

PCN/AERO A0 Issue 6

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PCN QUALIFICATION AND CERTIFICATION OF NDT PERSONNEL FOR THE AEROSPACE MULTI-SECTOR

Note: Requirements contained in this document are supplementary to those contained in the current edition of the PCN General Requirements for Certification of Personnel engaged in Non-Destructive Testing.

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INTRODUCTION

This document covers the specific requirements for PCN qualification and/or Level 2 or Level 3 certification of personnel engaged in Non-Destructive Testing of Aerospace Materials and Components, Aerospace Structures and Aerospace Welds.

The documents listed under 'Appendices to this document' are supplementary to, and amplify for each NDT method, the provisions of this specification. Any person requiring information concerning the content of PCN documents should visit www.bindt.org or email pcn@bindt.org.

APPENDICES TO THIS DOCUMENT:

Appendix A1	Eddy Current Testing of aerospace materials, components & structure
Appendix A2	Ultrasonic Testing of aerospace materials, components & structure
Appendix A3	Radiographic Testing of aerospace materials, components & structure
Appendix A4	Radiographic Testing of aerospace welds
Appendix A5	Magnetic Particle Testing of aerospace products
Appendix A6	Liquid Penetrant Testing of aerospace products
Appendix Z1	examination syllabus compendium
Appendix Z2	example examination questions

NORMATIVE REFERENCES:

ISO/IEC 17024	General requirements for bodies operating certification systems of persons
BS EN ISO 9712	General principles for qualification and certification of NDT personnel
EN 4179	Aerospace series - qualification and approval of personnel for non-destructive testing, which is technically equivalent to AIA-NAS-410
AIA-NAS-410	Certification and Qualification of Non-Destructive Test Personnel
CAP747 GR23	Personnel Certification for Non-Destructive Testing of Aircraft, Engines, Components and Materials. https://publicapps.caa.co.uk/docs/33/CAP747_21JUL17_BM.pdf

RELEVANT PCN DOCUMENTS:

Appendix E3	(to PCN/GEN) Radiation Safety
CP09	Requirements for Authorised Qualifying Bodies
CP17A	Recertification of PCN/AERO Level 3 through the credit system
CP19	Informal Access to BINDT Authorised Qualifying Bodies by Third Parties
CP22	Grading of PCN practical examinations
CP25	Guidelines for the preparation of NDT procedures and NDT instructions in PCN examinations
CP27	Code of ethics for PCN certificate holders
PSL04	PCN examination availability
PSL08A	PCN documents - issue status
PSL30	Log of pre-certification employment & experience
PSL31	Information - use of the PCN logo
PSL44/44A	Vision Requirements
PSL49	PCN examination exemptions for holders of current valid certificates issued by other certification bodies
PSL57A	Application form for INITIAL examinations
PSL57B	Application form for recertification, supplementary and retest examinations
PSL 57C	Application form for the issue of PCN certification where experience was gained subsequent to initial examination Implement with PCN/GEN Issue 5
ISO 18490	Vision Requirements (Aerospace) See (UK NANDTB NAndtB_24)

All PCN documents are available for download from <http://www.bindt.org>

1. SCOPE

- 1.1 This document together with Appendices covers the specific requirements for PCN qualification and/or Level 2 or Level 3 certification of personnel engaged in Non-Destructive Testing of Aerospace Materials and Components, Aerospace Structures and Aerospace Welds, and provides certification in compliance with BS EN ISO 9712, as well as qualification in compliance with EN 4179. The requirements herein, which are intended primarily for employees of organisations seeking to comply with EASA Part 145 regulations, but which may also be utilised for Part 21 organisations and aerospace materials suppliers (subject to the requirements of aerospace prime contractors), cover physical requirements, training, experience and qualification examinations for personnel performing NDT in the aerospace manufacturing, service, maintenance and overhaul industries.
- 1.2 This series of documents is designed to provide comprehensive information for users of the PCN Scheme. The complete list of published PCN documents is detailed in publication reference PSL/8A, which is updated and republished every three months on the Institute's web site at www.bindt.org where copies of PCN documents are available for download free of charge. Organisations are required at all times to be in possession of the most up to date PCN documents, as such they may register with the "PCN Update Scheme" which guarantees that they automatically receive all new or revised PCN documents.
- 1.3 It is intended, through publication of these documents, to provide PCN candidates, certificate holders and their employers with all relevant information. However, if further information or advice is required on any certification matter, please contact the Certification Services Division of BINDT on telephone number +44 (01604) 438300, or email pcn@bindt.org.

2. APPLICABILITY AND RECOGNITION

- 2.1 PCN Aerospace certification is awarded, following success in initial or revalidation processes and/or examinations, to personnel using NDT methods to test and/or accept materials, products, components, assemblies or sub-assemblies.
- 2.2 The UK CAA has issued guidance in publication CAP747 GR23 for PCN aerospace sector certification and its utilisation.
- 2.3 The UK National Aerospace NDT Board (UK NANDTB) has published document, NANDTB/10, a Policy on Recognition of PCN Aerospace Certificates for NDT personnel operating under EASA Part 145.
 - 2.4.1 ***NAndtB/10 – Policy on Recognition of PCN Aerospace Certificates for NDT personnel operating under EASA Part 145***

In accordance with the requirements within EN 4179, the NANDTB is entitled to recognise equivalency, and in this regard the UK National Aerospace NDT Board has agreed to recognise that the PCN/AERO will be recognised by the Board as satisfying the qualification requirements of EN 4179. This includes PCN Aero examinations conducted at overseas PCN aerospace approved AQB's (Authorised Qualifying Bodies).

It remains the responsibility of the Nominated Level 3 (as defined in the UK CAA Generic Requirement number 23) to determine whether additional job-specific training and examination, covering the NDT processes and products utilised by the employer, is required.

3. COMPLIANCE

- 3.1 PCN Certification issued as a result of success in an examination defined herein complies with the European standard BS EN ISO 9712 unless stated to the contrary, and may be used by employers of Aerospace NDT personnel to satisfy the *qualification requirements* of the European Standard EN 4179.
- 3.3 When Personnel Certification for Non-Destructive Testing (PCN) is awarded, the employing organisation shall authorise those person's to which PCN certification has been issued, so that they may carry out Non-Destructive testing in the method and sector for which they hold certification.
 - 3.3.1 Employer authorisation shall be in accordance with the employer's internal, procedure / written practice and shall be in addition to any PCN certification. (See clause 4.1).
 - 3.3.2 The employer shall be solely responsible for the authorisation of its employees, they shall satisfy themselves that the person is competent within the method and sector for which NDT certification is held.
 - 3.3.3 The employer cannot authorize personnel for another employer.

3.3.4 Individuals cannot qualify or authorize themselves. (If self-employed, the self-employed person shall be the employer, and shall act accordingly, for employer see 4.13)

4. DEFINITIONS AND ABBREVIATIONS

The following definitions apply within this document and its appendices:

- 4.1 **Authorisation** written statement made by an employer confirming that an individual has met the applicable requirements of this specification and the company's written practice, where the employer has deemed the certified person, competent to carry out NDT on its behalf. This may involve the use of such items as a trade test.
- 4.2 **Operating Approval** - Written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks. Such authorisation can be dependent on the employer having provided job or task-specific training.
- 4.3 **Authorised Qualifying Body (AQB)** - A body, independent of any single predominant interest, satisfying the criteria detailed in PCN document reference CP9 and authorised by the British Institute of NDT to prepare and administer PCN aerospace examinations to qualify NDT personnel. An Authorised Qualifying Body within the PCN Scheme may otherwise be referred to as *an Outside Agency*.
- 4.4 **Basic Examination** - written examination, at Level 3, 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 2.
- 4.5 **Category** - The specific application within the NDT method for which the individual is certificated. This may restrict the qualification to inspection using only specified techniques, particular equipment on stated materials, structures or geometries, e.g., ultrasonic testing of aerospace materials and components (excluding aerospace structures). Certified categories will be clearly indicated on the PCN record of certification.
- 4.6 **Certification** - a written statement by PCN that an individual has met the applicable requirements of BS EN ISO 9712. Certification does not include *authorisation*, but an employer may, in certain circumstances, confer authorisation on the strength of certification, provided such a process is documented in the employer's written practice.

