

Procedure for Training, Qualification and Certification of NDT Personnel

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0 INTRODUCTION

0.1 PURPOSE

The purpose is to establish the minimum requirements for the training, examination, qualification, certification and approval of personnel performing NDT examination/inspection within Dassault Aviation Business Services SA (hereafter to be referred to as DABS).

This procedure details the written practice that is fully compliant with the requirements of the Standards EN 4179 / NAS 410 (Qualification and approval of personnel for NDT).

This document, its contents and the application are the responsibility of the Responsible Level 3.

0.2 APPLICABILITY

This procedure is applicable to all personnel performing NDT methods to inspect materials, products, sub-assemblies and components.

It is also applicable to persons responsible for ensuring the technical adequacy of methods used, who approve NDT procedures or provide technical support or training.

The written practice includes the following methods and associated specific technical instruction(s), and the actions to be taken concerning additional training and experience for a currently certified individual.

- PT= Liquid Penetrant test/ Water washable, Post Emulsified and solvent removable
- MT= Magnetic Particles Fluorescent with Yoke and fixed bench unit
- UT= Ultrasonic / contact / Longitudinal and Shear waves
- ET= Eddy Currents / Low and High Frequencies, coating thickness, electrical conductivity and hole checks with rotor

0.3 REFERENCES

EN 4179	Qualification and approval of personnel for non-destructive testing
NAS 410	National Aerospace Standard. Certification and Qualification of non-destructive test personnel
ASTM E1316	Standard Terminology for Non-destructive Examinations

0.4 ABBREVIATIONS AND DEFINITIONS

Terms & definitions shall be as described by manufacturer's maintenance or non-destructive testing manuals. Where these manuals do not cover definitions or are not applicable, ASTM E1316 is used.

MOE	Maintenance Organisation Exposition
NDT	Non-Destructive Testing / Examination / Inspection, as appropriate
Company Level 3	An independent Certified Level 3 certificate holder i.a.w EN 4179 / NAS 410 and this procedure.
Certification	A written statement by an employer that an individual has met the applicable requirements of this procedure. <i>The NDT certification is granted by DABS through an internal authorisation certificate, after certification by the Responsible Level 3 or acceptable Company method level 3 in accordance with NAS or EN standards.</i>
Responsible Level 3	Level 3 certificate holder i.a.w EN 4179 / NAS 410 designated by DABS with the responsibility and authority to ensure that the requirements of this standard are met and to act on behalf of DABS. Refer to MOE for the name of this person.
NANDTB	National Aerospace NDT Board
Procedure	Internal document describing the general rules of the applicable method used by DABS and approved by the Company method level 3
Technical instruction	Instruction giving details of a particular test within a method and approved by the Company method level 3; <i>This document may also be named Technique Sheet or specific technique.</i>
Qualification	The skills, training, knowledge, examinations, experience and visual capability required for personnel to properly perform to a particular level. <i>The NDT qualification is granted to the national certification scheme and is a prerequisite to granting a company NDT certification. Every 5 years.</i>
Level of Qualification	Level 1, 2 or 3 are used in DABS. Refer to §1.
Examiner	Designated Level 3 certificate holder i.a.w EN 4179 / NAS 410 by the Responsible Level 3 to administer all or part of the qualification process in the NDT method(s) in which he is qualified.
Proficiency review Examiner	Designated personnel in written form (minimum Level 2 certificate holder i.a.w EN 4179 / NAS 410 by the Responsible Level 3 to accomplish the annual proficiency review in the NDT method(s) in which he is certified.

0.5 RESPONSIBILITY

The **Responsible Level 3** takes the responsibility to ensure training, experience and assessment for NDT personnel is adequate for the employer's requirements and methods used.

He is responsible for implementation of this procedure and the overall administration of the qualification and certification programme.

A **Company method level 3** is a Level 3 certificate holder accepted in written form by The **Responsible Level 3**. He takes the responsibility to approve specific technical instructions. He can also be appointed as **Examiner** in the NDT method(s) in which he is qualified.

