

Recommended Practice No. SNT-TC-1A

Personnel Qualification and Certification in

Nondestructive Testing

Scope

- 1.1 It is recognized that the effectiveness of nondestructive testing (NDT) applications depends upon the capabilities of the personnel who are responsible for, and perform, NDT. This Recommended Practice has been prepared to establish guidelines for the qualification and certification of NDT personnel whose specific jobs require appropriate knowledge of the technical principles underlying the nondestructive tests they perform, witness, monitor, or evaluate.
- 1.2 This document provides guidelines for the establishment of a qualification and certification program.
- 1.3 These guidelines have been developed by The American Society for Nondestructive Testing, Inc., to aid employers in recognizing the essential factors to be considered in qualifying personnel engaged in any of the NDT methods listed in Section 3.
- 1.4 It is recognized that these guidelines may not be appropriate for certain employers' circumstances and/or applications. In developing a written practice as required in Section 5, the employer should review the detailed recommendations presented herein and modify them, as necessary, to meet particular needs.

Definitions

- 2.1 Terms included in this document are defined as follows:
 - 2.1.1 **Certification:** written testimony of qualification.
 - 2.1.2 **Certifying Authority:** the person or persons properly designated in the written practice to sign certifications on behalf of the employer.
 - 2.1.3 **Certifying Agency:** the employer of the personnel being certified.
 - 2.1.4 **Closed Book Examination:** an examination administered without access to reference material except for materials supplied with or in the examination (See 8.7).
 - 2.1.5 **Comparable:** being at an equivalent or similar level of NDT responsibility and difficulty as determined by the employer's Level III.
 - 2.1.6 **Documented:** the condition of being in written form.
 - 2.1.7 **Employer:** the corporate, private, or public entity, which employs personnel for wages, salary, fees, or other considerations.
 - 2.1.8 **Experience:** work activities accomplished in a specific NDT method under the direction of qualified supervision including the performance of the NDT method and related activities but not including time spent in organized training programs.
 - 2.1.9 **Limited Certification:** nondestructive test methods may be further subdivided into limited disciplines or techniques to meet specific employer's needs; these are Level II certifications, but to a limited scope.
 - 2.1.10 **Nondestructive Testing:** a process that involves the inspection, testing, or evaluation of materials, components and assemblies for materials' discontinuities, properties and machine problems without further impairing or destroying the parts serviceability. Throughout this document the term NDT applies equally to the NDT inspection methods used for material inspection, flaw detection or predictive maintenance (PdM) applications.
 - 2.1.11 **Outside Agency:** a company or individual who provides NDT Level III services and whose qualifications to provide these services have been reviewed by the employer engaging the company or individual.
 - 2.1.12 **Qualification:** demonstrated skill, demonstrated knowledge, documented training, and documented experience required for personnel to properly perform the duties of a specific job.
 - 2.1.13 **Recommended Practice:** a set of guidelines to assist the employer in developing uniform procedures for the qualification and certification of NDT personnel to satisfy the employer's specific requirements.
 - 2.1.14 **Training:** an organized program developed to impart the knowledge and skills necessary for qualification.
 - 2.1.15 **Written Practice:** a written procedure developed by the employer that details the requirements for qualification and certification of their employees.

3.0 Nondestructive Testing Methods

- 3.1 Qualification and certification of NDT personnel in accordance with this Recommended Practice is applicable to each of the following methods:

- Acoustic Emission Testing
- Electromagnetic Testing
- Laser Testing Methods
- Leak Testing
- Liquid Penetrant Testing
- Magnetic Flux Leakage
- Magnetic Particle Testing
- Neutron Radiographic Testing
- Radiographic Testing
- Thermal/Infrared Testing
- Ultrasonic Testing
- Vibration Analysis
- Visual Testing