The term "certification" may only be used when the certification process complies with the requirements of ISO/IEC 17024, and the term "authorisation" is used to denote a written statement by an employer that an individual has met specific requirements, which may include the need for additional training and/or qualification examinations before carrying out NDT for that employer.

- 4.7 **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. In the present case, the certification body is the British Institute of NDT, which owns and administers the PCN Scheme.
- 4.8 **Closed book examination** - an examination administered without access to reference material, except that provided with or during the examination.
- 4.9 **Cognizant Engineering Organisation** - The engineering or NDT organisation of the prime contractor or end user authorised to make NDT-related decisions and give NDT-related approvals.
- 4.10 **Direct Observation** - Direct observation is when the observer is able to come to the immediate aid of the trainee and remains within a distance that permits uninterrupted, unaided visual and verbal contact with the trainee.
- 4.11 **Direct Readout Instrument** - Instruments that physically display measurements in dimensional or electrical units (e.g. inches, millimeters or %IACS, etc.) either as digital readout or an analog display, such as a scale/pointer configuration and do not require special skills or knowledge to set up the instrument and do not involve adjusting signal displays such as gates, delays, gain, or phase to obtain measurements. For example, common direct readout instruments include basic ultrasonic thickness gauges without an oscilloscope display, and eddy current coating thickness gauges.
- 4.12 **Documented** - the condition of being recorded in written or electronic form.
- 4.13 **Employer** - A government, prime contractor, sub-contractor, supplier, or outside agency employing or contracting the services of one or more individuals who perform NDT. Self-employed persons are included in this definition.
- 4.14 **Evaluation** - a review, following interpretation of the indications noted during an NDT inspection, to determine whether they meet specified acceptance criteria or to determine its significance.

- 4.15 **Examination Centre** - A location, approved by the British Institute of NDT, where PCN qualification examinations will be carried out strictly in accordance with the criteria detailed in PCN document reference CP9. An examination centre may be situated at an employer facility or at a BINDT Authorised Qualifying Body's premises.
- 4.16 **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 British Institute of NDT. Defined in EN 4179 as - A Level 3 certified to this standard and designated by the Responsible Level 3 or NANDTB to administer all or part of the qualification and certification process, excluding vision examinations, in the NDT method(s) in which the Examiner is certified.
- 4.17 **Experience** - Actual performance of an NDT method conducted in the work environment resulting in the acquisition of knowledge and skill. This does not include formal classroom training, but may include laboratory and on-the-job training as defined by the employer's written practice.
- 4.18 **Formal Training** - An organized and documented program of learning activities designed to impart the knowledge and skills necessary to be qualified to this standard. Formal training may be a mix of classroom, practical and programmed self-instruction as approved by the Responsible Level 3, Examiner or NANDTB.
- 4.19 **General Examination** – Written examination at level 1 or Level 2, concerned with the principles of an NDT method.
- 4.20 **Indication** - the response or evidence of a condition resulting from an NDT inspection that requires interpretation to determine its significance.
- 4.21 **Industrial NDT Experience** - actual performance or observation conducted in the work environment resulting in the acquisition of knowledge and skill. This does not include classroom or laboratory training but does include on-the-job training.
- 4.22 **Instructor** - An individual designated or approved by the Responsible Level 3 or NANDTB to provide training for NDT personnel.
- 4.23 **Interpretation** - the determination of whether indications are relevant or non-relevant.
- 4.24 **Main method examination** – written examination, at Level 3, which demonstrates the candidate's general and specific knowledge, and ability to write NDT procedures for the NDT method as applied for the industrial or product sector(s) for which certification is sought.
- 4.25 **Mature candidate** – a candidate for PCN examination having 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 published PCN syllabus) which was of at least the duration required for qualification.
- 4.26 **Multiple choice examination question** – wording of a question giving rise to four potential replies, only one of which is correct, the remaining three being incorrect or incomplete unless otherwise stated.
- 4.27 **National Aerospace NDT Board (NANDTB)**: An independent aerospace organisation representing the UK's aerospace industry that is chartered by the participating prime contractors and recognized by the UK CAA to provide or support NDT qualification, examination, and/or certification services in accordance with this specification.
- 4.28 **NDT instruction** - document detailing the NDT technique and testing parameters used for the inspection of a specific component, group of parts (e.g. "aluminium extrusions" or "aluminium brackets"), or assembly. NDT instructions are based on NDT procedures defined below.
- 4.29 **NDT method** - one of the disciplines of non-destructive inspection or testing (e.g. radiography) within which different techniques exist.
- 4.30 **NDT procedure** - document containing 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. Procedures are then used to develop NDT instructions, as defined above.
- 4.31 **NDT technique** - a category within an NDT method; for example, ultrasonic immersion testing or ultrasonic contact testing. Specific techniques within a method are defined by the cognizant NDT organisation, BINDT or the applicable NANDTB.

- 4.32 **NDT training** (approved training) - an organized and documented program of activities designed to impart the necessary knowledge and skills to be qualified. (See 5.1.1).
- 4.33 **On-the-job training** - training in the work environment to gain experience in learning instrument set-up, equipment operation, applying the process, and recognition, interpretation and evaluation of indications under appropriate technical guidance.
- 4.34 **Operating authorization** – written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks. **Such authorisation may be dependent on the provision of job-specific training, trade tests and monitoring of competency on an ongoing basis by the employer in conjunction with a written practice.**
- 4.35 **Open Book Examination** - examination administered with access to specific reference material that is provided with or referenced in the examination.
- 4.36 **Outside agency** - independent company or organisation outside the employer who provides NDT services to implement the requirements of this specification, such as training and examination of NDT personnel. Consultants and self-employed individuals are included in this definition. The UK NANDTB oversees a BINDT system for Accreditation of Outside Agencies.
- 4.37 **Practical Examination** - assessment of practical skills in which the candidate demonstrates familiarity with and the ability to perform, the test.
- 4.38 **Prime contractor** - an organisation having overall responsibility for design, control and delivery of a system, component or product.
- 4.39 **Qualification** - Demonstration of physical attributes, knowledge, skill, training and experience required to properly perform NDT tasks.
- 4.40 **Qualification examination** – Examination administered by the certification body or the authorised qualification body, which assesses the general, specific and practical knowledge and the skill of the candidate.
- 4.41 **Responsible Level 3** - a Level 3 individual designated by the employer with the responsibility and authority to ensure that the requirements of EN 4179 are met and to act on behalf of the employer.
- 4.42 **Significant Interruption** - an absence from (or a change of) work activity which prevents the individual from practising the duties corresponding to his or her level in the NDT method for:
- 4.41.1 A continuous period in excess of one year, within the certification period
- 4.41.2 Two or more periods for a total time exceeding two years, within the certification period
- 4.43 **Specific examination** - Written examination, at Level 1 or Level 2 concerned with the testing techniques applied in particular sector(s), including the knowledge of the product(s) tested and of codes, standards, specifications, procedures and acceptance criteria.
- 4.44 **Sub-contractor** - an organisation responsible to the prime contractor for the manufacture or maintenance of aerospace products. For the purposes of this document, this includes suppliers and processors.
- 4.45 **Test sample (specimen)** - part or image containing one or more known and documented natural or artificial discontinuities, flaws or conditions used in the practical examination to demonstrate the candidate's proficiency in an NDT method. Test samples can refer to actual hardware, fabricated test parts, or, when applicable, images of actual hardware such as radiographs.
- 4.46 **Trade Test** a test of proficiency in a given trade, standardized by obtaining norms for novices, apprentices, journeymen, and experts in the trade.
- 4.46 **Written practice** - a documented procedure detailing the employer's requirements for qualification, certification, training and authorization of NDT employees.

4.47 The following abbreviations are used in this specification and its appendices:

BRS	Basic Radiation Safety
ET	Eddy Current Testing
MT	Magnetic Particle Testing
NANDTB	National Aerospace NDT Board
NDT	Non-Destructive Testing
PCN	Personnel Certification in NDT
PT	Penetrant Testing
RPA	Radiation Protection Advisor
RPS	Radiation Protection Supervisor
RT	Radiographic Testing
UT	Ultrasonic Testing

5. RESPONSIBILITIES

5.1 The British Institute of NDT (the certifying agency)

5.1.1 The British Institute of NDT (BINDT), which complies with ISO/IEC 17024, is responsible for providing qualification and certification of aerospace sector NDT personnel in accordance with this specification, which provides compliance with BS EN ISO 9712 and satisfies the qualification criteria of EN 4179 for EASA part 145 organisations.

