



**AMERICAN SOCIETY  
for  
NONDESTRUCTIVE TESTING**

**Recommended Practice**

**No. SNT-TC-1A (June 1975 Edition)**

THIS DOCUMENT IS INTENDED AS A GUIDELINE FOR EMPLOYERS TO ESTABLISH THEIR OWN WRITTEN PRACTICE FOR THE QUALIFICATION AND CERTIFICATION OF THEIR NDT PERSONNEL. IT IS NOT INTENDED TO BE USED AS A STRICT SPECIFICATION.

**AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING**

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*FOREWORD*

The recommended practice contained herein establishes the general framework for a qualification and certification program. In addition, the document provides recommended educational, experience, and training requirements for the different test methods. Supplementary documents include question and answer lists which may be used in composing examinations for nondestructive testing personnel.

Inquiries related to this recommended practice should be directed to the Chairman of the Personnel Qualification Division, attention of the Technical Director, at the following address:

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## PERSONNEL QUALIFICATION AND CERTIFICATION IN NONDESTRUCTIVE TESTING

### 1. SCOPE

- 1.1 It is recognized that the effectiveness of nondestructive applications depends upon the capabilities of the persons who are responsible for, and carry out nondestructive testing (NDT). This Recommended Practice has been prepared to establish guidelines for the qualification and certification of nondestructive testing 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 to aid employers in recognizing the essential factors to be considered in qualifying employees engaged in any of the test methods listed in Par. 3.
  - 1.4 It is recognized that these guidelines may not be appropriate for certain applications. In developing his written practice as required by Par. 5, the employer shall review the detailed recommendations presented herein, and shall modify them as necessary to meet his particular needs.
- c. Certifying Agency—The employer of the personnel being certified.
  - d. Recommended Practice—A set of guidelines to assist the employer in developing uniform procedures for the qualification and certification of nondestructive testing personnel to satisfy his specific requirements.
  - e. Employer—The corporate or private entity which employs personnel for wages or salary.
  - f. Training—The program developed to impart the knowledge and skills necessary for qualification.

### 3. NONDESTRUCTIVE TEST METHODS

- 3.1 Qualification and certification of nondestructive testing personnel in accordance with this Recommended Practice shall be applicable to each of the following methods:
  - a. Radiographic Testing (RT)
  - b. Magnetic Particle Testing (MT)
  - c. Ultrasonic Testing (UT)
  - d. Liquid Penetrant Testing (PT)
  - e. Eddy Current Testing (ET)
  - f. Neutron Radiographic Testing (NRT)
  - g. Leak Testing (LT)

### 2. DEFINITIONS

- 2.1 Terms included in this document are defined as follows:
    - a. Qualification—Skill, training, and experience required for personnel to properly perform the duties of a specific job.
    - b. Certification—Written testimony of qualification.
- 4.1 There shall be three basic levels of qualification. These levels may be further subdivided by the employer to acknowledge that additional levels of skills and responsibility may be necessary for specific NDT applications.
  - 4.2 In the process of being qualified and certified to at

### 4. LEVELS OF QUALIFICATION

least NDT Level I, an individual shall be considered a Trainee. A Trainee shall work along with a certified individual and shall not conduct independently any test, interpret any results of a test, or write a report of test results.

**4.3** The three basic levels of qualification are as follows:

- a. NDT Level I—An NDT Level I individual shall be qualified to properly perform specific calibrations, specific tests, and specific evaluations according to written instructions and to record the results. He shall receive the necessary guidance or supervision from a certified NDT Level II or III individual.
- b. NDT Level II—An NDT Level II individual shall be qualified to set up and calibrate equipment and to interpret and evaluate results with respect to applicable codes, standards, and specifications. He shall be thoroughly familiar with the scope and limitations of the method and shall exercise assigned responsibility for on-the-job training and guidance of trainees and NDT Level I personnel. He shall be able to prepare written instructions, and to organize and report nondestructive testing investigations.
- c. NDT LEVEL III—An NDT Level III individual shall be capable of and responsible for establishing techniques; interpreting code, standards and specifications; and designating the particular test method and technique to be used. He shall be responsible for the complete NDT operation he is qualified for and assigned to, and shall be capable of evaluating results in terms of existing codes, standards, and specifications. He shall have sufficient practical background in applicable materials, fabrication, and/or product technology to establish techniques and to assist the design engineer in establishing acceptance criteria where none are otherwise available. It is desirable that he have general familiarity with other commonly used NDT methods. He shall be responsible for the training and examination of NDT Level I and Level II personnel for certification. The actual administration of training and grading of examinations may be delegated to a duly selected representative of the level III individual and so recorded.

