1, 2 or 3 adding an additional method may be permitted a reduction of required experience of 25 % for that additional method.

7.3.3.3 A certified Level 1, 2 or 3 individual changing sectors, adding another sector or technique for the same NDT method shall be required to gain additional experience of at least 25 % of the experience required in Table 2; and this shall never be less than 15 days in duration.

7.3.3.4 When the scope of certification sought is limited in application (i.e. thickness measurement or automated testing), experience duration may be reduced by upto50%but shall not be less than 15 days.

7.3.3.5 Up to 50 % of the industrial experience time may be achieved by a structured experience program (SEP). One day of attendance at the SEP may be equivalent to a maximum of five days industrial experience. The SEP shall include all typical tasks of the level, method and sector concerned. The additional intent is to gain specific product and technique knowledge. The SEP shall be approved in advance by the certification body and shall be available for audit by the certification body.

7.3.4 Vision Requirements

7.4.1 The requirements for colour perception and acuity of vision, together with the qualifications of those administering the vision tests, are fully defined in document F183, which includes a form for recording the results of vision tests. The requirements are reproduced below for ease of information.

7.4.2 Candidates for qualification examinations will be required, on the day of the examination, to provide proof of a satisfactory vision test conducted within the 12 months preceding the examination.

7.4.3 Near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1,6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected;

7.4.4 The certification body (CB) shall accept that a nominated official of the certification body, or a Level 3 certificate holder with documented evidence of satisfactory training in the administration of the test, or a licensed physician, nurse, ophthalmologist, or optometrist recognized as competent, may conduct vision tests for candidates and certification holders. A Level 3 individual administering the near vision test shall provide documented evidence of appropriate training when requested by the certification body

7.4.5 Colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT method concerned as specified by the employer.

NOTE: Subsequent to certification, the documented tests of visual acuity shall be carried out at least every twelve months.

8 Qualification Examination

8.1.1 General

8.1.1.1 The examination shall cover an NDT method, technique, industrial sector and/or product sector as appropriate.

8.1.1.2 The process used for the development and selection of examination questions shall be specified in a procedure prepared by the certification body. It shall ensure the questions are appropriate for the relevant syllabus for the method/ technique/ sector, and for the level of certification. The process shall be designed to ensure the comparability of results of examinations using methods such as peer group review, input from subject matter experts, statistical comparisons, and, where the size of the examination cohort allows, psychometric principles may be used as specified in Annex F. The certification body shall establish a documented appropriate methodology and procedures to ensure fairness, validity, reliability, and general performance of examinations to maintain an acceptable pass grade of 70 % for all examinations

8.1.1.3 The processes for preparation and conduct of examinations shall further be designed to ensure the confidentiality and security of examination questions and examination papers.

8.1.1.4. The practical specimens shall be maintained and monitored to ensure consistency and fairness of examinations using processes adopted by the certification body.

8.1.1.5 The results of examinations shall remain valid for up to five years while the candidate completes any remaining certification requirements

8.1.2 Examination elements

8.1.2.1 For Level2 the examination shall consist of the following examination elements:

— General examination element;

— Specific examination element;

— Practical examination element;

— NDT instruction writing element.

8.1.2.2 For Level 3 the examination shall consist of the following examination elements:

- Basic examination element which consists of the following items:
  - Item A technical knowledge;
  - Item B certification body's document knowledge;

—item C Level2 knowledge of methods;

- Main method examination element which consists of the following items:
  - Item D general examination;
  - Item E specific examination;
  - Item F NDT procedures.

8.1.3 Examination time

The certification body shall specify and publish the maximum amount of time allowed for the candidate to complete each examination element, which shall be based upon the following.

8.1.3.1 For Level 1 and Level 2, the total time for the examination elements shall be based on two minutes per multiple choice examination question for general examination element and three minutes per multiple choice examination question for specific examination element.

8.1.3.2 For Level 3, the total time for the examination elements shall be based on three minutes per multiple choice examination question in items B and E and two minutes for items A, C and D.

8.1.3. 3 For questions requiring narrative answers, Level 3 item F, NDT instruction writing element, and for the practical examination element, the time allowed shall be determined by the certification body.

8.1.4 Examination aids

8.1.4.1 The use of aids such as codes, standards, specifications, procedures and electronic devices is only permitted if supplied as part of the examination or authorized by the certification body.

8.2 Examination content and grading for Level 1 and Level 2

8.2.1 General examination element

The general examination element shall be a minimum of 40 multiple choice examination questions and shall be selected randomly from the certification body’s or authorized qualification body’s collection of general examination element questions valid at the date of examination.

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

8.2.2 Specific examination element

The specific examination element shall be a minimum of 20 multiple choice examination questions selected from the certification body’s or authorized qualification body’s collection of specific examination element questions valid at the date of examination.