1 LEVELS OF QUALIFICATION

The three basic levels of qualification used by DABS are Level 1, Level 2 and Level 3; level 1 limited is not used by DABS.

Trainee: A trainee is an individual who is participating in a training program for an NDT method for a limited period of time. A trainee is in the process of completing the minimum approved theory training hours with additional lab time, as outlined in Tables 1&2.

A trainee is an individual gaining on-the-job experience under the direct supervision of a Level 2 (or Level 3) in the same method prior to Level 1 or direct level 2 certification.

Trainees shall not conduct tests, make accept/reject decisions or perform any other NDT functions independently.

Level 1: This level indicates that the individual has completed the training and experience requirements of Tables 1&2 and has successfully passed the qualification examinations.

The Level 1 specific individual shall be limited to performance of a particular task, outlined in a specific NDT technique approved by a method Level 3 / TC Holder.

Level 1 might in some instances, with the written approval of the method level 3, interpret, evaluate and accept/ reject parts. (for example, UT thickness)

Level 2: This level indicates that the individual has completed the training and experience requirements of Tables 1&2 and has successfully passed the qualification examinations.

Responsibilities of Level 2 are i.a.w EN 4179/ NAS 410

Level 2 individuals shall:

- have the skills and knowledge to set up and standardize equipment, process parts, interpret and evaluate for acceptance or rejection and document results.
- be thoroughly familiar with the scope and limitations of the techniques/ method.
- have the skills and knowledge to conduct system performance checks in accordance with the applicable process standard.
- be capable of providing the necessary guidance and/ or supervision to trainees and Level 1 personnel.
- be familiar with the codes, standards, and method as used by DABS.
- be capable of developing work instructions from approved general procedures. Such work instructions shall require final approval by the DABS method Level 3 certified in the method.
- have a basic knowledge of relevant product manufacturing and inspection technology.

Level 3: This level indicates that the individual has completed the experience requirements of Table 3 and has successfully passed the qualification examinations.

Responsibilities of Level 3 are i.a.w EN 4179/ NAS 410

Level 3 individuals shall:

- Have the skills and knowledge to interpret codes, standards and other contractual documents that control the NDT method(s)
- Be capable of assuming technical responsibility for the NDT facility and staff
- Be capable of selecting the method and technique for a specific inspection
- Be capable of preparing and verifying the adequacy of procedures and work instructions
- Approve NDT procedures and work instructions for technical adequacy
- Have a general knowledge of other NDT methods and product manufacturing and inspection technologies used by the employer
- Have a basic knowledge of aircraft or vehicle maintenance
- Be capable of providing or directing training, examination, and certification of personnel
- Conduct NDT for the acceptance of parts and document the results if a demonstration of proficiency in this ability was included and proved through a "Hands On L2 practical examination
- When required by the written practice, be capable of auditing outside agencies to ensure the requirements of the written practice are met.

Instructor: Instructors' appointments and approvals are the responsibility of the Responsible Level 3

Tasks of instructor are i.a.w EN 4179/ NAS 410 §3.16

Auditor: External supplier and internal NDT Audits shall be carried out only by the Responsible Level 3 or his delegate in a written form.

The auditor shall be qualified to at least Level 2 in the methods to be audited and shall fully understand the applicable codes, standards and contractual documents used by DABS.

Responsibilities of auditor are i.a.w EN 4179/ NAS 410

2 TRAINING AND EXPERIENCE REQUIREMENT

2.1 TRAINING

2.1.1 Requirements

Training hour requirements shall be in accordance with EN 4179/ NAS 410.

Method	Level 1	Level 2 (with Level 1 experience)	Level 2 - Direct Access (without Level 1 experience)
PT	16	16	32
MT	16	16	32
ET	40	40	80
UT	40	40	80

Table 1 Minimum training hours for Levels 1 and 2

2.1.2 Training Syllabus/Outline

Training Syllabus/Outline shall be in accordance with EN 4179/ NAS 410 § 6.1.1. (Refer to Annex B).