5.1.2 BINDT is also responsible for implementing the general certification policy of the PCN Certification Management Committee (CMC), and the qualification policy and technical requirements defined by the UK National Aerospace NDT Board.

5.2 NDT Personnel

5.2.1 Responsibilities of NDT personnel for each level of certification are defined in the applicable standard(s), i.e. BS EN ISO 9712 and EN 4179.

5.2.2 The UK NANDTB has ruled that, if equipment operation or acceptance of production hardware is required as a part of the Level 3's duties, an appropriate valid Level 2 certificate shall be held.

5.3 Employer

5.3.1 To utilise this qualification, employers shall evaluate the scope of the PCN qualification and decide whether further training and/or job specific examinations are necessary to cover the employer's products, processes and equipment. In any event, the employer shall have a formal procedure, or written practice, as defined in EN 4179 or AIA-NAS-410, to satisfy this requirement.

5.3.2 The written practice, which shall be approved by the employers Responsible Level 3, shall address the procedural details necessary for the employer to implement an NDT qualification and certification program and shall include, either directly or by reference, the details of the NDT qualification and certification process, including:

5.3.2.1 the levels of qualification and certification used by the employer

5.3.2.2 personnel duties and responsibilities

5.3.2.3 training and experience requirements

5.3.2.4 certification and recertification requirements

5.3.2.5 records and record keeping requirements

5.3.2.6 requirements for expiration, suspension, revocation and reinstatement of certifications

5.3.3 The written practice and applicable NANDTB procedures shall be available for review by the employer's customer(s) and regulatory agencies. Further requirements regarding the contents of a written practice are detailed in EN 4179.

5.3.4 It remains the responsibility of the Nominated Level 3 as defined in the UK CAA GR No. 23 (Personnel Certification for Non-Destructive Testing of Aircraft, Engines, Components and

Materials) to determine whether additional job-specific training and examination, covering the NDT processes and products utilised by the employer, shall be required.

6. ELIGIBILITY FOR CERTIFICATION

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

6.1 Training

6.1.1 To be eligible for examination the candidate shall provide documentary evidence of successful completion of a British Institute of NDT validated course of training at a BINDT ATO which covers the relevant part of the published syllabus (CEN ISO/TR 25107). This shall be within the method, sector and at the level for which certification is sought.

6.1.2 For all levels, the candidate shall satisfactorily complete a course of theoretical and practical training recognized and approved by The BINDT

6.1.2.1 Where PCN examinations are to be conducted for candidates in an overseas location and BINDT validated training is not available through a BINDT ATO, a training course that is equivalent to the PCN approved syllabus may be granted interim recognition for up to two years subject to BINDT approval as meeting PCN requirements for pre-certification training.

6.1.2.2 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 a British Institute of NDT approved course of training may be waived. Such candidates should apply to the BINDT Authorised Qualifying Body as 'mature candidates', attaching evidence of that status.

6.1.2.3 If a significant interruption in continuity in the application of the NDT method exists, the candidate shall undertake further training determined by BINDT.

6.1.3 For Level 3 candidates, 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, studying books, periodicals and other specialized printed or electronic materials.

6.1.4 The minimum duration of training undertaken by the candidate for certification shall be as defined in Table 1 for the applicable NDT method.

6.1.5 Any possible reduction in training shall be defined within clause 6.1.8 and table 1.

6.1.6 Training duration is based upon the candidate possessing adequate mathematical skills and a prior knowledge of materials and processes (product technology). If this is not the case, additional training shall be undertaken.

6.1.7 To determine all Level 3 training requirements the ATO shall carry out a GAP analysis on the candidate in order to establish areas of weakness. All areas of weakness shall be included within a bespoke Level 3 training package provided by the ATO to the candidate, prior to any certification examination.

6.1.8 Training hours include both practical and theoretical courses.

6.1.8.1 Direct access to Level 2 requires the total hours shown in Table 1 for Levels 1 and 2.

6.1.8.2 Direct access to Level 3 requires the total hours shown in Table 1 for Levels 1, 2, and 3.

6.1.8.3 When considering the responsibilities of a certified Level 3 and the content of Part C of the basic examination for Level 3 (see Table 4). Additional training concerning other NDT methods may be necessary for those that do not currently meet the required knowledge requirement. The pre training course GAP analysis carried out by the ATO shall address the requirements listed within table 4 Part C for knowledge of 4 NDT Methods.

Table 1: Minimum Duration of Training (hours)

NDT Method	Level 1 hours	Level 2 hours	Level 3 hours
ET	40	48	48
PT	16	24	24
MT	16	24	32
RT	40	80	40
RI	N/A	56	N/A
UT	40	80	40
BRS	16	N/A	N/A
RPS	N/A	24	N/A
Basic knowledge	(direct access to Level 3 examination parts A, B and C)		80

NOTE 1: The 80 hours training required for Level 3 Basic qualification may be accrued through a combination of classroom training at a BINDT accredited training organisation (minimum 50%), self-study and distance learning. However accrued, candidates should record the training undertaken for presentation to PCN if requested. This note relates to the Level 3 Basic Examination (see 7.5). Reductions in training duration up to 72 hours maximum, may be granted based on holding:

a) **Product Technology** -The candidate holds a certificate covering:

a multi-sector	possible reduction - 12 hours
castings	possible reduction - 4 hours
welds	possible reduction - 4 hours
wrought products	possible reduction - 4 hours

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

Four NDT methods	possible reduction -60 hours
Three NDT methods	possible reduction -45 hours
Two NDT methods	possible reduction -30 hours
One NDT methods	possible reduction -15 hours

6.1.9 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 mandated training duration. BINDT assigns responsibility for such reductions to the training/examination body. Decisions on reduced training hours shall be justified by the training/examination body and records of that justification shall be retained and made available during routine BINDT audits (if requested).

6.1.10 For all levels:

6.1.10.1 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) may be reduced in line with the training syllabus.

6.1.10.2 For candidates who have graduated in a relevant subject from technical college or university, or have completed at least two 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 2: It shall be 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.)

6.1.11 For levels 1 and 2, when the certification sought is limited in application or technique, for example in application (e.g. automated ET, UT of bar, tube, and rod or normal beam

ultrasonic thickness and lamination testing of rolled steel plate) or in technique for example RT using only radioscopes only

Then the training duration may be reduced by up to 50%.

When direct access to Level 2 RT certification for film interpretation only is required, and shall be restricted to one product sector, then a minimum training requirement of 56 hours shall apply.

6.2 Industrial NDT Experience

- 6.2.1 The minimum duration of experience to be gained in the sector where the candidate is seeking certification shall be as given in Table 2, with the possible reductions given in clause 6.4. When the candidate is seeking certification in more than one method, the total time of experience shall be the sum of the experience required for each method.
- 6.2.2 For level 2 certification, the intent is that work experience consists of time as a level 1. If the individual is being qualified directly to Level 2, with no time at Level 1, then the experience shall consist of the sum of the time required for Level 1 and 2. No reduction in the period of experience shall be allowed.
- 6.2.3 Industrial NDT experience in the appropriate sector may be acquired either prior to or following success in the qualification examination.
- 6.2.4 In the event that the experience is sought following successful examination, the results of the examination shall remain valid for up to two years.
- 6.2.5 Documentary evidence (in a form acceptable to the British Institute of NDT, i.e., on PCN form PSL/30), of experience satisfying the following requirements shall be confirmed by the employer and submitted to the BINDT AQB prior to examination, or directly to BINDT prior to the award of PCN certification in the event that experience is gained after examination.
- 6.2.6 The minimum duration of experience for certification shall be as defined in Table 2.