If the specific examination element covers two or more sectors, the minimum number of questions shall be at least 30, taking into account the industrial or product sectors concerned

8.2.3 Practical examination element

8.2.3.1 The practical examination element shall involve applying the test to prescribed specimens, recording (and, for Level 2 candidates, 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.

Each specimen shall be uniquely identified and have a specimen master report which includes all of the equipment settings (if applicable) used to detect specified discontinuities. Markings 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 to prevent potential information correlation by candidates. The specimen master report shall be compiled based upon at least two independent tests, and shall be verified by a Level3 certificate holder in that method for use in grading examinations. The independent test reports from which the specimen master report is compiled shall be retained as records.

8.2.3.2 Specimens shall be sector (one or more) specific, representing field geometries and shall contain discontinuities representative of those likely to occur during manufacturing or in service. They may be natural or artificial. Data sets, digital radiographic images and/or films can be used instead of physical specimens, but at least one physical specimen shall be examined.

Specimens used for adjustment or for determination of thickness, coating or material properties do not need to contain discontinuities. For RT, the specimens to be tested do not need to contain discontinuities if these are exhibited in the data sets or radiographic images for Level 2 interpretation.

NOTE Guide lines on discontinuity types in examination specimens can be found in ISO/TS22809.

8.2.3.3 The certification body shall ensure that the number of specimens to be tested is adequate to the level, NDT method and sector concerned, and that the specimens contain reportable discontinuities. The number of specimens to be tested in the Level 1 and Level 2 practical examinations shall be in accordance with Annex B

8.2.3.4 The Level1candidate shall follow the NDT instruction (s) provided by the examiner.

8.2.3.5 The Level 2 candidate shall select the applicable NDT technique and determine the operating conditions related to a given code, standard or specification.

8.2.3.6 The time allowed for the examination shall be determined by the certification body

8.2.4 NDT instruction writing examination element

8.2.4.1 The NDT instruction writing examination element shall involve the creation of a written NDT instruction by the Level 2 candidate

Table D2—Percentile weighting for NDT instruction writing examination element for Level2

NDT instruction writing (Level2candidates)	%maximum
a) foreword (scope, reference documents)	5
b) personnel	5
c) equipment/media to be used	5

d)	product (description or drawing, including area of interest and purpose of the test)	10
e)	test conditions, including preparation for testing	10

8.2.5 Grading of the Level1 and Level2 examination

8.2.5.1 The general, specific, practical and NDT instruction writing examination elements shall be graded separately. 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. E-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used. Each correct reply scores 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.

8.2.5.2 The grading of the practical examination element shall be based on items 1 to 3 in Table 4, with the recommended weighting factors in relation to the level and method as applicable

Table4—Subjects and weighting factors for grading—Practical examination element

Item	**Subject**	**Weighting factor**	
		Level1 %	**Level2** %
1	Knowledge of NDT equipment and NDT media.	20	10
2	Application of NDT method	35	26
3	The detection of indications or discontinuities and reporting	45	64
Total		100	100
Table D1gives guidance on additional details on each item, to be taken into account, as applicable by the examiner.			

8.5.2.3 For the Level 1 candidates to be eligible for certification, they shall obtain a minimum grade of 70 % on each examination element (general, specific and practical). For the practical examination element, a minimum grade of 70 % shall be obtained for each specimen tested.

8.5.2.4 The certification body or authorized qualification body may classify some discontinuities as mandatory to be detected.

8.5.2.5 For the Level 2 candidates to be eligible for certification, they shall obtain a minimum grade of 70 % on each examination element (general, specific, practical and NDT instruction writing). For the practical examination element, a minimum grade of 70 % shall be obtained for each specimen tested and NDT instruction writing element, as applicable. The certification body or authorized qualification body may classify some discontinuities as mandatory to be detected and evaluated as unacceptable. The NDT instruction writing element shall be graded in accordance with Annex D .

For AT, the required test instruction may relate to a specimen which is not tested during the practical examination element.

8.3 Examination content and grading for Level 3

8.3.1 General

8.3.1.1 All candidates for Level 3 certification in any NDT method shall have successfully completed (with a grade of ≥ 70%) the practical examination element for Level2 in the relevant sector and method, except for the drafting of NDT instructions for Level 1 A candidate who is Level 2 in the same NDT method and product sector or who has successfully passed a Level 2 practical examination element for the NDT method in an industrial sector, as specified in Annex a, is exempt from passing again the Level2 practical examination element. 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 3 certification

8.3.2 Basic examination element

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 examination questions shown in Table 5 . Examination questions shall be selected in an unpredictable way from the certification body's or authorized qualification body's collection of basic examination element questions valid at the date of examination

Table5 — Minimum required number of basic examination element questions for Level 3

Item	Subject	Number of questions
A	Technical knowledge in materials science and process technology.	25
B	Knowledge of the certification body's qualification and certification system based on this document. This may be an open-book examination.	10
C[a]	General knowledge of at least four methods as required for Level 2 and chosen by the candidate from the methods given in Table 1 . These four methods shall include at least one volumetric method (UT or RT).	15 For each test method (total 60)
[a] for item C, the certification body may adjust the number of questions per method for methods impacted by evolving technology, increasing methods and techniques being added.		