It includes previous training, equivalent training as evaluated and approved by the Responsible Level 3.

Required Health and safety training for Radiography is the responsibility of SUVA.

2.2 EXPERIENCE

For trainees gaining experience, documentation shall be available for review to indicate individual, date, task, hours, and certified personnel providing direct observation.

All or a portion of previous hours may be accepted as applicable.

For documentation of previous experience, records other than original records may be accepted if adequacy and equivalency have been determined to be acceptable by the Responsible Level 3.

Experience requirements shall be in accordance with EN 4179/ NAS 410 §6.3

Minimum experience for Levels 1, 2 & 3 are given in tables 2&3 below.

Method	Experience Time in hours*		
	Level 1 (Trainee experience)	Level 2 (with Level 1 experience)	Level 2 - Direct Access (without Level 1 experience)
PT	130	270	400
MT	130	400	530
ET	200	600	800
UT	200	600	800

Table 2 - Minimum Experience Requirements for Levels 1 and 2

College or University	Level 2 or Equivalent Experience
None	4 Years
Two years of engineering or science study at an accredited technical school, college or university (ET, CFC or BTS).	2 Years
Graduate or successful completion of at least three years accredited science or engineering college or university program (HES, EPF).	1 Year

Table 3 - Minimum experience requirements for Level 3

3 EDUCATION, TRAINING AND EXAMINATION

3.1 EDUCATION

NDT personnel shall be familiar with Basic training that includes aircraft structures, systems component and Engines.

3.2 TRAINING

NDT personnel shall receive Specific NDT Training and Education i.a.w EN 4179/ NAS 410 §6.

3.2.1 Training organisation

Training organisation and training Syllabus/Outline course as per EN 4179 / NAS 410 shall be approved by the Responsible Level 3 before to be chosen by DABS to perform the training.

The Responsible Level 3 shall delegate all organised training/ qualification duties to one or more of the approved training organisations (provided they comply with EN 4179 / NAS 410) and continue to give supplemental "on-the-job" training as required.

Approved Swiss training centers is given by the NANDTB in Switzerland.

In the case of training centers outside of Switzerland, these centers shall be approved by the relevant National NDT Board and accepted by the Responsible Level 3.

The status of used centers should be checked before training of personnel starts.

DABS's accepted training organisations are:

- Sulzer Markets and Technology AG / Sulzer Innotec, Winterthur, Switzerland
Methods: ET, UT, MT and PT
- Quality Control NDT S.A., Forel, Switzerland
Methods: ET, UT, MT and PT
- Airbus Operations GmbH Including Testia GmbH, Bremen, Germany
Methods: ET, UT, MT, PT
- The South West School of NDT. Longwood Drive. Cardiff. CF147HY.UK
Methods: ET, UT, MT, PT

3.2.2 Training Syllabus

Training carried out on behalf of DABS shall be in accordance with EN 4179/ NAS 410 (refer to annex B Training Syllabus/Outlines).

Instructors and Examiners shall be approved by the Responsible Level 3.

Specialist Personnel: The theory training shall be presented by a Level 3 or an instructor approved by the Responsible Level 3 (i.e. specialist for highly specialised topics i.e. metallurgist, welding engineer).

Equivalency: Equivalency of formal training performed in other company or in accordance with other standards shall be evaluated by the Responsible Level 3.

3.2.3 Previous Training

For documentation of previous training, records other than original records may be accepted if adequacy and equivalency have been determined to be acceptable by the Responsible Level 3 or Examiner.

3.2.4 Equivalent training

For personnel previously certified under NAS410, EN 4179 or other recognized NDT qualification program, the adequacy and equivalency of their previous training to the requirements of §2.1 Table 1 shall be determined and documented by the Responsible Level 3 or Examiner. All or a portion of previous hours may be accepted as applicable.