Table 2: Minimum Duration of Experience for certification

NDT Method	Experience (months) ^a		
	Level 1	Level 2	Level 3
ET, RT, UT	3	9	36
MT, PT	1	3	24
RI	N/A	6	N/A

^a Work experience in months is based on a nominal 40 hours/week, or the legal week of work. When an individual is working in excess of 40 hours per week, they may be credited with experience based on the total hours, but he/she shall be required to produce evidence of this experience.

6.3 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 above details the minimum experience required for level 3 candidates.

- 6.3.1 For level 3 candidates who have successfully completed a degree or diploma at a technical school or who have completed at least two years of engineering or science study at an accredited college or university, (proof of qualifications will be required) may be eligible for a reduction in the amount of experience required by 50%.
- 6.3.2 For Level 3 certification, the intent is that work experience consists of time as a Level 2. If the individual is being qualified directly from Level 1 to Level 3, with no time at Level 2, the experience shall consist of the sum of the times required for Level 2 and Level 3. No reduction in the period of experience shall be allowed.

- 6.3.3 Level 3 candidates shall have the required amount of NDT experience prior to taking any PCN Certification examination.

6.4 Possible reductions

- 6.4.1 The possible reductions in the duration of experience required are as described hereafter, provided that, when several reductions are applicable, the total reduction does not exceed 50% of the total experience duration required. Any reduction applied for requires verification / acceptance by BINDT.

When considering a possible reduction in the duration of experience, the certification body should take into consideration the following elements.

- 6.4.1.1 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.
- 6.4.1.2 When gaining experience simultaneously in two or more surface NDT methods, i.e. MT, PT, the experience gained in the application of one NDT method may be complementary to the experience gained in one or more other surface methods.
- 6.4.1.3 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.
- 6.4.1.4 The level and quality of education possessed by the candidate should also be considered. This is particularly the case for the Level 3 candidate but it can also be applicable for other levels.
- 6.4.2 Credit for work experience may be gained simultaneously in two or more of the NDT methods covered by the International Standard BS EN ISO 9712, with the reduction of total required experience as follows:
- 6.4.2.1 Two testing methods: reduction of total required time by 25%
- 6.4.2.2 Three testing methods: reduction of total required time by 33%
- 6.4.2.3 Four or more testing methods: reduction of total required time by 50%.
- 6.4.3 In all cases, the candidate shall be required to show that for each of the NDT method and sector combinations for which they seek certification, they have at least half (50%) of the experience required (see table 2), this shall never be less than one month in duration.
- 6.4.4 When the certification sought is limited in application (e.g. thickness measurement or automated testing), the experience duration may be reduced by up to 50% but shall not be less than one month.
- 6.4.5 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 6.4.4. The course shall concentrate on practical solutions of frequently occurring testing problems and shall involve a significant element of testing known defective specimens at an authorised training establishment.

6.5 Vision Requirements

- 6.5.1 The PCN requirements for colour perception and acuity of vision, together with the qualifications of those administering the vision tests, are fully defined in PCN document PSL/44, which includes a form for recording the results of vision tests. The requirements are reproduced below for ease of information:
- 6.5.2 From 1st January 2011 the NANDTB recognise the Tumbling E Chart as a satisfactory near vision test and confirms that no other near vision test shall be carried out as an equivalent test to demonstrate compliance, please refer to NANDTB 24.

- 6.5.3 Candidates for PCN 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.
- 6.5.4 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;
- 6.5.5 Colour vision shall be sufficient, so 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 3: Subsequent to certification, the documented tests of visual acuity shall be carried out at least every twelve months.

7. QUALIFICATION EXAMINATION

7.1 Examination Application

- 7.1.1 Initial enquiries to the BINDT Authorised Qualifying Body (AQB) may be by telephone. Formal applications must be made on an application form (PSL/57A) available direct from The BINDT or from the AQB. No examination appointment can be considered confirmed until a correctly completed application form (PSL/57A) has been received.
- 7.1.2 Application forms ask for specific details on experience and training to the published syllabus and must be signed to the effect that those details are correct. In the event of a false statement being discovered, any certification awarded as a result of the examination will be null and void.
- 7.1.3 Applications dependent upon the individual holding appropriate certification must be supported by acceptable evidence of such certification (photocopies are acceptable at this stage). The British Institute of NDT requires candidates to present original certificates to the AQB on the date of examination.
- 7.1.4 Where marks from earlier examinations are to be included in the composite grade, the candidate must supply the relevant examination result notice (or, where unavailable, the date and scope of the examination and the AQB where the examination took place) showing the grades obtained. Failure to comply with this clause will result in a refusal to examine.
- 7.1.5 The location of all The BINDT's AQB's, the scope of examinations for which they are approved, and contact information is given on document PSL/4, copies are available at www.bindt.org
- 7.1.6 Provision is made wherever possible for candidates with a disability which may affect their ability to complete PCN examinations. For example, up to 25% additional time may be allowed in examinations for candidates suffering from dyslexia. The candidate is responsible for bringing his or her disability to the attention of the examining body.

7.2 Examination Equipment and Documentation

- 7.2.1 The BINDT AQB will provide all necessary NDT equipment, although for ultrasonic and eddy current testing examinations, candidates may bring their own. Any item of apparatus brought by a candidate that is unreliable or rendered unserviceable during the examination shall be replaced by the candidate. Guidance on suitable equipment is available directly from the BINDT AQB.
- 7.2.2 Digital instrumentation capable of storing calibration details, formulae or data relevant to NDT must be deprogrammed prior to attempting any PCN practical examination using that instrument. The candidate will be required to demonstrate compliance and, in the event that the BINDT AQB is not satisfied that deprogramming is effective, the candidate may be required to use equipment provided by the AQB, or be refused examination.
- 7.2.3 All necessary reference standards will be provided by the BINDT AQB. During PCN examinations, candidates must not be in possession of any reference standards, other those provided by the AQB.

- 7.2.4 Provided security of examination materials can be guaranteed, candidates will be allowed the use of an AQB provided PC or lap-top computer in the NDT instruction and NDT procedure writing section of the PCN examination. On no account will the use of a candidate's own computer be permitted during a PCN examination and, for reasons of security, candidates are not permitted to bring any form of computer, including hand-held devices (PDAs, etc.) into the examination facilities at a PCN AQB or Examination Centre. The provision of computers for candidate use is optional for any BINDT AQB.
- 7.2.5 The use of a pocket calculator is permissible in PCN examinations provided that it is of a type that does not permanently store programs, formulae or data relevant to NDT.
- 7.2.6 Mobile telephones, audio, video or other recording devices are not permitted in any PCN examination area.

7.3 Written Qualification Examination Content - Level 2

The qualification examination consists of a general, a specific and a practical examination and covers a given NDT method as it is applied in the aerospace sector.

7.3.1 General Examination

- 7.3.1.1 The general examination is a closed book examination consisting of 40 multi-choice answer questions covering the theory of the applicable method at the appropriate level.
- 7.3.1.2 The general examination includes only validated questions selected in an unpredictable way from the collection of general questions approved by the British Institute of NDT at the time of the examination.
- 7.3.1.3 The time allowed for the examination is 80 minutes, and the pass mark is 70%.

7.3.2 Specific Examination

- 7.3.2.1 The specific examination for all levels is an open book examination consisting of 30 multi-choice answer questions covering the application of the NDT method to aerospace products.
- 7.3.2.2 It may include the use of specifications, codes, equipment, operating procedures, and test techniques that the candidate may typically use in the performance of their duties with the employer.
- 7.3.2.3 The examination shall only use validated questions selected in an unpredictable way from the collection of specific questions approved by the British Institute of NDT at the time of the examination.
- 7.3.2.4 The time allowed for the examination is 60 minutes, and the pass mark is 70%.

NOTE 4:

At Level 2, 20 of the 30 specific written questions will cover the application of the NDT method (and no reference material will be provided)

The remaining 10 questions will cover aerospace product technology, standards and specifications (the AQB shall provide any specifications required for use by the candidate in this examination part).

- 7.3.2.2 Reference material such as specifications, tables, formulas, etc. shall be provided by the AQB as determined by the responsible Examiner. Questions utilizing such material shall require understanding of the information contained therein rather than merely finding its location.