4.0 Levels of Qualification

- 4.1 There are three basic levels of qualification. The employer may subdivide these levels for situations where additional levels are deemed necessary for specific skills and responsibilities.
- 4.2 While in the process of being initially trained, qualified, and certified, an individual should be considered a trainee. A trainee should work with a certified individual. The trainee shall not independently conduct, interpret, evaluate, or report the results of any NDT test.
- 4.3 The three basic levels of qualification are as follow:
- 4.3.1 NDT Level I. An NDT Level I individual should be qualified to properly perform specific calibrations, specific NDT, and specific evaluations for acceptance or rejection determinations according to written instructions and to record results. The NDT Level I should receive the necessary instruction and supervision from a certified NDT Level II or III individual.
 - 4.3.2 NDT Level II. An NDT Level II individual should be qualified to set up and calibrate equipment and to interpret and evaluate results with respect to applicable codes, standards, and specifications. The NDT Level II should be thoroughly familiar with the scope and limitations of the methods for which qualified and should exercise assigned responsibility for on-the-job training and guidance of trainees and NDT Level I personnel. The NDT Level II should be able to organize and report the results of NDT tests.
 - 4.3.3 NDT Level III. An NDT Level III individual should be capable of developing, qualifying, and approving procedures, establishing and approving techniques, interpreting codes, standards, specifications, and procedures; and designating the particular NDT methods, techniques, and procedures to be used. The NDT Level III should be responsible for the NDT operations for which qualified and assigned and should be capable of interpreting and evaluating results in terms of existing codes, standards, and specifications. The NDT Level III should have sufficient practical background in applicable materials, fabrication, and product technology to establish techniques and to assist in establishing acceptance criteria when none are otherwise available. The NDT Level III should have general familiarity with other appropriate NDT methods, as demonstrated by an ASNT Level III Basic examination or other means. The NDT Level III, in the methods in which certified, should be capable of training and examining NDT Level I and II personnel for certification in those methods.

5.0 Written Practice

- 5.1 The employer shall establish a written practice for the control and administration of NDT personnel training, examination, and certification.
- 5.2 The employer's written practice should describe the responsibility of each level of certification for determining the acceptability of materials or components in accordance with the applicable codes, standards, specifications, and procedures.
- 5.3 The employer's written practice shall describe the training, experience, and examination requirements for each level of certification.
- 5.4 The employer's written practice shall be reviewed and approved by the employers NDT Level III.
- 5.5 The employer's written practice shall be maintained on file.

6.0 Education, Training, and Experience Requirements for Initial Qualification

- 6.1 Candidates for certification in NDT should have sufficient education, training, and experience to ensure qualification in those NDT methods in which they are being considered for certification. Documentation of prior certification may be used by an employer as evidence of qualification for comparable levels of certification.
- 6.2 Documented training and/or experience gained in positions and activities comparable to those of Levels I, II, and/or III prior to establishment of the employer's written practice may be considered in satisfying the criteria of Section 6.3.
- 6.3 To be considered for certification, a candidate should satisfy one of the following criteria for the applicable NDT level:
 - 6.3.1 NDT Levels I and II
 - Table 6.3.1 A lists the recommended training and experience factors to be considered by the employer in establishing written practices for initial qualification of Level I and Level II individuals.
 - Table 6.3.1 B lists alternate training and experience factors which may be considered by the employer in establishing written practices for initial qualification of Level I and Level II individuals. (The SNT-TC-1A Review Committee plans to remove Table 6.3.1 B with the next revision.)
 - Table 6.3.1 C lists initial training and experience factors which may be considered by the employer for specific limited applications as defined in the employer's written practice.
 - 6.3.2 NDT Level III
 - 6.3.2.1 Have graduated from a minimum four-year college or university curriculum with a degree in engineering or science, plus one additional year of experience beyond the level II requirements in NDT in an assignment comparable to that of an NDT Level II in the applicable NDT method(s), or:
 - 6.3.2.2 Have completed with passing grades at least two years of engineering or science study at a university, college, or technical school, plus two additional years of experience beyond the level II requirements in NDT in an assignment at least comparable to that of NDT Level II in the applicable NDT method(s), or:
 - 6.3.2.3 Have four years experience beyond the level II requirements in NDT in an assignment at least comparable to that of an NDT Level II in the applicable NDT method(s).

The above Level III requirements may be partially replaced by experience as a certified NDT Level II or by assignments at least comparable to NDT Level II as defined in the employer's written practice.

7.0 Training Programs

- 7.1 Personnel being considered for initial certification should complete sufficient organized training to become thoroughly familiar with the principles and practices of the specified NDT method related to the level of certification desired and applicable to the processes to be used and the products to be tested.
- 7.2 The training program should include sufficient examinations to ensure understanding of the necessary information.
- 7.3 Recommended training course outlines and references for NDT Levels I, II, and III personnel, which may be used as technical source material, are contained in *ANSI/ASNT CP-105 – Topical Outlines for Qualification of Nondestructive Testing Personnel*.
- 7.4 The employer who purchases outside training services is responsible for assuring that such services meet the requirements of the employer's written practice.

