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Contact the [NDE Standards POC](#) (internal link) for ESM Ch. 13–Vol. 6 (or Tailored Standards Manual Ch. 13 NDE material) for upkeep, interpretation, and variance issues, or via [Suggestions or Clarifications](#) (internal link)

New in this revision (Revision Record since inception near end of main document)

Major revision to comply with SNT-TC-1A versus CP-189. Added Limited Certifications for techniques in the Leak Testing Method. Added Appendices H–Template for Logging of Experience; I–Rationale for Limited Certifications; J–Deviations from ASNT SNT-TC-1A, 2024 Edition, and K–Vision Acuity Examination Record. Multiple other changes throughout.

1.0 Scope

- 1.1. This Written Practice establishes the minimum requirements for qualification and certification of nondestructive examination (NDE) personnel at Los Alamos National Laboratory (LANL). The basis for this Procedure is ASNT Recommended Practice No. SNT-TC-1A, *Personnel Qualification and Certification in Nondestructive Testing*. SNT-TC-1A is treated as a requirement by the ASME Boiler and Pressure Vessel Code and is implemented as such in this Written Practice. The methods to which this Written Practice applies include:
 - 1.1.1. ET – Electromagnetic Testing
 - 1.1.2. LT – Leak Testing, including Bubble Leak Testing, Pressure Change Leak Testing, and Mass Spectrometer Leak Testing (MSLT)
 - 1.1.3. MT – Magnetic Particle Inspection, including both visible and fluorescent techniques
 - 1.1.4. PT – Liquid Penetrant Inspection
 - 1.1.5. RT – Radiographic Testing, including Film, DR (panel), CR, and CT techniques
 - 1.1.6. UT – Ultrasonic Testing, including Conventional and Phased Array Ultrasonic Testing (PAUT), Time of Flight Diffraction (TOFD), and Full Matrix Capture (FMC)
 - 1.1.7. VT – Visual Testing, both Direct and Indirect
 - 1.1.8. Other methods as addressed by SNT-TC-1A, when implemented by LANL and governed by this Written Practice. This Written Practice will be updated to include training and experience requirements for qualification in the method as required.
 - A. This Written Practice details the minimum training, education, and experience requirements for NDE personnel and provides criteria for documenting qualifications and certification. Unique or additional requirements beyond the minimum established by SNT-TC-1A are also addressed in this Written Practice, and Appendix J lists the deviations from SNT-TC-1A, 2024 Edition.
- 1.2. The Responsible NDE Level III shall maintain this Written Practice and associated documents, verify qualifications of all candidates for certification and sign the individual's certification to testify as to qualification, and shall provide guidance to NDE Level III personnel responsible for given methods in examination requirements and development of test parts meeting the requirements of this Written practice. The Responsible Level III is the final authority in its application and interpretation and is responsible for this Written Practice's compliance with SNT-TC-1A. The Responsible Level III is not required to be certified in all methods addressed.
 - A. LANL may accept a valid ASNT central certification, e.g., ACCP or ASNT NDT Level II, as meeting the examination requirements of 6.3.1 (General Examination) if the Responsible Level III and NDE Level III have determined that those examinations meet the requirements of this Written Practice.
- 1.3. Personnel certified in accordance with the previous revision of this document are considered certified in accordance with this document unless the specific method/technique/level was removed from the program. Recertification due to inactivity (revocation/suspension) based on the new intervals in this written practice shall be completed within six months of the issue of this revision. Level III personnel shall complete the noted Specific Examinations and Practical Examinations within six months of issue of this revision, as required.
- 1.4. This Written Practice meets the requirements of LANL Procedure P330-5 r6.2, *Special Processes*, and therefore complies with the requirements of ASME NQA-1.

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- 1.5. This document does not apply to subcontract NDE organizations; however, subcontracted personnel hired as staff augmentation or supplemental staff, and who will provide NDE, shall be certified to the qualification and certification requirements of this written practice.
- 1.6. The AWS QC-1 *Specification for Certification of AWS Welding Inspectors* program is not directly addressed in this Written Practice. That program is a central certification program administered directly by the American Welding Society. However, visual acuity assessment for AWS CWI personnel is performed in accordance with this Written Practice.
- 1.7. The requirements in this document are based on industry standard and apply as appropriate to both nuclear and non-nuclear NDE activities at LANL. Codes and standards used on specific projects may have additional requirements, but this document is considered the minimum standard for NDE personnel qualification and certification at LANL.
 - A. Outside Services: At LANL's option, an outside organization may be engaged to perform the duties of an NDE Level III. For organizations other than ASNT, LANL shall be responsible for evaluating the organization to ensure the services are in accordance with this Written Practice and SNT-TC-1A, and so documented. An NDE Level III of the engaged outside organization shall be responsible for the services provided. Depending upon flow-down requirements or the governing specification, additional requirements may be imposed upon the outside organization by LANL. A Level III this capacity may qualify personnel, but certification remains the responsibility of LANL Engineering Services.