7.3.3 Radiation Safety

- 7.3.3.1 PCN certification in the radiographic method is valid only so long as the certificate holder also holds certification for either basic radiation safety or radiation protection. In the United Kingdom, this requirement is satisfied by holding PCN valid certification for radiation safety.
- 7.3.3.2 PCN provides guidance for radiographic certificate holders and candidates based in countries other than the UK

- 7.3.3.3 If current radiation safety certification is not held, the candidate for radiographic certification will attempt the PCN basic radiation safety examination module at the time of the radiography examination.
- 7.3.3.4 Details of the PCN radiation safety examinations are in Appendix E3.1 to the current edition of PCN/GEN.

7.4 **Practical Qualification Examination Content - Level 2**

- 7.4.1 The practical examination consists of a demonstration of proficiency in NDT tasks that are typical of those to be accomplished in the performance of the candidate's duties. The practical examination is designed to ascertain the ability of the candidate to use a range of equipment and techniques, and to:
 - 7.4.1.1 make the required settings;
 - 7.4.1.2 operate the test equipment properly;
 - 7.4.1.3 test a number of specimens, as detailed in the relevant appendix to this document; comprising aerospace materials, components and/or structure, as appropriate to the certification sought;
 - 7.4.1.4 record and to analyse the resultant information to the degree required according to written instructions or a code, standard, specification or a procedure.
- 7.4.2 The candidate will demonstrate the ability to prepare written instructions for the application of a specified NDT technique. This will be an open book examination where the candidate is provided with the relevant standard, code or specification, together with a copy of PCN document CP25.
- 7.4.3 The candidate will select the applicable NDT technique and determine the operating conditions related to a given code, standard, or specification.
- 7.4.4 The specimens used for the practical test will be selected from a collection representative of those likely to be tested by the candidate during normal work activity. Each test specimen will be uniquely identified and have a master report which includes all of the equipment settings used to detect specified discontinuities contained within the specimen.
- 7.4.5 Test specimens shall contain discontinuities characteristic of those that occur during manufacturing or in service. They may be natural, artificial or implanted. For practical radiography, the test specimen will not necessarily contain discontinuities since these will be exhibited in the radiographs for interpretation.
- 7.4.6 The total time allowed for the practical examination is as stated in the relevant appendix. The minimum pass mark is 70% per sample tested and 70% for the NDT instruction (failure to detect and report a reportable discontinuity in any one sample, or failure to produce an acceptable NDT instruction, will result in failure of this examination part). (Note: The whole examination average grade shall not be less than be 80%)
- 7.4.7 For radiography candidates, the practical examination includes interpretation and reporting on radiographs of components and structure. The total time allowed for the radiographic interpretation part is 4 hours, and the pass mark is 70%. (Note: The whole examination average grade shall not be less than be 80%)

7.5 **Qualification Examination Content - Level 3**

- 7.5.1 Level 3 candidates not holding appropriate level 2 certification shall pass a relevant level 2 practical examination (except that they need not draft an NDT instruction).
- 7.5.2 In the basic examination the candidate shall demonstrate:
 - 7.5.2.1 in a closed book examination, technical knowledge and understanding of materials science and technology, including production and in-service discontinuities – **Part A**
 - 7.5.2.2 in an open book examination, knowledge and understanding of the qualification and certification system defined in this specification – **Part B**
 - 7.5.2.3 in a closed book examination, general knowledge and understanding of at least four methods at Level 2 standard chosen by the candidate from the ET, PT, MT, RT and

UT methods. The four chosen methods shall comprise the principal method for which the certification is sought and three others, which must include at least one volumetric method (UT or RT) unless UT or RT is the principle method – **Part C**

NOTE 5: The basic examination shall be passed first and remains valid providing that the main method examination is passed within 5 years of the date of completing the basic examination.

7.5.3 The validated examination questions are selected in an unpredictable way from the collection of basic examination questions approved by the British Institute of NDT at the time of the examination. The number of questions set will be as defined in Table 4.

Table 4: Number of Basic examination questions (multiple choice type)			
Part	Examination	Number of questions	Duration
A	Materials technology and science, including typical defects in a wide range of products including castings welds and wrought products.	30 multi-choice	60 minutes
B	Qualification and certification procedure in accordance with this document	10 multi-choice	20 minutes
C	15 general questions at Level 2 standard for each of four NDT methods, including at least one volumetric NDT method (UT or RT).	60 multi-choice	120 minutes

7.5.4 **The main method examination consists of:**

7.5.4.1 A general examination covering the Level 3 knowledge relating to the test method (for which the certification is sought) – **Part D**

7.5.4.2 A specific examination relating to the application of the NDT method in the aerospace sector, including the applicable codes, standards and specifications (the candidate will be provided with any relevant code, standard or specification) – **Part E**

7.5.4.3 A practical examination requiring the candidate to draft an NDT procedure in the aerospace sector – **Part F**

7.5.5 The validated examination questions are selected from the collection of the main method questions approved by the British Institute of NDT at the time of the examination. The number of questions shall be as defined in Table 5.

Table 5: Number of Main Method questions			
Part	Examination	Number of questions	Duration
D	General	40 multi-choice questions	80 minutes
E	Specific	30 multi-choice questions	60 minutes
F	Practical	Drafting of one or more NDT procedures (see definitions)	4 hours per procedure

7.6 **Examination Exemptions**

7.6.1 Candidates in initial PCN examinations are not required to attempt an examination part in which they have already achieved success during the process of gaining PCN certification, so long as the subject examination part has (or had) the same (or a greater) scope as that part for which an exemption is claimed, and the resultant certification remains valid.

7.6.2 Existing PCN 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 C1 (a general examination covering the Level 3 knowledge relating to the test method, shall also be exempt).

- 7.6.3 Level 3 candidates who hold PCN (or equivalent acceptable to BINDT) level 2 certificates are exempt part or the whole of the level 3 Basic examination part B. However, the candidate must demonstrate a general knowledge at level 2 of at least four NDT methods, including at least one relating to a volumetric NDT method (UT or RT).
- 7.6.4 For the purpose of claiming exemptions, certification issued by other independent NDT personnel certification bodies may be considered by the British Institute of NDT for equivalence (refer to PCN document PSL/49 for further information). An administrative charge will be made where the British Institute of NDT requires an evaluation of alternative certification.
- 7.6.5 If any candidate elects to claim an exemption (where entitled), the mark obtained in the examination, which lead to the issue of certification, under which such exemption is claimed, where the actual examination mark cannot be ascertained, a mark of 80% shall be used.
- 7.6.6 If any candidate elects to include within their examination any part or parts for which they may have been awarded an exemption, failure in any such part will cause the candidate to fail and no certification will be issued. The validity of any existing PCN certificates held by the candidate shall not be affected by such failure.
- 7.6.7 A candidate for radiography who claims an exemption in respect of Basic Radiation Safety should note that PCN radiography certification is valid only so long as the holder holds current PCN BRS certification or other valid radiation safety certification recognised by the British Institute of NDT. (See also - NOTE 7)

7.7 Conduct of Examinations

- 7.7.1 All PCN examinations shall be conducted in examination centres established, approved and monitored by the British Institute of NDT, either directly or through an Authorised Qualifying Body. An examination centre may be established by an AQB at the employer's premises, but the employer shall not take part in the setting, conduct or grading of a PCN examination.
- 7.7.2 At the time of examination, the candidate shall have in his possession valid proof of identification and an official notification of the examination, which shall be shown to the examiner or invigilator upon demand.
- 7.7.3 Once an examination has commenced, candidates found in possession of equipment, materials or documents which, if used during a PCN examination, would be deemed to constitute cheating, will be considered to have cheated and the examination will be terminated.
- 7.7.4 Candidates proved to have cheated in a PCN examination will not be accepted as a candidate for any future PCN examination for a minimum period of 12 calendar months from the date of the examination in which cheating was established to have taken place. No examination results will be issued for those examination parts already completed and a letter will be sent to the candidate concerned and to the employer or sponsor explaining why the examination was terminated.
- 7.7.5 The Level 2 written and practical examinations shall be prepared, supervised and graded by one PCN examiner.
- 7.7.6 Level 3 examinations shall be graded by one examiner. An authorised examiner can prepare, administer and grade written or practical NDT examinations, and administer all or part of the qualification process in the method(s) for which they are certified.