8.0 Examinations

- 8.1 Administration and Grading
 - 8.1.1 An NDT Level III shall be responsible for the administration and grading of examinations specified in Section 8.3 through 8.8 for NDT Level I, II, or other Level III personnel. The administration and grading of examinations may be delegated to a qualified representative of the NDT Level III and so recorded. A qualified representative of the employer may perform the actual administration and grading of Level III examinations specified in 8.8.
 - 8.1.2 For Level I and II personnel, a composite grade should be determined by simple averaging of the results of the general, specific, and practical examinations described below. For Level III personnel, the composite grade should be determined by simple averaging of the results of the basic, method, and specific examinations described below.
 - 8.1.3 Examinations administered for qualification should result in a passing composite grade of at least 80 percent, with no individual examination having a passing grade less than 70 percent.

- 8.1.4 When an examination is administered and graded for the employer by an outside agency and the outside agency issues grades of pass or fail only, on a certified report, then the employer may accept the pass grade as 80 percent for that particular examination.
- 8.1.5 The employer who purchases outside services is responsible for ensuring that the examination services meet the requirements of the employer's written practice.
- 8.2 Vision Examinations
- 8.2.1 Near-Vision Acuity. The examination should ensure natural or corrected near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at the distance designated on the chart but not less than 12 inches (30.5 cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This should be administered annually.
- 8.2.2 Color Contrast Differentiation. The examination should demonstrate the capability of distinguishing and differentiating contrast among colors or shades of gray used in the method as determined by the employer. This should be conducted upon initial certification and at five-year intervals thereafter.
- 8.3 General (Written - for NDT Levels I and II)
- 8.3.1 The general examinations should address the basic principles of the applicable method.
- 8.3.2 In preparing the examinations, the NDT Level III should select or devise appropriate questions covering the applicable method to the degree required by the employer's written practice.
- 8.3.3 See the Appendix for example questions.
- 8.3.4 The minimum number of questions that should be given is as follows:

Test Method	Limited Certifications	Number of Level I Questions	Number of Level II Questions
Acoustic Emission Testing		40	40
Electromagnetic Testing		40	40
1. Alternating Current Field Measurement		40	40
2. Eddy Current		40	40
3. Flux Leakage Testing		40	40
4. Remote Field Testing		40	40
Laser Testing		30	30
Leak Testing		20	20
Liquid Penetrant Testing		40	40
Magnetic Flux Leakage		20	20
Magnetic Particle Testing		40	40
Neutron Radiographic Testing		40	40
Radiographic Testing		40	40
	Film Interpreter (from trainee)	N/A	40
	Film Interpreter (from Level I)	N/A	20
	Digital Radioscopy	N/A	30
Thermal/Infrared Testing		40	40
Ultrasonic Testing		40	40
	Digital Thickness Measurement	N/A	20
	A-Scan Thickness Measurement	N/A	30
Vibration Analysis		40	40
Visual Testing		40	40

N/A: Not Allowed

- 8.4 Specific (Written - for NDT Levels I and II)
- 8.4.1 The specific examination should address the equipment, operating procedures, and NDT techniques that the individual may encounter during specific assignments to the degree required by the employer's written practice.
- 8.4.2 The specific examination should also cover the specifications or codes and acceptance criteria used in the employer's NDT procedures.
- 8.4.3 The minimum number of questions that should be given is as follows:

Test Methods and Techniques	Limited Certification	Number of Level I Questions	Number of Level II Questions
Acoustic Emission Testing		20	20
Electromagnetic Testing			
1. Alternating Current Field Measurement		20	20
2. Eddy Current		20	20
3. Flux Leakage Testing		20	20
4. Remote Field Testing		20	20
Laser Testing			
1. Profilometry		20	20
2. Holography/Shearography		20	20
Leak Testing			
1. Bubble Test		15	15
2. Absolute Pressure Leak Test (Pressure Change)		15	15
3. Halogen Diode Leak Test		15	15
4. Mass Spectrometer Leak Test		20	40
Liquid Penetrant Testing		20	20
Magnetic Flux Leakage		20	15
Magnetic Particle Testing		20	20
Neutron Radiographic Testing		15	15
Radiographic Testing		20	20
	Film Interpreter (from trainee)	N/A	20
	Film Interpreter (from Level I)	N/A	15
	Digital Radioscopy	N/A	20
Thermal/Infrared Testing		20	20
Ultrasonic Testing		20	20
	Digital Thickness Testing	N/A	10
	A-Scan Thickness Testing	N/A	15
Vibration Analysis		20	60
Visual Testing		20	20

N/A: Not Allowed

- 8.5 Practical (for NDT Level I and II)
- 8.5.1 The candidate should demonstrate familiarity with and ability to operate the necessary NDT equipment, record, and analyze the resultant information to the degree required.
- 8.5.2 At least one flawed specimen or component should be tested and the results of the NDT analyzed by the candidate.
- 8.5.3 The description of the specimen, the NDT procedure, including check points, and the results of the examination should be documented.
- 8.5.4 NDT Level I Practical Examination. Proficiency should be demonstrated in performing the applicable NDT on one or more specimens or machine problems approved by the NDT Level III and in evaluating the results to the degree of responsibility as described in the employer's written practice. At least ten (10) different checkpoints requiring an understanding of test variables and the employer's procedural requirements should be included in this practical examination.
- 8.5.5 NDT Level II Practical Examination. Proficiency should be demonstrated in selecting and performing the applicable NDT technique within the method and interpreting and evaluating the results on one or more specimens or machine problems approved by the NDT Level III. At least ten (10) different checkpoints requiring an understanding of NDT variables and the employer's procedural requirements should be included in this practical examination.
- 8.6 Sample questions for general examinations are presented in the separate question booklets that can be obtained from ASNT Headquarters. These questions are intended as examples only and should not be used verbatim for qualification examinations. The following is a list of the booklets:

Test Method	Question Booklets
Acoustic Emission Testing	G
Electromagnetic Testing	E
1. Alternating Current Field Measurement	EA*
2. Eddy Current	EE*
3. Flux Leakage	EF*
4. Remote Field Testing	ER*
Laser Testing	
1. Profilometry	LP*
2. Holography/Shearography	LH*
Leak Testing	
1. Bubble Test	HB
2. Pressure Change Measurement	HP
3. Halogen Diode Leak Test	HH
4. Mass Spectrometer Test	HM
Liquid Penetrant Testing	D
Magnetic Flux Leakage Testing	MF*
Magnetic Particle Testing	B
Neutron Radiographic Testing	F
Radiographic Testing	A
Thermal/Infrared Testing	J*
Ultrasonic Testing	C
Vibration Analysis	K*
Visual Testing	I

* In course of preparation

9.0

8.7 Additional Written, Specific and Practical Examination Criteria

8.7.1 Level I, II, and III Written Examinations

8.7.1.1 All Level I, II, and III written examinations should be closed-book except that necessary data, such as graphs, tables, specifications, procedures, codes, etc., may be provided with or in the examination. Questions utilizing such reference materials should require an understanding of the information rather than merely locating the appropriate answer. All questions used for Level I and Level II examinations should be approved by the responsible Level III.

8.7.1.2 A valid endorsement on an ACCP Level II certificate fulfills the corresponding examination criteria described in paragraphs 8.3 and 8.5 for each applicable NDT method.

8.7.2 Level I and II Specific Examinations

The employer may delete the specific examination if the candidate has a valid ACCP Level II certificate in the method and if documented experience exists to permit such.

8.7.3 Practical Examinations

Successful completion of an ACCP Level II general hands-on practical examination may be considered as fulfilling the requirements of paragraph 8.5.

8.8 NDT/PdM Level III Examinations

8.8.1 Basic Examinations

8.8.1.1 NDT Basic Examination (required only once when more than one method examination is taken). The minimum number of questions that should be given is as follows:

8.8.1.1.1 Fifteen (15) questions relating to understanding the *SNT-TC-1A* document,

8.8.1.1.2 Twenty (20) questions relating to applicable materials, fabrication, and product technology.

8.8.1.1.3 Twenty (20) questions that are similar to published Level II questions for other appropriate NDT methods.

10.