8.3.2.2 It is recommended that the basic examination element be passed first and remain valid, provided that the first main method examination element is passed within five years after passing the basic examination element. A candidate holding a valid Level 3 certificate is exempt from the need to retake the basic examination element.

8.3.3 Main method examination element

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 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 the examination.

Table6 —Minimum required number of main method examination element questions

Item	Subject	Number of questions
D	Level 3 knowledge relating to the NDT test method applied.	30
E	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.	20
F	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 an NDT procedure in a successfully passed Level 3 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.	—
Applicable aids shall be specified and communicated to candidates. These aids may be provided by the certification body or authorized qualification body for use in open-book examinations.		

8.3.4 Grading of Level3 examinations

8.3.4.1 General

The grading of the basic and main method examination elements shall be done separately. To be eligible for certification, a candidate shall pass both the basic and main method examination elements. For the three items A, B, and C of the basic examination element and items D and E of the main method examination element, 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 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.

8.3.4.2 Basic examination element

In order to pass the basic examination, the candidate shall obtain a minimum grade of 70 % in each of parts A, B, and C.

8.3.4.3 Main method examination element

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 Annex D for the recommended weighting of the written NDT procedure.

8.4 Conduct of examinations

8.4.1 All examinations shall be conducted in examination centres established, approved, and monitored by the certification body, either directly or through an authorized qualification body.

8.4.2 At the examination, the candidate shall have in their possession valid proof of identification and an official notification of the examination, which shall be shown to the examiner or invigilator upon demand.

8.4.3 Any candidate who, during the course of the examination, does not abide by the examination rules or who perpetrates, or is an accessory to, fraudulent conduct shall be excluded from all further examinations for a period of at least one year.

8.4.4 Examinationquestionsshallbevalidatedbythecertificationbody.Whenconventional 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 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 examinations shall be invigilated by an examiner or by one or more invigilators placed under a certification body's responsibility

8.4.6 With the approval of the certification body, a candidate for a practical examination may use their own equipment.

8.4.7 Candidates shall not be permitted to bring into the examination area personal items, unless specifically authorized to do so by the examiner

8.5 Re-examination

8.5.1 A candidate failing for reasons of unethical behaviour shall wait at least 12 months before reapplying .A candidate who fails one or more elements of an examination (i.e. general, specific, practical etc.) may retake the failed examination no more than twice:

a) After a minimum time of one month (which may be reduced if further training acceptable to the certification body has been satisfactorily completed);

b) no later than two years after the initial examination.

8.5.2 A candidate failing two re-examinations on one or more elements shall complete further training, acceptable to the certification body, and be required to retake all examination elements.

8.6 Supplementary examinations

8.6.1 A certified Level 1 or Level 2 individual changing sectors or adding another sector for the same NDT method shall be required to take sector specific and practical examination elements for the new sector. Level 2 shall also be required to write the NDT instruction for the new sector.

8.6.2 A certified Level 3 individual changing sectors or adding another sector for the same NDT method shall be required to take the sector specific items E and F of the main method examination element only

9 Certification

9.1 Administration

9.1.1 A candidate fulfilling all certification requirements 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), digital certificates and/or by electronically uploading and displaying the relevant information on a database on the certification body's website.

9.2 Certificates

Certificates shall include the following information as a minimum:

a) The name of the certified individual, and (optional) date of birth of the certified individual;

b) a unique identification (e.g. photo or reference to a photo identification by number)

c) the name of the certification body;

d) the scope of the certification, including reference to this document, the NDT method(s) and level of certification, and/or applicable techniques and sector(s), including issue date;

e) any limitations to the certification, if applicable;

f) the effective date of certification and date of expiry;

g) the signature and/or authorization of a designated representative of the certification body;

h) contact information or website address to issuing certification body data base for verification purposes.

Where the data listed above 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.

9.3 Conditions of certification

9.3.1 General

Certification is granted, extended, suspended, withdrawn or revalidated by the certification body. The maximum period of validity of the certificate is 5 years. To be valid, certificates shall be supported by a current annual verification of acceptable vision as per 7.4

9.3.2 Granting

Certification shall be granted by the certification body when all certification requirements are fulfilled. The period of validity shall commence upon the decision of certification by the certification body.

9.3.3 Scope extension

The certification body shall specify requirements for scope extension for situations where an individual seeks extension of their scope of certification for an existing certification (i.e. additional product sector).

At the discretion of the certification body:

a) The additional scope may be added to the existing certification and the original period of validity maintained; or

b) a new certificate with a new period of validity may be issued for the extension to scope only.