3.3 EXAMINATIONS

Examinations:

Examinations shall be carried out to verify the visual acuity and the technical skills and knowledge of candidates i.a.w to EN 4179/ NAS 410 §7.

Examinations shall consist for each method in which the candidate is to be certified:

- a examination,
- a general examination,
- a specific examination
- a practical examination.

The examination shall be made available to the candidates only during the examination.

3.3.1 Visual acuity

Near vision and colour perception shall be assessed annually in accordance with the requirements stated in the table below as accepted by the Responsible Level 3;

The records shall be stored by DABS Quality Department and available for review.

Candidates for certification or recertification shall have a valid vision examination.

Tests shall be administered by trained personnel designated by the Responsible Level 3 or by qualified medical personnel.

Examination Requirements	
Near vision	in at least one eye, natural or corrected: <ul style="list-style-type: none">• Tumbling E in accordance with ISO 18490• 20/25 (Snellen) at 16" (40,64 cm) \pm 1" (\pm 2,54 cm)• Jaeger No.1 at not less than 12" minimum (30,48 cm)
Colour Perception	Personnel shall be capable of adequately distinguishing and differentiating colours used in the process involved*. (Ishihara test, 38 figures, is considered acceptable) <i>*In case of deficiency during the test, the Responsible Level 3 shall evaluate the results.</i>

3.3.2 General Examination

The general examination for all levels shall be a closed book examination consisting of questions that cover the cross-section of the applicable method at the appropriate level. A minimum of 40 questions shall be used for the general examination at Levels 1, 2 or 3.

For Level 3 the general examination questions will address the general knowledge of other methods at Level 2 used by DABS as well as the method for which certification is sought.

For Level 3, possession of a current ASNT, EN 473 or ISO 9712 Level 3 certificate by the candidate shall be considered satisfactory evidence that the general examination requirement is satisfied.

3.3.3 Specific Examination:

The specific examination for all levels shall be an open book examination and shall cover the requirements and use of the specifications, codes, equipment, operating procedures and test techniques the candidate may use in the performance of his or her duties at DABS.

A minimum of 30 questions shall be used for the specific examination at Levels 1, 2 and 3.

Reference material such as specifications, tables, formulas etc. will be provided as determined by the Responsible Level 3. Questions using such material shall require understanding of the information contained therein rather than merely finding the location.

3.3.4 Practical Examination

3.3.4.1 General

The practical examination shall consist of a demonstration of proficiency in performing tasks that are typical of those to be accomplished in the performance of the candidate's duties.

Test samples used in the examination may be actual hardware if the candidate is required to demonstrate proficiency in the application of the process as well as interpretation of results, or may be images, such as radiographs if the candidate is only required to interpret the results and not perform the process of generating the image.

3.3.4.2 Level 1

The candidate shall demonstrate proficiency by using a written instruction to process at least one test sample for each technique for which certification is sought.

At least two test samples shall be processed for each method. The test samples shall be representative of the products to be encountered by the candidate in the performance of his duties at DABS.

The checklist shall address proficiency in the use and standardization of the equipment and materials, adherence to procedural details and the documentation of the results. If the Level 1 candidate is to accept specific products with the Responsible Level 3 written approval, the checklist shall also include proficiency in the interpretation and evaluation of indications and the NDT results shall be documented by the candidate.

3.3.4.3 Level 2

The candidate shall demonstrate proficiency by inspecting at least one test sample for each technique for which certification is sought.

At least 2 test samples shall be inspected, evaluated and the results interpreted for each method. The NDT results shall be documented by the candidate. The test samples shall be representative of the products to be encountered by the candidate in the performance of his/her duties at DABS.

In addition to the two minimum known and documented test samples with discontinuities, specimens without discontinuities may be included.

The checklist shall include proficiency in the use and standardization of equipment and materials, adherence to procedural details, the accuracy and completeness of interpretation and evaluations of materials and, when applicable, the ability to develop written specific technical instructions.