## 5. 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 reflect the guidelines referenced in Par. 1.
- 5.3** The employer's written practice shall describe the responsibility of each level of certification for determining the acceptability of materials or com-

ponents in accordance with the applicable quality standards.

## 6. EDUCATION, TRAINING AND EXPERIENCE

**6.1** Personnel considered for certification in nondestructive testing shall have sufficient education, training and experience to ensure understanding of the principles and procedures of those areas of testing in which they are being considered for certification.

**6.2** To be considered for certification, a candidate shall satisfy one of the following criteria for the applicable NDT level. Documented training and/or experience gained in positions and activities equivalent to those of level II or Level III prior to establishment of the employer's written practice and a certification program in accordance with this document shall be considered as satisfying the criteria of Par. 6.2.1 and 6.3.

### 6.2.1 NDT Levels I and II

Table 6.2.1A lists the recommended the minimum training and experience factors to be considered by the employer in establishing written practices for qualification of Level I and Level II individuals. The experience factor in months is based on a normal 40-hour work week (175 hours per month). When work is performed in excess of a 40-hour week, credit may be based on total hours. Records substantiating qualification shall be kept on either a monthly or hourly basis.

**6.3** To be considered for certification as a Level III, the candidate shall satisfy one of the following education and experience criteria:

### 6.3.1 NDT Level III

- a. Graduate of a four-year accredited engineering or science college or university with a degree in Engineering or Science plus one year's experience in nondestructive testing in an assignment comparable to that of an NDT level II in the applicable test method.

*Note: if the college or university degree is issued in nondestructive testing, the one year's experience requirement may be reduced to six months.*

- b. Completion with a passing grade of at least two years of engineering or science study at an accredited university, college, or technical school plus two years' experience as a certified NDT Level II in the applicable test method.
- c. four years' experience as a certified NDT Level II in the applicable testing method.
- d. When the individual is qualified by examination, the above requirements may be partially replaced by experience as a certified NDT Level II in other methods listed in Par. 3 of this Recommended Practice as defined in the employer's written practice.

**Table 6.2.1A**  
**RECOMMENDED TRAINING AND EXPERIENCE MINIMUM LEVELS**  
**TRAINING (HOURS)**

	RT		MT		UT		PT		ET		NRT	
	Level I	Level II	Level I	Level II	Level I	Level II	Level I	Level II	Level I	Level II	Level I	Level II
* Completion with a passing grade of at least 2 years of engineering or science study at a university, college, or technical school	12	40	8	4	24	40	4	4	8	8	12	40
** High school graduation, diploma or its equivalent	20	40	12	8	40	40	4	8	12	8	20	40
*** Grammar school graduation, or demonstrated proficiency, or additional training	80	100	24	16	40	80	12	16	48	24	NA	NA

**WORK TIME EXPERIENCE (MONTHS)**

All educational levels as listed above	3 Mo.	9	1	3	3	9	1	2	1	9	6	24
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NA = Not applicable.

Notes: Training shall be as outlined in the employer's written practice.

For Level II certification, the experience shall consist of time at Level I. 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 as a trainee and the hours of training required for Level I and Level II in total shall apply.

Credit for experience may be gained simultaneously in two or more disciplines. The candidate must spend at least 25% of his work time on each discipline for which experience is being claimed.

**Table 6.2.1A (Cont'd)**  
**RECOMMENDED TRAINING AND EXPERIENCE MINIMUM LEVELS**

**TRAINING (HOURS)**

LEAK TESTING	LEVEL I				LEVEL II			
	BT	PCMT	HDLT	MSLT	BT	PCMT	HDLT	MSLT
* Completion with a passing grade of at least 2 years of engineering or science study at a university, college, or technical school	2	16	8	28	2	12	6	16
** High school graduation, diploma or its equivalent	2	24	12	40	4	16	8	24
*** Grammar school graduation, or demonstrated proficiency, or additional training	2	96	48	NA	4	80	40	NA
<b>WORK TIME EXPERIENCE (MONTHS)</b>								
All educational levels as listed above	- Mo. 2 Hr	1 1/2	1 1/2	4	1/2	4	4	6

NA = Not applicable.

BT = Bubble Test  
 PCMT = Pressure Change/Measurement Test  
 HDLT = Halogen Diode Leak Test  
 MSLT = Mass Spectrometer Leak Test

Asterisks refer to the Recommended Training Course Tables.