9.3.4 Suspension of certification

Certification may be suspended by the certification body:

a) If the individual becomes temporarily physically incapable of performing their duties;

b) if the individual fails to provide evidence of meeting the visual acuity requirements of this document annually;

c) if a significant interruption takes place in the method for which the individual is certified;

d) at the discretion of the certification body for any other situations.

The certification body shall specify the conditions for revalidation where an individual's certification has been suspended.

9.3.5 Withdrawal of certification

Certification shall be withdrawn by the certification body:

a) at the discretion of the certification body, i.e. after reviewing evidence of behaviour in compatible with the certification scheme or failure to abide by a code of ethics;

b) if the individual fails to meet the requirements of renewal, until such time as the individual meets the requirements for renewal;

c) if the individual fails recertification, until such time as the individual meets the requirements for recertification or certification;

d) at the discretion of the certification body, when verifiable evidence is received from the employer stating that the individual has become physically incapable of performing their duties

9.3.6 Certification after withdrawal

The certification body shall specify the conditions for certification where an individual's certification has been withdrawn in the case of 9.3.5a) and d). (REFER complaints and appeals procedure form QP 14)

9.3.7 Waiting period prior to certification after withdrawal

In case of 9.3.5 a), the certification can only be granted after a minimum 12 month waiting period. The certification body shall specify the length and conditions of the waiting period.

9.4 Certificates issued by other certification bodies

9.4.1 A certification body may consider certification issued by another certification body. If so, the certification body shall do so in accordance with a documented process. Where the certification body takes into account work performed by another body, it shall have appropriate reports, data and records to demonstrate that the results are equivalent and conform to the requirements established by the certification scheme.

9.4.2 This process shall consider the granting of credit for valid certification including a review of education, training, experience, vision and examination requirements of the originating certification body. The review may allow the certification body to recognize the general theory part of a method examination. The review may also allow the certification body to recognize the specific and/or practical examination elements but only when the method/technique, industry/product sector are appropriate.

9.4.3 Where the prior certification is accepted without any additional examination, the expiry of the new certification shall not extend beyond that of the prior certification nor shall extend the scope of certification.

9.4.4 Existing level 3 certificate holders who are attempting additional level 3 examinations will be exempt the whole of the basic examination and, if they hold valid certification at level 3

covering the same method in a different sector, the part D (a general examination covering the Level 3 knowledge relating to the test method) is exempted.

9.4.5 Existing Level 3 candidates (who hold a valid ASNT / ACCP /ISO9712 certificate in any method appearing for different Level 3 method examination) is exempted to take Part A and Part C of Basic examination. The candidate needs to make a formal request and need to get the exemption from the CB before appearing for the examination.

9.4.6 Existing Level 3 candidates (who hold a valid ASNT / ACCP /ISO9712 certificate) appearing for Level 2 is exempted to take General examination. The candidate need to appear for specific and practical exams on the Industrial sector sought.

10 Renewal

10.1 Prior to the completion of the period of validity following certification and recertification, certification shall be renewed by the certification body for a new period of validity on production of:

a) documentary evidence of a satisfactory near vision acuity examination taken within the preceding 12 months; and

b) documentary evidence of a satisfactory colour vision and/or grey scale perception examination taken within the preceding 60 months; and

c) verifiable documentary evidence of continued satisfactory work activity without significant interruption in the method and sector for which certificate renewal is sought;

and either:

d) successful completion of a practical examination element in accordance with 11.2.2 except that it shall consist of a minimum of 50 % of the examination specimens required by11.2.2; or

e) successfully meeting the requirements of the structured credit system as given in10.2 and Anex c .

If the criterion c) for renewal is not met, the individual shall complete the practical examination elements required by11.2.2.

10.2 Where a candidate elects to use the structured credit system, they shall provide evidence to the certification body to demonstrate achievement of a minimum of 100 points in the 5 year renewal period based on the requirements of Table C 1.

10.2.1 For candidates seeking renewal of Level 1 certificates, a minimum of 75 of the 100 points is required for any combination of activities listed in part A of Table C 1.

10.2.2 For candidates seeking renewal of Level 2 or 3 certificates, a minimum of 50 of the 100 points is required for any combination of activities listed in part A of Table C 1.

10.2.3 Where a certification body has opted to implement a renewal period of less than 5 years, the minimum points required may be prorated accordingly [i.e. a 4year renewal period would require a minimum of 80 points (100 × 4/5)].

10.2.4 Where a candidate is seeking renewal for more than one certificate, points granted for a specific activity can be applied to the total points required for each certificate for those activities not specific to a

particular method (e.g. “Current individual membership in NDT or NDT related society”). However, candidates shall meet the total number of points required (i.e. 100 points) for each certificate for which renewal is being sought.

10.3 It is the responsibility of the certificate holder to initiate the procedure required for renewal.

10.3.1 The renewal application should be made to the certification body before the date of the expiration of the certification and shall be no later than 12 months after the date of expiration of the certificate.