3.3.4.4 Level 3

The candidate shall demonstrate proficiency by preparing an NDT procedure appropriate to DABS's requirements. When the candidate's duties will include inspection or evaluation of products, then proficiency in performance of such tasks shall be demonstrated to the requirements of practical Level 2 exams.

The check list shall address the practical and technical adequacy of the interpretation and evaluation of indications. The results of the practical examination shall be documented.

3.4 ADMINISTRATION OF EXAMINATIONS

3.4.1 General

The Responsible Level 3 may delegate the administration and grading of all examinations to one or more of the approved training centers mentioned at §3.2. Copies of documents are held by training centers involved, except for the documents listed in paragraph 4.2.

In no case can an examination be administered by one's self or a subordinate.

3.4.2 Grading

The candidate for certification must achieve a minimum grade of 70% on the general and specific examinations.

The candidate must detect all discontinuities or conditions specified by the Level 3 during the practical examination and achieve a minimum score of 70% in the remaining practical part.

The candidate must have an overall average score of no less than 80% in order to be eligible for qualification.

All examination scores shall be of equal weight in determining the average score. Scores for third party examinations where grading is a "pass/fail", the value of "pass" used for the average score shall be 80%.

3.4.3 Re-examination

Candidates failing any general, specific or practical examination shall receive additional training as determined and documented by the Responsible Level 3 or Examiner before attempting re-examination of the failed exam.

The additional training shall be documented and shall address those areas found deficient in the candidate's skill or knowledge.

The re-examination shall not use the same written tests or test samples that were used in the failed examination. The re-examination test must contain a minimum of 25 % new questions.

A current certification shall be suspended if an individual fails an examination for requalification.

4 CERTIFICATION

4.1 GENERAL

Personnel, who have demonstrated that they possess the appropriate training, experience and who have passed the qualification examination are eligible for application for certification/ authorization by DABS and in accordance with the present written practice.

Certification is not required for personnel who are trainees or designated as instructors or NDT personnel performing specialized inspections using direct readout instruments as documented and accepted by the Responsible Level 3.

4.2 RECORDS

DABS Quality Department shall maintain records for personnel as long as their certification is in effect. Such records shall contain as a minimum

1. Name of certified individual;
2. Levels methods and examination techniques in which individual is qualified/certified;
3. The written and practical exam, including results, scores for latest previous exams that the individual has taken. (If an approved NANDTB training facility has conducted the examination then the exam questions will not be readily available but it shall be possible to obtain this information for audit purposes if required in written form)
4. Date & expiration of current certifications & approvals;
5. A summary of all previous NDT certifications & approvals;
6. Training history which identifies source, type of training, dates of training and course hours;
7. Experience history both at DABS and with previous employers sufficient to justify experience requirements for qualification & certification;
8. Results of the most-recent (i.e. current) visual acuity and colour perception examinations;
9. Extent and documentation of formal education, when used to meet qualification requirements (only for Level 3);
10. The name and signature of DABS's representative approving the employee.

4.3 LOSS OF CERTIFICATION

Certification may expire, be suspended or be revoked. Both the Responsible Level 3 and the Quality department have the right to suspend an employee's certification.

Certification for all levels, annual proficiency review and visual examination are considered to expire at the end of the corresponding month in which the event began.

4.3.1 Expiration

Certification shall expire when the certification interval has lapsed with no recertification issued.

4.3.2 Suspension

The certification shall be suspended when:

- Vision examination is expired;
- Individual does not perform in the method certified for at least 12 consecutive months;
- Individual fails recertification examination;
- Individual's performance is found to be deficient in any manner;
- *Annual proficiency review* is expired or failed.

4.3.3 Revocation

Certification shall be revoked:

- when the individual does not perform in the certified method for at least 24 consecutive months; or
- when employment is terminated; or
- when the individual's conduct is found to be unethical or incompetent.

4.4 REINSTATEMENT OF CERTIFICATION

Certifications that have been suspended may be reinstated when the cause for the suspension has been corrected and the correction verified by the Quality department or the individual's proficiency is verified by the Responsible Level 3.