- 8.8.1.2 PdM Basic Examination (required only once when more than one method examination is taken). The minimum number of questions that should be given is as follows:
 - 8.8.1.2.1 Fifteen (15) questions relating to understanding the *SNT-TC-1A* document.
 - 8.8.1.2.2 Twenty (20) questions relating to applicable machinery technology.
 - 8.8.1.2.3 Thirty (30) questions that are similar to published Level II questions for other appropriate PdM methods.
- 8.8.2 Method Examination (for each method).
 - 8.8.2.1 Thirty (30) questions relating to fundamentals and principles that are similar to published ASNT Level III questions for each method, and
 - 8.8.2.2 Fifteen (15) questions relating to application and establishment of techniques and procedures that are similar to the published ASNT Level III questions for each method, and
 - 8.8.2.3 Twenty (20) questions relating to capability for interpreting codes, standards, and specifications relating to the method.
- 8.8.3 Specific Examination (for each method).
 - 8.8.3.1 Twenty (20) questions relating to specifications, equipment, techniques, and procedures applicable to the employer's product(s) and methods employed and to the administration of the employer's written practice.
 - 8.8.3.2 The employer may delete the specific examination if the candidate has a valid ASNT NDT Level III or ACCP Professional Level III certificate in the method and if documented evidence of experience exists, including the preparation of NDT procedures to codes, standards, or specifications and the evaluation of test results.
- 8.8.4 A valid endorsement on an ASNT NDT Level III certificate fulfills the examination criteria described in 8.8.1 and 8.8.2 for each applicable NDT method.
- 8.8.5 A valid endorsement of an ACCP Professional Level III certificate fulfills the examination criteria described in 8.8.1 and 8.8.2 for each applicable NDT method.
- 8.9 Reexamination
Those failing to attain the required grades should wait at least thirty (30) days or receive suitable additional training as determined by the NDT Level III before reexamination.

9. Certification

- 9.1 Certification of all levels of NDT personnel is the responsibility of the employer.
- 9.2 Certification of NDT personnel shall be based on demonstration of satisfactory qualification in accordance with Sections 6, 7, and 8, as described in the employer's written practice.
- 9.3 At the option of the employer, an outside agency may be engaged to provide NDT Level III services. In such instances, the responsibility of certification of the employees shall be retained by the employer.
- 9.4 Personnel certification records shall be maintained on file by the employer for the duration specified in the employers written practice and should include the following:
 - 9.4.1 Name of certified individual.
 - 9.4.2 Level of certification and NDT method.
 - 9.4.3 Educational background and experience of certified individuals.
 - 9.4.4 Statement indicating satisfactory completion of training in accordance with the employer's written practice.
 - 9.4.5 Results of the vision examinations prescribed in 8.2 for the current certification period.
 - 9.4.6 Current examination copy(ies) or evidence of successful completion of examinations.
 - 9.4.7 Other suitable evidence of satisfactory qualifications when such qualifications are used in lieu of the specific examination prescribed in 8.8.3.2 or as prescribed in the employer's written practice.
 - 9.4.8 Composite grade(s) or suitable evidence of grades.
 - 9.4.9 Signature of the Level III that verified qualifications of candidate for certification.
 - 9.4.10 Dates of certification and/or recertification and the dates of assignments to NDT.
 - 9.4.11 Certification expiration date.
 - 9.4.12 Signature of employer's certifying authority.

10. Technical Performance Evaluation

- 10.1 NDT personnel may be reexamined any time at the discretion of the employer and have their certificates extended or revoked.
- 10.2 Periodically, as defined in the employers written practice, the technical performance of Level I and II personnel should be evaluated and documented by a NDT Level III. The evaluation and documentation should follow the format and guidelines described in section 8.5.

11.0 Interrupted Service

- 11.1 The employer's written practice should include rules covering the types and duration of interrupted service that requires reexamination and recertification.
- 11.2 The written practice should specify the requirements for reexamination and/or recertification for the interrupted service.

12.0 Recertification

- 12.1 All levels of NDT personnel shall be recertified periodically in accordance with one of the following criteria:
 - 12.1.1 Evidence of continuing satisfactory technical performance.
 - 12.1.2 Reexamination in those portions of the examinations in Section 8 deemed necessary by the employer's NDT Level III.
- 12.2 Recommended maximum recertification intervals are 5 years for all certification levels.