2.0 Definitions and Abbreviations

2.1. Purpose

These definitions and abbreviations clarify the meanings and terms used in this Written Practice as they apply to this Written Practice, and only to this Written Practice. No broader application of these definitions is implied. For basic definitions of terms related to NDE, refer to ASTM E1316, *Standard Terminology for Nondestructive Examinations*. See GLOS-COE-1, [Conduct of Engineering Glossary](#) for additional definitions (and the ESM-official ones, where these may differ).

- 2.1.1. ASNT. American Society for Nondestructive Testing.
- 2.1.2. ACCP. ASNT Central Certification Program.
- 2.1.3. Calibration, Instrument. The comparison of an instrument with, or the adjustment of an instrument to, a known reference(s), often traceable to the National Institute of Standards and Technology (NIST). *See also "Standardization, Instrument."*
- 2.1.4. Certification. Written testimony of qualification.
- 2.1.5. Certifying Agency. LANL is the Certifying Agency.
- 2.1.6. Certifying Authority. On behalf of LANL, the Certifying Authority is the Division Leader, Engineering Services, or as delegated. Such delegation shall be documented.
- 2.1.7. Closed-book Examination. An examination administered without access to reference material except that supplied with or in the examination.
- 2.1.8. Comparable. Being at an equivalent or similar level of NDE responsibility and difficulty as determined by the Responsible Level III.
- 2.1.9. Detection Rate. Expressed as a percentage, it represents the number of flaws or indications detected in a specimen compared to the actual number of flaws or indications in the specimen.
- 2.1.10. Documented. The condition of being in written form.

- 2.1.11. Employer. LANL is the employer.
- 2.1.12. Examination. A formal, controlled, documented assessment of knowledge or skills conducted in accordance with this Written Practice.
- 2.1.13. Experience. Work activities accomplished in a specific NDE method under the direction of qualified supervision including the performance of the NDE method and related activities, but not including time spent in formal training programs. "OJT" is commonly used to describe the experience gained for certification.
- 2.1.14. Formal Training. An organized and documented program of activities designed to impart the knowledge and skills required to be qualified to this Written practice. Formal training may be a mix of classroom, practical, and programmed self-instruction as approved by the responsible Level III. Self-study is not considered formal training. The content of formal classroom training is defined by ANSI/ASNT CP-105, latest revision.
- 2.1.15. LANL NDE Level III. An individual qualified and certified by LANL as NDE Level III in accordance with this written practice, also referred to simply as "Level III" in this document (all Responsible Level III requirements will be clearly indicated as such).
- 2.1.16. Limited Certification: Nondestructive test methods may be further subdivided into limited disciplines or techniques. *This document recognizes UT thickness measurement, RT Film/Image interpretation, and LT techniques as being Limited Certifications. Further description is given in Appendix B, with rationale for the Leak Testing Level II Limited certifications in Appendix I.*
- 2.1.17. Method. One of the disciplines of NDE; for example, ultrasonic testing, within which various techniques may exist. *See Scope for a listing of the methods to which this Procedure applies.*
- 2.1.18. MSLT. Mass Spectrometer Leak Testing.
- 2.1.19. Nondestructive Examination (NDE): 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 part's serviceability. *"NDE" is commonly used interchangeably with NDT (Nondestructive Testing) and NDI (Nondestructive Inspection).*
- 2.1.20. NDE Instructor. An individual qualified and designated in accordance with this Procedure to educate NDE personnel.
- 2.1.21. NDE Procedure. A written instruction for conducting a nondestructive examination.
- 2.1.22. Outside Agency. An agency or individual who provides NDE Level III services. Depending upon the Contract or governing Specification, additional requirements not addressed by this Procedure may be placed upon an Outside Agency.
- 2.1.23. Personalized Instruction. Personalized instruction may consist of blended classroom, supervised laboratory, and/or hybrid online competency-based course delivery. Modular content is covered through online presentations, in the classroom, and/or in small groups. Personalized instruction also enables students to achieve competency using strategies that align with their knowledge, skills, and learning styles.
- 2.1.24. Predictive Maintenance. This written practice does not address the qualification nor certification of predictive maintenance activities at LANL at the time of its publication.
- 2.1.25. Qualification. Demonstrated skill, demonstrated knowledge, documented training, and documented experience required for personnel to properly perform the duties of a specific job.