10.3.2 If the renewal application is received prior to or on the date of expiration of the certificate, the renewal date of the new certificate shall be the same as the date of expiration of the certificate (i.e. no interruption in certification). The date of expiration of the new certificate shall be no more than 5 years from the date of expiration of the original certificate.

10.3.3 If the renewal application is received after the date of expiration of the certificate, the renewal date of the new certificate shall be the date on which all requirements for renewal are met. In this case, there shall have been an interruption in the certification period. The date of expiration of the new certificate shall be no more than 5 years from the date of expiration of the original certificate.

10.4 The maximum period of validity of the certificate at renewal is 5years.

10.5 Certificate holders at Level 1 and Level 2 not meeting the requirements for renewal shall fulfil the requirements for recertification as specified in11.2.2. Certificate holders at Level 3 not meeting the requirements for renewal shall fulfil the requirements for recertification, as specified in 11.3.1 .

11 Recertification

11.1 General

Prior to the completion of each second period of validity, the certified individual shall be recertified by the certification body for a new period of five years or less, provided the individual meets the criterion for renewal specified in10.1 a) and10.1 b) and meets the applicable conditions described in the following.

It is the responsibility of certificate holders to initiate the procedures required to obtain recertification. If the recertification is applied for more than 12 months after expiry of the period of validity, a complete examination (general, specific, and practical) for Level 1 and Level 2 and a main method examination element (Table 6, items D, E and F) for Level 3 shall again be passed successfully.

11.2 Levels 1 and 2

11.2.1 Levels 1 and 2 certificate holders seeking recertification shall provide a confirmation issued by the employer of continued satisfactory work activity without significant interruption in the method and sector for which recertification is sought and satisfy11.2.2.

11.2.2 The individual shall successfully complete the practical examination element which demonstrates continued competence to carry out work within the scope specified on the certificate. This shall include testing specimens appropriate to the scope of recertification and in addition, for Level 2, the production of a

written instruction suitable for the use of Level 1 personnel If the individual fails to achieve a grade of at least 70% for each specimen tested and, for Level 2, for the instruction, two re-examinations of the recertification examination shall be allowed after at least 7 days and within 12 months of the first attempt at the recertification examination.

11.2.3 In the event of failure in the two allowable re-examinations, the certificate shall be withdrawn. In order to reinstate certification, a candidate shall:

— Complete further training, acceptable to the certification body; and

— retake all examination elements required for initial certification.

The date of expiration of the reinstated certificate shall be no more than 5 years from the date of expiration of the original certificate.

11.2.4 If the criterion in 11.2.1 for recertification is not met, the individual shall complete the general, specific and practical examinations required by 11.1 .

11.3 **Level 3**

11.3.1 Level 3 certificate holders seeking recertification shall provide a confirmation issued by the employer of continued satisfactory work activity without significant interruption in the method and sector for which recertification is sought and:

a) Satisfy the Level 3 requirements of 11.3.3 for a written examination; or

b) meet the requirements for a structured credit system, as given in 11.3.2 and Table c .

The individual shall decide between the examination or 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 their continued practical competence in the method or pass a Level 2 practical examination, as specified in11.2.2, except for the drafting of NDT instructions.

11.3.2 Where a certificate holder elects to use the structured credit system, they shall provide evidence to the certification body to demonstrate achievement of a minimum of 100 points in the 5year recertification period based on the requirements of Table C.1 .

For certificate holders seeking recertification of Level 3 certification:

— A minimum of 50 and a maximum of 70 of the 100 points is required for any combination of activities listed in item A of Table c.1 and

— a minimum of 30 and a maximum of 50 of the 100 points is required for any combination of activities listed in item B of Table C.1 .

Where a certification body has opted to implement a recertification period of less than 5 years, the minimum points required may be prorated accordingly [(i.e. a 4year renewal period would require a minimum of 80 points (100 × 4/5)].

11.3.3 Where a certificate holder elects to take the written examination or does not meet the structured credit system requirements, they shall successfully complete an examination that includes:

a) a minimum of 20 multiple-choice 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

b) a minimum of 10 multiple-choice questions on the requirements of the certification body's certification scheme.

11.3.4 If the individual fails to achieve a grade of at least 70 % in the recertification examination, a maximum of two retests of the recertification examination shall be allowed. The time period within whichalltestsaretobetakenshallbe12 months, unless otherwise extended by the certification body.

11.3.5 In the event of failure in the two allowable re-examinations, the certificate shall be withdrawn. In order to reinstate certification, a candidate shall:

— Complete further training, acceptable to the certification body; and

— retake all main method examination items as required for initial certification.

The date of expiration of the reinstated certificate shall be no more than 5 years from the date of expiration of the original certificate.