NOTE: Credit for experience may be gained simultaneously in two or more disciplines. The candidate must spend at least 25% of his work time on each discipline for which experience is being claimed.

**7. TRAINING PROGRAMS**

- 7.1** Personnel being considered for certification shall complete sufficient organized training to become thoroughly familiar with the principles and practices of the specified test method related to the level of certification desired and applicable to the practices to be used and the products to be tested.
- 7.2** Recommended training course outlines and sources of technical information are provided in this document.
- 7.3** The training program shall include sufficient examination to ensure the training material has been comprehended.
- 7.3.1** Recommended training course outlines are appended as follows:

<b>Test Method</b>	<b>Table Number</b>
Radiographic Testing	I-A
Magnetic Particle Testing	I-B
Ultrasonic Testing	I-C
Liquid Penetrant Testing	I-D
Eddy Current Testing	I-E
Neutron Radiographic Testing	I-F
Leak Testing	I-G

- 7.3.2** Recommended references to be used as sources of

technical information for training courses are appended as follows:

<b>Test Method</b>	<b>Table Number</b>
Radiographic Testing	II-A
Magnetic Particle Testing	II-B
Ultrasonic Testing	II-C
Liquid Penetrant Testing	II-D
Eddy Current Testing	II-E
Neutron Radiographic Testing	II-F
Leak Testing	II-G

**8. EXAMINATIONS**

- 8.1** To be considered for examination, NDT personnel must meet the applicable requirements of the employer's written practice.
- 8.2** An NDT Level III individual or his selected representative shall conduct and grade examinations for all NDT Level I and NDT Level II personnel. The examination to verify physical and technical qualifications shall consist of the following:
  - a. Physical**
    - 1.** An examination shall be given to assure natural or corrected near distance acuity in at least one eye such that the applicant is capa-

ble of reading a minimum of Jaeger Number 2 letters at a distance of 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 shall also be acceptable. The examination shall be administered by qualified personnel on an annual basis. Examination results shall be kept on file for the period of certification (see Par. 9.7).

2. Individuals shall also be capable of distinguishing and differentiating contrast between colors used in the method for which qualified as demonstrated by the practical examinations or test performance.
3. Additional physical requirements should be considered when preparing the employer's written practice.

**b. General (written)**

1. The general examination shall cover the basic test principles relative to the applicable method to the degree required by the employer's written practice.
2. In preparing the examination, the employer shall select or devise appropriate questions covering the applicable method to the degree required by the employer's written practice.
3. The questions and answers provided in the applicable separate examination booklets are suggested as guides for the development of the general examination.

**c. Specific (Written)**

1. The specific examination shall cover the equipment, operating procedures, and test techniques that the applicant may encounter in his specific assignment to the degree required by the employer's written practice.
2. The specific examination shall also cover the specification or codes and acceptance criteria used by the employer in his nondestructive testing procedures.

**d. Practical**

1. The person considered for certification shall demonstrate to the satisfaction of the examiner that he is familiar with and can operate the necessary test equipment and analyze the resultant information to the degree required.
2. At least one selected specimen shall be tested, and the results of the test shall be analyzed by the person considered for certification.
3. The description of the specimen, the test procedure, including check points, and the results of the examination shall be documented.

**8.3** Suggested examination questions and answers for use in compiling appropriate general examinations for Levels I and II have been prepared and are presented in the following separate Question Booklets which can be obtained from ASNT Headquarters. The following is a list of the booklets.

<b>Test Method</b>	<b>Question Booklets</b>
Radiographic Testing	A
Magnetic Particle Testing	B
Ultrasonic Testing	C
Liquid Penetrant Testing	D
Eddy Current Testing	E
Neutron Radiographic Testing	F
Leak Testing	G

**8.4** Until Level III questions become available, the Level III general examination shall consist of Level II questions of a number significantly greater than that used in the Level II examination.

**8.5** The following describes the recommended examinations for each NDT level for the various nondestructive testing methods. The written examinations shall be administered without access to reference material (closed book) except that necessary data, such as graphs and tables, may be provided.

**8.5.1 NDT Level I**

- a. General Examination—The designated number of Level I questions approved by the NDT Level III examiner are to be answered.

<b>Test Method</b>	<b>Number of Questions</b>
Radiographic Testing	40
Magnetic Particle Testing	30
Ultrasonic Testing	40
Liquid Penetrant Testing	30
Eddy Current Testing	30
Neutron Radiographic Testing	40
Leak Testing	15

- b. Specific Examination—The designated number of questions approved by the Level III examiner are to be answered.