7.8 Grading of Examinations

7.8.1 General

The pass mark for each examination part is 70%.

To be eligible for certification all candidates must achieve an average score of no less than 80%.

All examination scores shall be of equal weight in determining the average score. For example, where only specific and practical examination parts are administered for recertification, only those scores shall be factored into the average score.

7.8.2 **Level 2**

To be eligible for certification, the Level 2 candidate must pass the written general and specific parts, and shall detect all discontinuities, flaws or conditions specified by the examiner during the practical examination.

The grading of the practical examination shall be in accordance with PCN document CP22.

7.8.3 **Level 3**

Level 3 candidate shall pass the basic and main method examinations in order to be considered eligible for certification.

7.8.3.1 **Basic Examination**

To be eligible for candidacy in the main method examination the candidate shall first obtain a grade of at least 70% in each of the examination parts A, B and C detailed in Table 4, and achieve an average score of no less than 80%

7.8.3.2 **Main Method Examination**

To be eligible for certification the candidate shall obtain a grade of at least 70% in each of the examination parts D, E and F detailed in Table 5, and achieve an average score of no less than 80%

7.9 **Re-examination (retest)**

7.9.1. A candidate who fails in an examination part (general, specific or practical) in an initial examination may be re-examined a maximum of 2 times in order to achieve a pass grade of 80%, provided the re-examination takes place not sooner than 30 days of the original examination and not later than 1 year after the original examination. The only exception to the 30 day rule is where further (supplementary) training is delivered to address areas of weakness identified in the initial examination. The training/examination body shall keep records of the supplementary training delivered. BINDT assigns responsibility for ensuring the suitability of the supplementary training to the AQB (or ATO) which may be reviewed during routine BINDT audits.

7.9.2. For recertification examinations, based upon specific and practical modules only, the candidate shall achieve a pass grade of 70% for the specific module and 70% for each practical specimen attempted (and for Level 2 the written instruction). An overall composite score of 80% or greater is required. Candidates who fail to achieve a composite pass grade of 80% are allowed 2 re-tests of the failed module (part). The retests shall take place not sooner than 30 days of the failed recertification examination and not later than 1 year after the failed recertification examination with one re-test taking place within 6 months of failed recertification examination. The only exception to the 30 day rule is where further (supplementary) training is delivered to address areas of weakness identified in the failed recertification examination. The training/examination body shall keep records of the supplementary training delivered. BINDT assigns responsibility for ensuring the suitability of the supplementary training to the AQB (or ATO) which may be reviewed during routine BINDT audits.

For composite calculations where only one module was initially failed the score from the original passed module shall be taken with the score for the re-examination module for the purpose of the overall composite calculation. Prior to attempting a re-sit of a failed examination further (supplementary) training is required to address areas of weakness identified in the failed examination. The training/examination body shall keep records of the supplementary training delivered. BINDT assigns responsibility for ensuring the suitability of the supplementary training to the AQB (or ATO) which may be reviewed during routine BINDT audits.

- 7.9.3 A candidate who fails all allowed re-examination(s) shall apply for and take the initial examination according to the procedure established for new candidates. (Initial)
- 7.9.4 A candidate whose examination results have not been accepted for reason of fraud or unethical behaviour shall wait one year before re-applying for examination.

7.10 **Publication of Examination Results**

- 7.10.1 All candidates will be issued with a standard PCN examination results notice by The BINDT Authorised Qualifying Body, normally within 28 days of completion of examination, provided all examination fees have been paid.
- 7.10.2 A copy of the results notice will be sent to the organisation paying the examination and certification fees, and to the PCN Certification Records Office, which will issue certification to candidates fulfilling all pre-requisites (training, experience, satisfactory vision and success in the relevant examination) for certification.
- 7.10.3 Candidates who fail any part of the examination will be provided with brief reasons for failure on this notice.

8. CERTIFICATION

- 8.1 Issue of PCN certification, in respect of a successful candidate, normally takes place within 21 days of the British Institute of NDT receiving the results notice from the BINDT Authorised Qualifying Body.

However, where a candidate for certification has achieved a pass in all relevant examination parts, but has not yet satisfied the pre-requisite experience and vision requirements, the issue of certification may be deferred for up to two years from the date of success in the PCN examination.

- 8.2 Once the PCN Certification Records Office is in possession of evidence that all pre-requisites (training, experience, satisfactory vision and success in the relevant PCN examination) have been satisfied, a PCN certificate stating the level and category awarded will be issued.

- 8.3 The PCN record of certification and/or corresponding wallet card bears:

- 8.3.1 the forename and surname of the certified individual;
- 8.3.2 the date of certification;
- 8.3.3 the date upon which certification expires;
- 8.3.4 the level of certification;
- 8.3.5 the NDT method(s);
- 8.3.6 the industrial sector(s) concerned;
- 8.3.7 the specific products the holder is qualified to test;
- 8.3.8 a unique PCN identification number;
- 8.3.9 the signature of the certified individual;
- 8.3.10 a photograph of the certified individual in case of the wallet card;
- 8.3.11 the PCN cold seal impressed over the photograph to avoid falsification of the wallet card;
- 8.3.12 the signature of an authorised officer of the British Institute of NDT.

NOTE 6:

By issuing the certificate and/or the corresponding wallet card, the British Institute of NDT attests to the qualification of the individual but does not give any authority to operate. The employer shall authorise the holder of the certificate to carry out testing on his behalf. (See 3.3)

9. VALIDITY OF CERTIFICATION

- 9.1 The period of validity of the certification is five years from the date of certification indicated on the certificate except where success in the recertification procedure occurs within the 56 days prior to expiry of the certificate, the new certificate will expire five years after the expiry date of the certificate being revalidated.
- 9.2 It should be noted that some standards might require recertification at more frequent intervals. The PCN recertification procedure may be invoked at any time within the period of validity of the certificate. If the recertification procedure is completed prior to 56 days before expiry, the new certificate will be valid for five years from the completion of that recertification procedure.
- 9.3 **PCN certification shall be invalid:**

- 9.3.1 in any industrial sector which is not covered by the certificate (unless the holder successfully completes a supplementary examination for the industrial sector);
- 9.3.2 at the option of the British Institute of NDT after reviewing evidence of unethical behaviour (see CP27 – PCN Code of Ethics);
- 9.3.3 if examination or certification fees are not paid when due;
- 9.3.4 if the individual fails to satisfy the criteria for visual acuity and colour perception;
- 9.3.5 if a *significant interruption* (see definitions) takes place in the method for which the individual is certified;
- 9.3.6 from the date of issue of notification of failure in a PCN examination for recertification
- 9.3.7 in the case of certification for industrial radiography, if the period since the certificate holder has achieved success in a PCN (or recognised equivalent) radiation safety examination exceeds five years.

NOTE 7: PCN radiography certification is considered by BINDT to be valid in any country outside of the United Kingdom where the certificate holder has passed an examination on local radiation safety regulations, and provides to BINDT evidence of valid radiation safety certification issued by a recognised independent authority in that country. (See also 7.6.7)

- 9.4 Verification of PCN certification is available at www.bindt.org/PCN provided the name or PCN number of the individual candidate is known.

10. RECERTIFICATION

10.1 General

- 10.1.1 It is the responsibility of the certificate holder to initiate the procedure required for recertification.
- 10.1.2 Complete and correct recertification applications shall be presented to PCN no sooner than 6 months and no later 6 weeks prior to the expiry date. As an exception, and based upon decision of BINDT, applications presented within twelve months after the date of expiration may be considered, but such applications will be subject to payment of an additional handling fee. Over this period, no exception is admitted and the candidate shall be considered an initial candidate for certification in the NDT method and level concerned.

10.2 Level 2

- 10.2.1 The recertification examination for Level 2 personnel comprises practical and specific examinations equivalent to those required for initial qualification.
- 10.2.2 To be eligible for recertification, the candidate is required to achieve a grade of at least 70 % for each examination part, and an overall average of 80%.
- 10.2.3 Applications for Level 2 recertification are to be submitted directly to the AQB on PCN Form PSL/57B.