13.0 Termination

- 13.1 The employer's certification shall be deemed revoked when employment is terminated.
- 13.2 A Level I, Level II, or Level III whose certification has been terminated may be certified to the former NDT level by a new employer based on examination, as described in Section 8, provided all of the following conditions are met to the new employer's satisfaction:
 - 13.2.1 The employee has proof of prior certification.
 - 13.2.2 The employee was working in the capacity to which certified within six (6) months of termination.
 - 13.2.3 The employee is being recertified within six (6) months of termination.
 - 13.2.4 Prior to being examined for certification, employees not meeting the above requirements should receive additional training as deemed appropriate by the NDT Level III.

14.0 Reinstatement

- 14.1 A Level I, Level II, or Level III whose certification has been terminated may be reinstated to the former NDT level, without a new examination, provided all of the following conditions are met:
 - 14.1.1 The employer has maintained the personnel certification records required in section 9.4.
 - 14.1.2 The employee's certification did not expire during termination.
 - 14.1.3 The employee is being reinstated within six (6) months of termination.

Notes:

1.0

2.0

3.0

4.0

5.0

8/11

Table 6.3.1 A: Recommended Initial Training and Experience Levels

Examination Method	Level	Technique	High School Graduate or Equivalent	Completion with a passing grade of at least 2 years of engineering or science study at a university college or technical school	Minimum Required Work Experience in Method (hours)	Total Hours in NDT
Acoustic Emission	I		40	32	210	400
	II		40	40	630	1200
Electromagnetic	I	AC Field Measurement	40	24	210	400
	II	AC Field Measurement	40	40	630	1200
	I	Eddy Current	40	24	210	400
	II	Eddy Current	40	40	630	1200
	I	Flux Leakage	40	24	210	400
	II	Flux Leakage	40	40	630	1200
	I	Remote Field	40	24	210	400
	II	Remote Field	40	40	630	1200
Laser Methods	I	Profilometry	8	4	70	130
	II	Profilometry	24	12	140	260
	I	Holography/Shearography	40	36	210	400
	II	Holography/Shearography	40	36	630	1200
Leak Testing	I	Bubble Testing	2	2	3	4
	II	Bubble Testing	4	2	35	65
	I	Pressure Change	24	16	105	200
	II	Pressure Change	16	12	280	520
	I	Halogen Diode	12	8	105	200
	II	Halogen Diode	8	6	280	520
	I	Mass Spectrometer	40	28	280	520
	II	Mass Spectrometer	24	16	420	800
Liquid Penetrant	I		4	4	70	130
	II		8	4	140	270
Magnetic Flux Leakage	I		16	12	70	130
	II		12	8	210	400
Magnetic Particle	I		12	8	70	130
	II		8	4	210	400
Neutron Radiography	I		28	20	420	800
	II		40	40	1680	2400
Radiography	I		40	30	210	400
	II		40	35	630	1200
Thermal/Infrared	I		32	32	210	400
	II		34	32	1260	1800
Ultrasonics	I		40	30	210	400
	II		40	40	630	1200
Vibration Analysis	I		24	24	420	800
	II		72	48	1680	2400
Visual	I		8	4	70	130
	II		16	8	140	270

Notes:

- (1) For Level II certification, the experience shall consist of time at Level I or equivalent. If a person is being qualified directly to Level II with no time at Level I, the required experience shall consist of the sum of the times required for Level I and Level II and the required training shall consist of the sum of the hours required for Level I and Level II.
- (2) For Level III certification, the required experience shall consist of the sum of the time required for Level I and Level II, plus the additional time required in 6.3.2 as applicable. The required formal training shall consist of the Level I and Level II training, plus any additional formal training as defined in the employer's written practice.
- (3) Listed training hours may be adjusted as described in the employer's written practice depending on the candidate's actual education level, e.g. grammar school, college graduate in engineering, etc.
- (4) Training shall be outlined in the employer's written practice. Magnetic Particle training hours may be counted towards Magnetic Flux Leakage training hours as defined in employer's written practice.
- (5) If an individual is currently certified in an ET technique and a full course format was used to meet the initial qualifications in that technique, the minimum training hours to qualify in another ET technique at the same level may be reduced up to 40 percent if so defined in the employer's written practice. If an individual is certified in an ET technique, the minimum experience to qualify for another ET technique at the same level or to the next level may be reduced by up to 50 percent if so defined in the employer's written practice.