11.3.6 A candidate who applies for and does not meet the requirements of the credit system shall be recertified in accordance with11.3.3 . In the event of failure at the first attempt at recertification by examination, only one retest of the recertification examination shall be allowed within 12 months of the date of application for recertification via the structured credit system

12 Files

12.1 The certification body shall be responsible for the maintenance of:

a) an actual list or database of all certified individuals classified according to level, NDT method and sector;

b) an individual file for each candidate who has not been certified, for at least five years from the date of application;

c) an individual file(s) for each certified individual and for each individual whose certification has lapsed containing:

   1) a unique personal identifier (e.g. a photo or reference to a photo identification by number);

   2) application forms;

   3) examination records, such as questionnaires, answers, description of specimens, records, results of test, NDT procedures, and grade sheets;

   4) renewal and recertification documents, including evidence of visual acuity and continuous work activity;

   5) reason(s) 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 full certification cycle after the certification has lapsed.

NOTE The archiving of specimen, data sets or radiographs is not required.

13 Transition period

13.1 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 years from the date of implementation of the new method or sector, duly qualified personnel as examiners for the purpose of conducting, supervising and grading the examinations. The five-year implementation periodisnottobeusedbythecertificationbodyasameanstocertifycandidateswhodonotmeet all the qualification and certification requirements of this document. When new/additional training requirements of the new method or sector are adopted, currently certified personnel shall provide documented evidence of full compliance at the next recertification cycle.

13.2 Duly qualified personnel means that such personnel:

a) Have the knowledge of the principles of NDT and the specific knowledge in relation to the sector;

b) have industrial experience of the application of the NDT method;

c) have the ability to conduct examinations;

d) be able to interpret the questionnaire and results of examinations.

13.3 Within two years of the date of appointment, these examiners shall have gained certification by satisfying the requirements for recertification as described in 11.3.1 .

14. Complaints and Appeals

14.1. Certificate holders must recognise that personal integrity and professional competence are the fundamental principles on which their testing activities are founded (see also use and misuse of certificates – paragraph 23). Accordingly, it is a condition of certification that certificate holders shall undertake to comply with a code of ethics, which is published as document reference F171.

14.2. An aggrieved party in a dispute, which considers itself to have reasonable grounds for questioning the competency or ethical behaviour of a certificated individual or his employer, may petition the CB for withdrawal or cancellation of certification QP-14 Such a petition must be accompanied by all relevant facts and, if it is the view of the CB that an adequate case has been presented, a full investigation of the circumstances under dispute will be initiated.

14.3. BSS NDT has a process for the resolution of appeals, complaints and disputes received from candidates, certified persons, their employers, and other parties regarding the certification process, qualification criteria, or the performance of certified persons.

Annex A

Sectors

A.1 General

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

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

A.2 Product sectors

These include:

— Metallic materials:

a) castings(c) (ferrous and non-ferrous 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 (i.e. plates, bar, rods);

A.3 Industrial sectors

Sectors combining a number of product sectors including all or some products or specified materials (i.e. ferrous and non-ferrous metals or non-metals like ceramics, plastics, and composites):

a) manufacturing(m);

b) pre-and in-service testing which includes manufacturing(s);

When creating an industrial sector, the certification body shall precisely specify 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 each sector from which the industrial sector is composed

Annex B

Minimum number and type of specimens for the Level 1 and Level

2 practical examination elements

a) For all practical examination elements, candidates shall be required to test one or more sector specific specimen.

b) If the candidate is required to test more than one specimen, each specimen shall be different in character, i.e. in product form, material specification, shape, size, or discontinuity type.

c) The evaluation and interpretation of a data set shall be considered as equivalent to testing one specimen.

d) For a product sector related practical examination elements:

Candidates shall be required to test a minimum of two specimens and for multiple product sectors, a minimum of one from each product sector.

e) For an industrial sector related practical examination elements:

Candidates shall be required to test at least two specimens; representative of products typically tested in the industrial sector.

f) For RT candidates:

Level 1 and Level 2 candidates shall radiograph at least two specimens. Level 2 candidates, already certified as Level 1, shall radiograph at least one specimen.

In addition to taking radiographs, Level 2 candidates shall interpret a set of at least 10 film images or 10 digital radiographic images. This set shall be considered as one specimen.

g) When the certification sought is limited in application, for example, thickness measurement, radiographic interpretation or automated testing, the minimum number of specimens may be reduced by up to 50 % to one per sector.