10.3 Level 3

- 10.3.1 The recertification examination for Level 3 personnel comprises examination parts E and F detailed at Table 5.
- 10.3.2 To be eligible for recertification, the candidate is required to achieve a grade of at least 70 % for each examination part, and an overall average of 80%.
- 10.3.3 Applications for Level 3 recertification by examination are to be submitted directly to the AQB on PCN Form PSL/57B.
- 10.3.4 As an alternative to a recertification examination comprising parts E and F, the Level 3 candidate for recertification may satisfy the structured credit system detailed in PCN document CP17A. Candidates whose application for recertification through the credit system is refused shall, in order to be recertified, attempt the recertification examination detailed above.

10.4 Re-examination (recertification)

- 10.4.1 In the event of failure in a PCN Aerospace recertification examination, where the individual fails to achieve a grade of at least 70 % for each examination part, and an overall average of 80%, BINDT will immediately cancel the certificate concerned.

PCN shall issue a new record of certification that no longer shows the competence concerned and shall send this with an explanatory letter to the certificate holder requesting the return of the superseded record of certification.
- 10.4.2 The return of the superseded record of certification is a MANDATORY requirement, incumbent upon the candidate.
- 10.4.3 The cancellation of the certificate shall not affect the eligibility of the candidate to attempt the 2 permitted retests as detailed in clause 7.9.2.
- 10.4.4 Note for clarification: "Examination parts" in this context refers to:
 - 10.4.4.1 For Levels 1 and 2, parts are - the General, Specific and Practical examinations. (3 parts)
 - 10.4.4.2 For the Level 3 basic examination, Parts are - A, B and C (3 parts)
 - 10.4.4.3 For the Level 3 main-method examination, Parts are - Parts D, E and F (3 parts)
- 10.4.6 A candidate failing all permitted re-examinations shall apply for and take the examination in accordance with the procedure established for new candidates (initial examination).

11. COMPLAINTS AND APPEALS

- 11.1 PCN 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). Accordingly, it is a condition of PCN certification that certificate holders shall undertake to comply with a code of ethics, which is published as PCN document reference CP27.
- 11.2 An aggrieved party in a dispute, which considers itself to have reasonable grounds for questioning the competency or ethical behaviour of a PCN certificated individual or their employer, may petition the British Institute of NDT for withdrawal or cancellation of certification.

Such a petition must be accompanied by all relevant facts and, if it is the view of the British Institute of NDT that an adequate case has been presented, a full investigation of the circumstances under dispute will be initiated.
- 11.3 If the petition is substantiated to the satisfaction of the UK National Aerospace NDT Board (or a committee to which the Board has assigned responsibility for such matters), the certification may be cancelled, or recertification may be refused, for such period as the Board may decide, unless the holder of certification is successful in a further examination, the content of which will be decided by the Board or the responsible committee at an ordinary meeting.
- 11.4 Appeals against certificate cancellation, failure to certify or failure to renew may be made by the candidate or the employer upon application using PCN document CP21 to the Certification Management Committee (CMC).

- 11.5 The CMC may delegate the process of dealing with complaints and appeals to a properly constituted sub-committee.

12. CHANGE OF EMPLOYER

Change of employer shall not be cause for PCN BS EN ISO 9712 recertification. However, PCN certificates signed by the employer for authorisation purposes must be returned to the British Institute of NDT for re-issue upon change of employer.

13. SUPPLEMENTARY EXAMINATIONS

- 13.1 Holders of Level 2 certification described in Appendices A1, A2 and A3, who wish to add aerospace structures to an existing certificate for aerospace materials and components at the same level will be required to attempt a supplementary examination comprised of:

13.1.1 Calibration and functional checking of test equipment, testing two aerospace structure samples, and reporting the results in a prescribed manner in accordance with the code, specification or standard provided (this will include any calculations necessary for inspection sensitivities).

13.1.2 For radiography (structures) only, read and report on a total of 8 radiographs of aerospace structures.

- 13.2 Applications for supplementary examination are to be made direct to the AQB using PCN form PSL/57B. Applicants will be required to submit (to the examining AQB) log sheets showing continuity of employment and in the application of the method in the aerospace sector.

- 13.3 The pass mark for all supplementary examination parts will be 80%, and the time allowed will be 4 hours for ET and UT, and 8 hours for RT.

- 13.4 Supplementary examinations may only be attempted 56 days or more prior to the expiry of the certificate to be supplemented.

This is to allow sufficient time for the publication of results and the retest of failed supplementary examinations.

- 13.5 Retests of failed supplementary examinations will be allowed between thirty days and one year after the most recent attempt.

- 13.6 Any new certification issued as a result of successful supplementary examination will incorporate the previous certification and will be valid for a period of 5 years from the date of completion of the successful supplementary examination.

14. CERTIFICATION AND EXAMINATION RECORDS

- 14.1 The British Institute of NDT will retain records of certification issued as a result of success in any PCN examination for a minimum period of 11 years.

An updated database of certificated personnel, which includes (amongst other things) the name, PCN identification number and scope of certification held by each individual, is maintained by the PCN Certification Records Office.

- 14.2 Where BINDT Authorised Qualifying Bodies retain examination records of successful and unsuccessful candidates for a period of 11 years from the date of the examination. Audit of specific individual examination records, which are under the jurisdiction of the British Institute of NDT or its nominees, may be made in accordance with PCN document CP19.

15. USE AND MISUSE OF CERTIFICATES

- 15.1 The issue of a PCN certificate indicates that the holder has demonstrated an acceptable level of competence measured by means of the relevant examination conducted at a BINDT Authorised Qualifying Body in accordance with the prevailing requirements on the date indicated using a particular set of equipment on a specific product.

- 15.2 Certification holders and/or employers **shall not** imply any further degree of competence on the basis of the PCN certification held.
- 15.2.1 Employers **shall** satisfy themselves that the certificate holder is competent in accordance with their internal procedures / written practice, by providing the certificate holder, authorisation to carry out NDT inspections on the employer's behalf.
- 15.2.2 This could involve such items as a trade test and the monitoring of individual competency, on an ongoing basis by the employer, in conjunction with a written practice.
- 15.3 PCN certificate holders and/or their employers shall not use or refer to PCN certificates, nor the PCN logo, nor must they knowingly allow them to be used or referred to by a third party, in a manner that may be considered fraudulent or to bring the PCN Scheme into disrepute.
- The full conditions of use of the PCN logo, or reference to PCN certification, are detailed in a separate document (PSL/31) available from the British Institute of NDT.
- 15.4 All certificated personnel are required to keep a register of complaints made against them within the scope of the certificate of competence (see also PCN document CP27 – Code of Ethics for PCN certificate holders).
- 15.4.1 Failure to keep such a register or failure to enter valid complaints in it will be construed as a misuse of the certificate and appropriate penalties will be applied, see below.
- 15.4.2 The register of complaints must be made available to the British Institute of NDT on request.
- 15.5 The penalty for misuse of PCN certification in all cases is invalidation of the certificate. If the misuse was in the public domain, publication of the transgression may also be undertaken.
- 15.5.1 Any misuse, which appears to be an infringement of the law, will result in the matter being reported to the police.
- 15.6 Certificates are valuable documents which should be kept in a safe place. Any suspicion of forgery or misrepresentation must be reported to the British Institute of NDT.
- 15.6.1 Loss or theft of certificates **shall** be reported to the police and to the British Institute of NDT.
- 15.7 It is required that all PCN certificate holders maintain a log demonstrating continuity in the application of the NDT activity for which they are certificated. Examples of suitable pages for recording details of employment, continuity and surveillance are contained within PCN document CP16.
- 15.8 New employers presented with PCN certification should satisfy themselves that the certificate holder has been employed without *significant interruption* (see definitions) on work for which the certificate was granted.
- It is strongly recommended that the employer request sight of the certificate holder's logbook.

ANNEX A – PCN CERTIFICATION AND AUTHORISATION TO EN 4179

A1. PCN aerospace sector examinations are founded upon somewhat different criteria than other sectors within the PCN scheme. The Welding, Castings and Wrought Products sector examinations concentrate principally upon non-destructive testing (NDT) associated with the manufacturing stage in the product cycle. Hence their sector specific examination module product technology content and practical examination modules are primarily concerned with the defects and materials technology relevant to flaws occurring during the production of welds, castings, forgings, extrusions etc.