9/11

Table 6.3.1 B: Alternate Initial Training and Experience Levels

The intent is to eliminate this table during the next revision.

Examination Method	Level	Technique	High school graduate or equivalent	Completion with a passing grade of at least 2 years of engineering or science study at a university college or technical school	Experience Level (months)
Acoustic Emission	I		40	32	3
	II		40	40	9
Electromagnetic	I	AC Field Measurement	40	24	3
	II		40	40	9
	I	Eddy Current	40	24	3
	II		40	40	9
	I	Flux Leakage	40	24	3
	II		40	40	9
	I	Remote Field	40	24	3
	II		40	40	9
Laser Methods	I	Profilometry	8	4	1
	II		24	12	2
	I	Holography/Shearography	40	36	3
	II		40	36	9
Leak Testing	I	Bubble Testing	2	2	2 hours
	II		4	2	0.5
	I	Pressure Change	24	16	1.5
	II		16	12	4
	I	Halogen Diode	12	8	1.5
	II		8	6	4
	I	Mass Spectrometer	40	28	4
	II		24	16	6
Liquid Penetrant	I		4	4	1
	II		8	4	2
Magnetic Flux Leakage	I		16	12	1
	II		12	8	3
Magnetic Particle	I		12	8	1
	II		8	4	3
Neutron Radiography	I		28	20	6
	II		40	40	24
Radiography	I		40	30	3
	II		40	35	9
Thermal/Infrared	I		32	30	3
	II		34	32	18
Ultrasonics	I		40	30	3
	II		40	40	9
Vibration Analysis	I		24	24	6
	II		72	48	24
Visual	I		8	4	1
	II		16	8	2

Notes:

- 0 For Level II certification, the experience shall consist of time at Level I or equivalent. If a person is being qualified directly to Level II with no time at Level I, the required experience shall consist of the sum of the times required for Level I and Level II and the required training shall consist of the sum of the hours required for Level I and Level II.
- 0 For Level III certification, the required experience shall consist of the sum of the time required for Level I and Level II, plus an additional 12 months. The required formal training shall consist of the Level I and Level II training, plus any additional formal training as defined in the employer's written practice.
- 3.0 Listed training hours may be adjusted as described in the employer's written practice depending on the candidate's actual education level, e.g. grammar school, college graduate in engineering, etc.
- 0 Initial experience may be gained simultaneously in two or more methods if the:
 - 4.1 candidate spends a minimum of 25% of work time on each method for which certification is sought, and
 - 4.2 remainder of the work time claimed as experience is spent in NDT-related activities defined in the employer's written practice.
- 0 Training shall be outlined in the employer's written practice.
- 0 If an individual is currently certified in an ET technique and a full course format was used to meet the initial qualifications in that technique, the minimum training hours to qualify in another ET technique at the same level may be reduced up to 40 percent if so defined in the employer's written practice. If an individual is certified in one ET technique, the minimum experience to qualify for another ET technique at the same level or to the next level may be reduced by up to 50 percent if so defined in the employer's written practice.

0 Recommended Practice SNT-TC-1A (2006)

10/11

**Table 6.3.1 C: Initial Training and Experience Levels
For Level II Limited Certifications**

Examination Method	Limited Certification	Technicians Starting Point	Formal Training	Minimum Required Work Experience in Method (Hours)
Radiography	Film Interpretation	Trainee	18	22
	Film Interpretation	Level I	2	22
	Digital Radioscopy	Trainee	32	175
Ultrasonics	Digital Thickness	Trainee	8	40
	A-Scan Thickness	Trainee	24	175

NON-RADIOGRAPHERS

Interpretation of Radiographs – total = 22 hours

Artifacts – 2 hours

Castings – 6 hours

Weldments – 14 hours

RADIOGRAPHERS (Certified RT Level I)

Refresher instruction – 2 hours (geometrical unsharpness, radiographic sensitivity, radiographic contrast, film contrast, subject contrast, definition, exposure techniques, manufacturing processes and associated discontinuities, & standards, code and procedures)

Interpretation of radiographs – 22 hours

11/11