Annex C

Structured credit system for renewal Level 1, 2 and 3 and for Level 3 recertification

C.1 General

Table C.1—Structured credit system for renewal Level 1, 2 and 3 and for Level 3 recertification[a]

		Level1			Level2			Level3		
Item	**Activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**
	Part A									
1	**Performance of NDT Activities[a]**	2 /day	25	95	2 /day	25	95	2 /day	25	95
2	**Completion of theoretical training in the method**	1 /day	5	15	1 /day	5	15	1 /day	5	15
3	**Completion of practical training in the method**	2 /day	10	25	2 /day	10	25	2 /day	10	25
4	**Delivery of practical or theoretical training in NDT in the method considered**	N/A	N/A	N/A	1 /day	15	75	1 /day	15	75
	Part B									
5	**Participation to a technical seminar/paper in the field of the method or technique**	1 /day	2	10	1 /day	2	10	1 /day	2	10
6	**Presenting a technical seminar/ paper in the field of the method or technique**	1/presentation	3	15	1/presentation	3	15	1/presentation	3	15
7	**Current individual membership in NDT or NDT related society**	1/membership	2	5	1/membership	2	5	1/membership	2	5
8	**Technical oversight and mentoring of NDT personnel/ trainee in the relevant method**	N/A	N/A	N/A	2 /mentee	10	30	2 /mentee	10	40
9	**Participation or convenorship in standardization and technical committees**	N/A	N/A	N/A	1/committee	3	15	1/committee	4	20

NOTE Where the term “year(s)” is noted in this table, this is specified as a certification year and not as a calendar year.

a See C.2 for specific details of this activity.

Table C.1 *(continued)*

		Level1			Level2			Level3		
Item	**Activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**	**Points granted per activity**	**Maximum number of points per year of activity**	**Maximum number of points over 5 years of activity**
10	**Performing a technical NDT role within a certification body**	N/A	N/A	N/A	2 /activity	10	30	2 /activity	10	40

NOTE Where the term “year(s)” is noted in this table, this is specified as a certification year and not as a calendar year.

a See C.2 for specific details of this activity.

C.2Performance of NDT activities

C.2.1 In assessing this activity type, the certification body should consider the responsibilities of employers as specified in 5.5 and the duties specified in. The following work activities may be considered as acceptable:

a) Knowledge and understanding of the customer’s specifications and the inspection standards;

b) verification of operating conditions or setting up of the test equipment, successful performance of NDT, satisfactory reporting;

c) performance as a Level 3 examiner.

C.2.2 In order to assess the activities specified in C.2.1, the certification body may request from the individual seeking renewal or Level 3 recertification documentation and/or evidence to demonstrate compliance including, but not limited to, the following:

a) Confirmation of the candidates work activities by a certified individual or referee;

b) confirmation of the level of activity of the individual in the given method;

c) confirmation of formal documented competency or proficiency test(s) in the given method;

d) dates and protocol numbers of reports;

e) details of any job specific training received;

f) confirmation of employer's authorization to operate;

g) summary of activities and outputs;

h) job/position description;

i) annual/regular employer assessments of performance/competence;

j) sample NDT reports;

k) sample procedure(s) developed (Level 3only);

l) customer feedback;

m) confirmation of adherence to code of ethics from employer;

n) confirmation of compliance with additional national requirements (i.e. radiation safety).

Other evidence may be deemed acceptable or be requested by the certification body. The certification body may require that some or all of the submitted evidence be confirmed by the employer.

Annex D

Grading practical examination elements

D.1 Grading of Level 1 and Level 2 practical examination element—percentile weighting

TableD.1 — Percentile weighting for practical examination element for Levels 1 and 2

Subject	%maximum (Level 1)	%maximum (Level 2)
Item1—Knowledge of the NDT equipment and/or NDT media:		
a) system and/or media knowledge and control;	10	5
b) validity of verifications and/or media.	10	5
Total	**20**	**10**
Item2—Application of the NDT method:		
a) preparation of the specimen (i.e. surface condition), including visual examination;	5	2
b) for Level2, the selection of the NDT technique and determination of operating conditions;	n/a	10
c) setting up of the NDT apparatus and performance of the test;	25	12
d) post test procedures (i.e. demagnetization, cleaning, preservation).	5	2
Total	**35**	**26**
Item3—Detection of discontinuities and reporting:		
a) detection of mandatory reportable indications;	20	18
b) characterization of indications (if applicable with respect to the test method: type, position, orientation, apparent dimensions, etc.);	15	18
c) Level 2 evaluation against code, standard, specification or procedure criteria;	n/a	18
d) production of the test report.	10	10
Total	**45**	**64**
Total items1,2and3	**100**	**100**

D.2 Grading of Level 2 writing examination elements

TableD.2—Percentile weighting for NDT instruction writing examination element for Level2

NDT instruction writing (Level 2 candidates)	%maximum
a) foreword (scope, reference documents)	5
b) personnel	5

c) equipment/media to be used	5
d) product (description or drawing, including area of interest and purpose of the test)	10
e) test conditions, including preparation for testing	10
NDT instruction writing (Level 2 candidates)	%maximum
f) detailed instructions for application of the test, including settings	40
g) recording and classifying of the test results	20
h) reporting the results	5
TOTAL	100