Level 1, Level 2 and Level 3 certifications that have been revoked may only be reinstated by specific and practical examination.

4.4.1 Recertification for Level 1, Level 2

Individual shall be recertified at intervals not to exceed 5 years.

Recertification shall be accomplished by successful completion of specific & practical re-examination

4.4.2 Recertification for Level 3

Level 3 personnel shall be recertified at periods not to exceed 5 years.

Recertification shall be accomplished by successful specific & practical re-examination or as per the credit points system as per annex A.

If equipment operation and ability to accept production hardware is required as part of the Level 3's duties, a "Hands on practical examination" equivalent to Level 2 shall be administered to the Level 3.

4.5 ANNUAL PROFICIENCY REVIEW

Each year a proficiency review shall be made for each certified individual processing hardware, each method and each level.

The scope of this review is to evaluate technical proficiency.

The review is made annually by the Responsible Level 3 or by a designated level 2 in written form in the relevant method.

Proficiency review is not requested the year of the Qualification.

Documentation of the review may be the compliance part of the relevant Nadcap checklist or checklist accepted by the Responsible Level 3.

Each point which does not comply with the checklist shall be corrected. In the case of non-compliance, the Responsible Level 3 shall evaluate if the proficiency review is failed or not.

In case of the proficiency review is failed, the certificate shall be suspended (until further training and new successful assessment are completed).

5 ANNEX

5.1 ANNEX A – CREDIT POINTS SYSTEM OF LEVEL 3

Credit System for Recertification of Level 3 NDT Personnel (From EN 4179/ NAS 410)

A.1 SCOPE

A.1.1 This annex specifies the requirements for recertification of Level 3 NDT personnel using the credit system. It applies only to those persons holding a valid Level 3 NDT certification at the time of recertification.

A.2 REQUIREMENTS

A.2.1 Documentation for recertification shall be submitted to the Responsible Level 3 or NANDTB at least 14 days prior to the expiration date of the certification. Application for recertification of the Responsible Level 3 shall be made directly to the applicable regulatory agency, NANDTB, or employer for review by a designated Level 3.

A.2.2 The candidate shall have been employed in a Level 3 function for a minimum of 36 months (at least 12 of which are in the last 24 months) within the previous five years in the method(s) for which recertification is sought. The number of months is cumulative and does not need to be consecutive months for validation purposes.

A.2.3. Continuity in the method shall be demonstrated. The candidate shall provide a list of 8 verifiable Level 3 tasks in each NDT method for which recertification is sought covering the 5-year period.

A.2.4 Candidates shall provide objective evidence that they have kept up to date with current NDT [knowledge](#) in the method(s) for which they are seeking recertification by obtaining a minimum of 24 points during the 5-year period of certification, irrespective of the number of certifications (methods) obtained, by engaging in a combination of activities listed in Table A.1.

A.2.5 The approval of Annex A activity documentation shall be determined and documented by the Responsible Level 3 or NANDTB as defined within the employer's written practice. Annex A recertification for the Responsible Level 3 shall be determined and documented by the employer. A single event shall only be used one time during a 5-year period.

A.3 DEFINITIONS

A.3.1 COMMITTEE OR PANEL MEETINGS: Meetings, conferences, symposia, seminars, trade association meetings, panels, etc. organized or sponsored by a regional, national or international NDT organization or technical society. Foreign or international meetings qualify if the sponsor(s) are national or international.

A.3.2 COMMITTEE PROJECTS: Specific identifiable official activities of regional or national technical societies, committees or work groups, such as round robins or individual studies, preparation of guidelines, appendices, specifications, recommended practices, procedures, codes or standards, etc. Documentation may include memos or reports, drafts of committee output documents, or official written comments submitted by the candidate on such documents.