A2. PCN aerospace examinations, by contrast, have practical modules relevant to the detection of in-service flaws such as fatigue cracks, stress-corrosion cracks, corrosion etc. The level 2 aerospace sector specific product technology module is different in that it is principally concerned with the engineering and materials technologies appropriate to aerospace structures, methods of construction and aerospace Regulatory Authority requirements. Aerospace materials, for instance, may include non-metals, which could be affected by materials and processes associated with non-destructive testing.

A3. From the paragraphs above it will be apparent that PCN aerospace central (BS EN ISO 9712) certification is principally aimed at NDT personnel working in the fields of aircraft in-service inspection and overhaul, either at maintenance facilities (EASA part 145 approved organisations) or at aircraft or sub-assembly manufacturers and over-haulers. Nevertheless, the PCN certificate may be used by the employer as evidence of qualification meeting EN 4179 criteria, and the employer may issue an 'approval' to such personnel – where this is deemed appropriate by the UK NANDTB and where the employer's 'written practice' embodies such an approach.

A4. In certain circumstances, where the UK NANDTB deems that the standard PCN examination is not wholly appropriate to the employers NDT processes, a PCN Authorised Qualifying Body may work with the employer to develop specific written and/or practical NDT qualification examinations that are entirely appropriate to the employer's NDT processes, in which case such examinations may be deemed by the UK NANDTB to satisfy EN 4179 qualification criteria and the employer may approve NDT personnel so qualified so long as the employer's 'written practice' embodies such an approach. In such circumstances, a PCN BS EN ISO 9712/ISO 9712 certificate could still be awarded. For further information on this service, the employer should deal directly with the chosen PCN Authorised Qualifying Body.

A5. An employer may utilise an outside agency (for example, a PCN Authorised Qualifying Body) to develop a certification program, train and examine NDT personnel and perform any other Level 3 function. An outside agency may qualify, but not certify personnel. The employer shall document the suitability of any outside source selected to perform any function to meet the requirements of EN 4179. This documentation shall be of sufficient detail to justify the outside agency's ability to perform the required Level 3 function(s).

ANNEX B - AEROSPACE PRODUCTS (DEFINITION OF)

B1. Raw Products

For NDT personnel working in companies which are supplying aerospace raw products such as basic castings, forgings, extrusions etc., the most appropriate PCN certification can be obtained via relevant examinations in the casting and wrought product sectors. These examinations contain product technology questions and practical modules which are entirely relevant to this “raw product” stage of manufacture, irrespective of whether the product is destined for use in an aircraft or an automobile. Acceptance standards may well be higher in the former case, but the origin of flaws in the product will be solely as a result of the process involved and unrelated to the end use of the item.

B2. Welds

One exception to this is aerospace welds – Appendix A4. PCN certification in weld inspection would normally be via the welding sector examinations, but these are principally aimed at (in aerospace terms) very thick sections, e.g. 6 mm and above. Appendix A4 has therefore been published to cover welds normally used in aerospace, e.g. from thin gauge (around 30 SWG) materials up to about 6 mm, and in relevant materials which are more commonly stainless steels or heat resisting alloys, rather than plain carbon steels. The sector specific product technology examination module associated with Appendix 4 is the same as that in welding sector examinations (and therefore different to that in other aerospace appendices) to reflect the fact that it is related to a “raw product” situation.

B3. Materials, Components & Structures - terminology and philosophy

The PCN aerospace appendices for volumetric NDT methods define two basic categories of certification:

- (a) Materials and Components;
- (b) Materials, Components and Structures.

Some confusion has arisen with respect to these categories because of the words used. In essence, (a) is intended to apply to those NDT personnel engaged in manufacturing and/or overhauling “components” (see below); (b) is intended to apply in those areas where the NDT personnel are responsible for examining the load bearing structures of the airframe, either as a whole or as major sub-assemblies. This latter category of personnel may also be required to carry out NDT on “components” where they are still fixed into, or only temporarily removed from the airframe.

The term “components” is therefore intended to mean any type of more or less complex item which can range from a literal component, e.g. a wheel or a flying control rod assembly, to a complete sub-assembly such as an undercarriage unit, power plant or powered flying control unit. In other words, units or sub-assemblies which are not usually a part of the airframe load-bearing structure, and often not serviced by the user, but returned to the original supplier for repair, overhaul or modification.

The term “structures” is intended to mean the primary, fixed, load-bearing part of the airframe, or major sub-assemblies such as vertical or horizontal stabilizers or flying control surfaces which may be removed from the airframe and sent elsewhere for repair or overhaul.

Materials is included in both categories because all components and structures are of course made from raw materials of one sort or another, e.g. plate, forgings, castings etc. Inevitably, there is an occasional need for NDT to be applied to raw materials at a “user” site. It is felt, therefore, that these NDT personnel need to demonstrate some basic knowledge of raw materials and their flaws. By comparison with NDT personnel certificated for NDT of “raw materials” via the castings or wrought products sectors, PCN expects only a relatively superficial knowledge of manufacturing processes as part of the basic aerospace “components” or “components and structures” certification.

The aerospace liquid penetrant and magnetic particle testing certificates are not annotated as “Materials and Components” or “Materials Components and Structures”. This is because it has proved to be impracticable to distinguish between penetrant or magnetic particle methods applied to “structures” as opposed to “components” and/or “materials”, i.e. a localised penetrant or magnetic particle inspection technique (such as is commonly applied to detect local in-service flaws) is virtually the same whether applied in situ on an aircraft structure, or on a component on the bench.

As with the other methods, for penetrant or magnetic particle certification in respect of “raw products”, the route to NDT personnel certification detailed within PCN/GEN is usually more appropriate.

ANNEX C - ACCESS TO PCN EXAMINATION RECORDS FOR AUDIT PURPOSES

All Qualifying Bodies (AQB) authorised by the British Institute of NDT (BINDT) to conduct PCN examinations have been initially and impartially audited by registered Lead Assessors and remain subject to continued audit and surveillance under the terms of PCN documents CP9 and CP10.

Indeed, BINDT and the PCN Scheme itself is regularly audited by the United Kingdom Accreditation Services (UKAS) against the provisions of ISO/IEC 17024 (General Criteria for Certification Bodies operating Certification of Personnel).

One of the declared aims of the PCN Scheme is to eliminate the need for the costly and wasteful practice of subjecting AQBs to repetitive third party audits which merely add to the cost, and not to the value of certificated personnel. Indeed, this was the primary reason for the creation of the PCN scheme, and for it seeking and gaining independent accreditation.

However, the UK NANDTB has recognised that the requirement to satisfy the QA procedures of customers, regulators and quality assurance bodies will occasionally generate a need for access to an AQB for reasons of establishing the credibility of an examination, and the Board has therefore agreed that:

- Industrial users of the PCN Scheme may occasionally require access at short notice to an AQB for reasons of establishing the credibility of an examination conducted in the past. The agreement to provide such access may be reviewed from time to time and formalised, withdrawn or altered as necessary.
- Regulators, employers of PCN certificated individuals or quality assurance authorities requiring access to examination material held at AQB for the purpose of establishing the suitability of the scheme will, subject to approval by BINDT in each case, be granted such access at all reasonable times.

Requests for such access to PCN examination material at a BINDT Authorised Qualifying Body or at the headquarters of the PCN Scheme itself should be made initially to the

The Head of Certification
BINDT Certification Services
Midsummer House
Riverside Way, Bedford Road
Northampton
NN1 5NX
United Kingdom

(Email: pcn@bindt.org).

SUMMARY OF CHANGES

Issue number	Issue date	Summary of changes
5	01.04.2018	<ul style="list-style-type: none">• Clause 6.1.9 – responsibility for experience reductions.• Clause 7.9 – clarification on re-examination rules for re-tests (7.9.1/7.9.2)
6	01.07.2018	<ul style="list-style-type: none">• Clause 4.47 – Ref to TT Removed.• Clause 6.1.10.1 – Ref to VT removed.• Clause 6.4.1.2 – Ref to VT removed.• Table 1: Ref to VT Removed.• Table 2: Ref to VT removed.• Table 2: Ref to TT removed.