8 D.3 Weighting of Level 3 main method examination element item F

TableD.3 —Percentile weighting for the Level 3NDT procedure examination

Subject	**%maximum**
Item1 —General:	
a) scope (field of application, product);	2
b) document control;	2
c) normative references and complementary information.	4
Sub-total	**8**
Item 2—NDT personnel	**2**
Item3—Materials and equipment:	
a) main NDT equipment (including defining verification status and pre-test serviceability checks);	10
b) ancillary equipment (reference and calibration blocks, consumables, measuring equipment, viewing aids, etc.).	10
Sub-total	**20**
Item4— Test piece:	
a) physical condition and surface preparation (temperature, access, removal of protective coatings, roughness, etc.);	1
b) description of area or volume to be tested, including reference datum;	1
c) discontinuities sought.	3
Sub-total	**5**
Item5—Performance of the test:	
a) NDT method(s) and technique(s) to be used;	10
b) setting up the apparatus;	10
c) conducting the test (including reference to NDT instructions);	10
d) characterization of discontinuities.	10
Sub-total	**40**
Item6—Acceptance criteria	**7**
Item 7—Post-test procedure:	
a) disposition of non-conforming product (labelling, segregation);	2

b) restoration of protective coatings (where required).	1
Sub-total	**3**
Item8—Production of the test report	**5**
Item9—Overall presentation	**10**
Total	**100**

Annex E

Training requirements for techniques

15 E.1 General

This annex considers the increasing use of NDT techniques developed in the framework of an NDT method. This annex is also intended to provide guidance for an increasing request for competency in those techniques.

The selection of NDT techniques included in this annex is not meant to be comprehensive nor exclusive and, therefore, leaves room for future techniques when their use becomes significant for inclusion in the annex.

Direct access to Level 2 requires the total training days shown in each table for Levels 1 and 2. Direct access to Level 3 requires the total training days shown in the tables where applicable for Levels 1, 2, and 3.

N/A means not applicable.

16 E.2 Recommended additional training days for techniques

E.2.1 General

The training requirements for the techniques shown in Table E.1.to E.4.are in addition to those for the method shown inTable.2.

Note The training requirements for the base methods from Table.2.are reproduced in the first line of Table E.1.to E.3 for convenience.

E.2.2 Validity

Certification in a technique is valid as long as the certificate in the main method is valid.

Table E.3—Ultrasonic testing (UT) techniques additional training requirements

Technique	Abbreviated term	Training requirements (days)		
		Level1	Level2	Level3
UT (as per Table 2)		8	10	5
Time off light	UT-TOFD	5	5	N/A
Phased array	UT-PA	5	5	N/A

TableE.4—Ultrasonic testing (UT) techniques additional prerequisites

Technique	Level1	Level2	Level3
UT –TOFD	UT1	UT2	N/A
UT–PA	UT1	UT2	N/A
NOTE The level stated in the table is the minimum acceptable level of certification. A Level 3 certificate holder satisfies this requirement.			

17 E. 3 Recommended total training days for radiographic testing (RT) techniques

E.3.1 General

The training requirements for the techniques shown in TableE.5 and E.6 are the total training days required for certification in the RT technique noted.

E.3.2 Validity

Certification in a technique is valid as long as the certificate in the main method is valid, except for techniques with limited scope.

TableE.5—Radiographic testing (RT) techniques training requirements

Technique	Technique with Limited scope	Abbreviated term	Training requirements (days)		
			Level1	Level2	Level3
Film &Digital		RT -FD	8	10	8
Film		RT –F	5	10	5
Digital		RT- D	5	10	5
Computed tomog-raphy		RT –CT	4	5	5
Radioscopy		RT –S	4	4	5
	RT Film Interpretation	RT –FI	N/A	8	

	RTdigital image interpretation	RT –DI	NA	8	N/A
	RT film and digital image interpretation	RT –FDI	NA	9	

NOTE At the present time, training shown in Table 2 for RT is mainly film radiography (RT-F).

When the training syllabi are in agreement with the recommendations in ISO/TS 25107, several situations are to be considered, RT including then film and digital radiography (RT-FD).

E.3.3 Additional training requirements for film to digital transition

Candidates holding an RT-F certificate and seeking certification in RT-D need to have additional training, as shown in Table E 6

Table E .6—Additional training requirements for RT-F to RT-D

Method	Technique	Abbreviated term	Level1	Level2	Level3
RT	Digital radiography	RT-D	3 days	5 days	3 days

Annex F

Psychometric principles

If the certification body choses to use psychometric principles for the written examinations, then the following shall be required.

— Any reference to questions in this document relates to scorable questions, however, all questions (scorable and non-scorable) shall be considered when calculating examination times.

— Scorable questions are approved and validated test items submitted to certification body (or authorized qualification body) for entry into the item bank. Non-scorable questions (not used to determine pass/fail) are items developed and approved for use on future examinations but are not statistically validated. Validation requires a minimum number of exposures and item analysis as specified by the certification body before use as a scorable question.

— The minimum passing grade shall be 70%.

— The grading of examinations shall be done in accordance with the psychometric process specified by the certification body.