5.1.1 TABLE– Credit Activity

TABLE A.1 – LEVEL 3 AWARDED CREDIT ACTIVITY
(From EN 4179/ NAS 410)

ACTIVITY	CRITERIA	Point Allocation	Max points per 5 years
Authoring or co-authoring technical NDT papers, presentations, or white papers	Sole Author	8	8
	Co-author	4	
Authoring or co-authoring for company or industry NDT specifications or standards	Each Standard/Specification	2	8
Attending NDT technical sessions, committee or panel meetings organised by: a) National or international technical societies, associations and institutes b) Inter-company NDT teams comprised of members from several locations	1 day or 1 meeting	1	8
	2 days	2	
	3 or more days	4	
NDT instructor teaching academic courses, or courses designed to prepare students for NDT qualification	For each 8 hours of instruction	4	8
Participating in technical courses or seminars	For every 8 hours of documented instruction	2	8
Participating in technical courses or seminars for which academic credit is given	For actual Continuing Education Units (CEUs) or academic credit earned	Actual CEUs/credit awarded	8
Obtaining an initial * Level 3 certificate from a recognized industry source (applicable only to initial professional certification). * This does not apply to professional recertification)	For each method obtained	4	4

TABLE A.1 – LEVEL 3 AWARDED CREDIT ACTIVITY (CONTINUED)
(From EN 4179/ NAS 410)

ACTIVITY	CRITERIA	Point Allocation	Max points per 5 years
Nondestructive testing Examiner	For each qualification examination	1	6
NDT related technical and/or scientific publications published either internally or externally	For each published paper	4	8
Documented NDT contributions to company, technical society, or industry committee projects	For each documented contribution	4	8
Documented participation in NDT-related studies, developments, or investigations.	For each documented contribution	4	8
Documented continuous satisfactory performance as a Level 3.	Written testament for each method in the certification period	1	4
Attend NDT equipment or trade show e	For each show attended	1	4
Conduct external NDT audits	For each external audit conducted	2	6
Development of new NDT processes, facilities, or systems	For each documented contribution	4	8
Submitting and/or obtaining a patent for an NDT product or process.	Sole inventor	8	8
	Co-inventor	4	

5.2 ANNEX B – TRAINING SYLLABUS/OUTLINES

(i.a.w EN 4179/ NAS 410 § 6.1.1)

All training shall be conducted in accordance with a detailed course Syllabus/Outline approved by the Responsible Level 3 or NANDTB.

The syllabus shall include a list of references from which the training material is derived. As a minimum the training shall include:

- a) Basic theory;
- b) Test principles, including choice of NDT methods, relevance to different materials and part and test variables;
- c) Product forms and materials; defect formation and characterization;
- d) Equipment operation and standardization;
- e) The importance of process controls;
- f) The importance of appropriate processing steps and parameters;
- g) Safety;
- h) Applicable techniques and the advantages and disadvantages of each;
- i) Limitations and capabilities of each method and technique;
- j) Applicable specifications, codes, operating procedures and work instructions;
- k) If applicable, evaluation, interpretation and documentation of inspection results.

If an outside agency or NANDTB is used to provide training, the Responsible Level 3 shall verify that the training meets the employer's requirements.

Previous training

For personnel credited with previous training, or personnel not certified within 12 months of their training, refresher training must be provided. Previous training must be documented to be accepted by the employer.

As a minimum, refresher training shall cover products, equipment set-up, operation and standardization, specific operating procedures, applicable techniques, interpretation and evaluation of NDT results, safety, and applicable codes, standards and specifications.

Equivalent training

For personnel previously certified under EN 4179/ NAS 410 or other recognized NDT qualification program, the adequacy and equivalency of their previous training to the requirements of Table 1 shall be determined and documented by the Responsible Level 3 or NANDTB.

Health and safety training

All regulations relating to hazardous substances, accident prevention and safe working practices shall be strictly adhered to. Safety-related training requirements shall be determined in accordance with local codes and regulations. Prior to certification, all candidates seeking radiography qualification shall have received instruction on the hazards and safety requirements associated with ionizing radiation and be knowledgeable of, and comply with, the applicable regulations and laws.