<b>Test Method</b>	<b>Number of Questions</b>
Radiographic Testing	20
Magnetic Particle Testing	20
Ultrasonic Testing	15
Liquid Penetrant Testing	20
Eddy Current Testing	15
Neutron Radiographic Testing	15
Leak Testing:	
1. Bubble Test	10
2. Absolute Pressure Leak Test (Pressure Change)	15
3. Halogen Diode Leak Test	15
4. Mass Spectrometer Leak Test	35

- c. Practical Examination—Proficiency shall be demonstrated in performing the applicable non-destructive tests and limited evaluations of the results obtained on one or more samples approved by the NDT Level III examiner. At least ten different checkpoints requiring an understanding of test variables and the employer's procedural requirements should be included in this practical examination.

### 8.5.2 NDT Level II

- a. General Examination—The designated number of Level II questions approved by the NDT Level III examiner are to be answered.

Test Method	Number of Questions
Radiographic Testing	40
Magnetic Particle Testing	30
Ultrasonic Testing	40
Liquid Penetrant Testing	30
Eddy Current Testing	30
Neutron Radiographic Testing	30
Leak Testing	15

- b. Specific Examination—The designated number of questions approved by the Level III examiner are to be answered.

Test Method	Number of Questions
Radiographic Testing	20
Magnetic Particle Testing	15
Ultrasonic Testing	20
Liquid Penetrant Testing	15
Eddy Current Testing	15
Neutron Radiographic Testing	15
Leak Testing:	
1. Bubble Test	10
2. Absolute Pressure Leak Test (Pressure change)	15
3. Halogen Diode Leak Test	15
4. Mass Spectrometer Leak Test	50

- c. Practical Examination—Proficiency shall be demonstrated in selecting and performing the applicable nondestructive tests and evaluating the results obtained on one or more samples approved by the NDT Level III examiner. At least ten different checkpoints requiring an understanding of test variables and the employer's procedural requirements should be included in this practical examination.

### 8.5.3 NDT Level III

- a. General Examination—Thirty questions devised by the examiner for the appropriate method, plus 30 questions from the NDT Level II questions for other applicable NDT methods, are to be answered.
- b. Specific Examination—Appropriate questions shall be chosen to demonstrate a knowledge of test variables and the employer's procedural requirements.

- c. Practical Examination—Proficiency shall be demonstrated in selecting, specifying, and writing specifications and/or procedures for the performance of the applicable nondestructive tests using appropriate reference material.

- 8.5.4 On the basis of demonstrated ability, achievement experience, and education, as defined in Par. 4.3.c and 6.3, the employer may waive examination for the Level III individual. Written certification must be provided, and evidence supporting the certification shall be held on file and be made available when verification is required.

### 8.6 Grading

- 8.6.1 An NDT Level III representative of the employer shall be responsible for the conducting and grading of examinations of all NDT Level I and Level II personnel. The actual administration and grading of examinations may be delegated to the duly selected representative of the Level III individual and so recorded.

- 8.6.2 Recommended satisfactory percentile grades for Levels I, II, and III are detailed in 8.6.4. These grades shall be a composite grade based upon the general, specific, and practical tests as weighted in 8.6.3

- 8.6.3 A percentile weight factor should be applied to the percentage grades of the various examinations. The percentile weight assigned any particular examination should be within the ranges listed below and should be established in accordance with the principles outlined in Par. 1.4. The total of the three percentile weights shall equal 1.0.

#### a. NDT Level I Examination Grades

- 1. General — 0.2 to 0.6
- 2. Specific — 0.1 to 0.5
- 3. Practical — 0.3 to 0.7

#### b. NDT Level II Examination Grades

- 1. General — 0.3 to 0.7
- 2. Specific — 0.2 to 0.6
- 3. Practical — 0.1 to 0.5

#### c. NDT Level III Examination Grades

- 1. General — 0.4 to 0.6
- 2. Specific-Practical — 0.4 to 0.6

- d. The composite grade (Gc) is determined as follows:

$$G_c = (G_g \times W_g) + (G_s \times W_s) + (G_p \times W_p)$$

Where Gc = Composite grade

Gg = Actual grade from general examination in percent

Wg = Percentile weight of general examination

Gs = Actual grade from specific examination in percent

Ws = Percentile weight of specific examination

Gp = Actual grade from practical examination in percent

Wp = Percentile weight of practical examination

e. Example:

1. Test results obtained for Level I examination =  
General (Gg) = 87%  
Specific (Gs) = 93%  
Practical (Gp) = 90%
2. Percentile weight assigned for each examination =  
General (Wg) = 0.3  
Specific (Ws) = 0.2  
Practical (Wp) =  $\frac{0.5}{1.0}$
3. Then:  $G_c = (87 \times 0.3) + (93 \times 0.2) + (90 \times 0.5)$   
 $G_c = 26.1 + 18.6 + 45$   
 $G_c = 89.7\%$

**8.6.4** When an examination is administered for NDT Level I or Level II qualification, a composite grade of 80% or greater is required for qualification. In addition, each grade for the general, specific, and practical examinations shall be 70% or greater. Test objects shall be used in the practical examination, and at least 90% of the known indications should be found. For NDT Level III, a composite grade of 90% is required, and no grade shall be less than 80%.

### **8.7 Re-examination**

- a. Those failing to attain the required grades must wait at least 30 days or show evidence of having received suitable additional training as determined by the employer before re-examination.

## **9. CERTIFICATION**

- 9.1** Certification of all levels of NDT personnel is the responsibility of the employer.
- 9.2** Each employer shall establish written practices covering all phases of certification including training as specified in Par. 5.
- 9.3** Certification of NDT personnel shall be based on demonstration of satisfactory qualification as determined by procedures outlined in Par. 6, 7, and 8 as modified by the employer's written practices.
- 9.4** 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 must be retained by the employer utilizing outside services.
- 9.5** The purchaser of outside certification services is responsible for auditing the agency providing such services to assure that training, examination, and certification are in accordance with this document. He must maintain a written record of his audit.
- 9.6** Certification records shall be maintained on file by the employer and should contain personnel records

of the certified individuals and copies of written practices as required by Par. 5.

**9.6.1** The personnel records of the certified individuals should include as a minimum the following:

- a. Name of certified individual.
- b. Level of certification and test method.
- c. Educational background and experience of certified individuals.
- d. Statement indicating satisfactory completion of training in accordance with the employer's written procedure.
- e. Results of the physical examination prescribed in Par. 8.2.a.
- f. Copies of current examinations and of grades for all previous examinations and descriptions of practical test objects.
- g. Percentile weights assigned to each examination if examinations were employed for qualification.
- h. Composite grade if examinations were employed.
- i. Date of certification and/or recertification and the dates of hire or assignment to NDT.
- j. Signature of certifying agency representative.

### **9.7 Re-Certification**

- 9.7.1** All levels of NDT personnel should be re-certified at least once every three years in accordance with one of the following criteria as determined by the employer:
  - a. Evidence of continuing satisfactory performance.
  - b. Re-examination in accordance with Par. 8 and 9.
- 9.7.2** NDT personnel may be re-examined any time at the discretion of the employer and have their certification extended or revoked.
- 9.7.3** The employer shall in his written practice establish rules covering the duration of interrupted services which will require re-examination and recertification.

## **10. TERMINATION**

- 10.1** All certification shall be automatically terminated when an employee leaves the employer where he had been certified.
- 10.2** A terminated Level I or II employee may be recertified to his former NDT level by a new employer based on examination as described in Par. 8.2 provided all of the following conditions are met to the new employer's satisfaction:
  - a. The employee has proof of prior certification.
  - b. The employee was working in the capacity to which he had been certified within six months of his termination.
  - c. The employee is being re-certified within six months of his termination.

# Quick Links

to ASNT Certification Documents on CD-ROM

**Recommended Practice  
No. SNT-TC-1A  
1966**

**Recommended Practice  
No. SNT-TC-1A  
1968**

**Recommended Practice  
No. SNT-TC-1A  
1971**

**Recommended Practice  
No. SNT-TC-1A  
1975**

**Recommended Practice  
No. SNT-TC-1A  
1980**

**Recommended Practice  
No. SNT-TC-1A  
1984**

**Recommended Practice  
No. SNT-TC-1A  
1988**

**Recommended Practice  
No. SNT-TC-1A  
1992**

**Recommended Practice  
No. SNT-TC-1A  
1996**

**Recommended Practice  
No. SNT-TC-1A  
1998 Addenda**

**Welcome**  
an introduction to  
**ASNT Certification Documents on CD-ROM**

**Interpreting SNT-TC-1A**  
1996 Edition

**A Guide to  
Personnel Qualification and Certification**  
by  
George C. Wheeler

**ASNT Standard for Qualification and Certification  
of  
Nondestructive Testing Personnel  
ANSI/ASNT CP-189-1995**

**ASNT Central Certification Program  
(ACCP)**