- 2.1.26. Responsible Level III. LANL NDE Level III role designated by appropriate management as the individual responsible for this Written Practice, and the qualification and certification program at LANL.
- 2.1.27. Standardization, Instrument. The adjustment of an NDE instrument using an appropriate reference standard to obtain or establish a known and reproducible response. *(This is usually done prior to an examination but can be carried out anytime there is a concern about the examination or instrument response). See also "Calibration, Instrument."*
- 2.1.28. Technique. A category within an NDE method; e.g., immersion ultrasonic testing.
- 2.1.29. Third Party Agency: A company or organization, without an established Written Practice, providing supplemental workforce to LANL; e.g., a temporary staffing company.
- 2.1.30. Training: An organized program developed to impart the knowledge and skills necessary for qualification.
- 2.1.31. Written Practice. A written procedure that details the requirements for qualification and certification of NDE personnel per ASNT SNT-TC-1A. This document is defined as that Written Practice.

3.0 Levels of Qualification

- 3.1. Classification. Six levels of qualification are defined in terms of skills and knowledge required in each method or methods to perform specified NDE activities.
- 3.2. NDE Level III. An NDE Level III shall have the skills and knowledge to establish techniques; interpret codes, standards, and specifications; designate the particular technique to be used; and verify the adequacy of procedures. The NDE Level III shall also have general familiarity with the NDE methods covered in Appendix A of this Written Practice. The NDE Level III shall be capable of conducting or directing the training of NDE personnel in the methods in which the NDE Level III is qualified. There may be multiple NDE Level III personnel in a given method.
- 3.3. NDE Level II. An NDE Level II shall have the skills and knowledge to set up and standardize equipment, to conduct tests, and to interpret, evaluate, and document results in accordance with the procedures approved by a NDE Level III. The NDE Level II shall be thoroughly familiar with the scope and limitations of the method(s) to which he or she is certified and should be capable of directing the work of trainees and NDE Level I personnel. The NDE Level II shall be able to organize and report nondestructive test results.
- 3.4. NDE Level II Limited. An NDE Level II Limited shall have the skills and knowledge to set up and standardize equipment, to conduct tests, and to interpret, evaluate, and document results in accordance with procedures approved by the NDE Level III in the techniques listed in Appendix B. The NDE Level II Limited shall be thoroughly familiar with the scope and limitations of the technique to which certified and should be capable of instructing and supervising the work of trainees and NDE Level I personnel. The NDE Level II Limited shall be able to organize and report nondestructive test results. Refer to Appendix I for a discussion of the reduction in experience hours for the performance of MSLT at LANL. Note that for the Radiography Image Interpretation, actual performance of the radiographic examination is not in the scope of the Limited certification.
- 3.5. NDE Level I. An NDE Level I shall have the skills and knowledge to properly perform specific standardizations of instruments, specific tests, and with prior written approval of the NDE Level III, perform specific interpretations and evaluations for acceptance or rejection and document the results, in accordance with specified approved procedures. The NDE Level I shall be able to follow approved nondestructive test procedures and shall receive the necessary guidance or supervision from a certified NDE Level II Limited, NDE Level II, or NDE Level III. An NDE Level I shall have sufficient technical knowledge and skills to be qualified to properly perform specific

standardizations, specific NDE, and specific evaluations for acceptance or rejection determinations according to written instructions and to record results. The Level I shall receive the necessary instruction and supervision from a certified Level I or Level II.

- 3.6. Trainee. A person who is not yet certified to any level shall be considered a trainee. Trainees shall work with a certified person, under the direction of an NDE Level II Limited, NDE Level II, or NDE Level III, and shall not independently conduct any tests or write a report of test results. The intent is that Trainees are designated as such and are actively in the process of obtaining experience after classroom instruction has been completed. Although in some cases trainees may gain experience prior to being designated as a trainee and attending class, this situation should be minimized.
- 3.7. NDE Instructor. An NDE Instructor shall have the skills and knowledge to plan, organize, and present classroom, laboratory, demonstration, and/or on the job NDE instruction, training, and/or education programs in accordance with course outlines approved by an NDE Level III with concurrence of the Responsible Level III. LANL personnel who are providing instruction may have additional requirements imposed regarding course preparation and/or classroom presentation.
- 3.7.1 Criteria. The NDE Instructor shall meet at least one of the following criteria. LANL may flow down or impose additional requirements for Instructors.
- 3.7.1.1. Possess a current ASNT Level III certificate in the NDE method to be taught; or
- 3.7.1.2. Have academic credentials at least equivalent to a BS in engineering, physical science, or technology, and possess adequate knowledge in the NDE method to be taught; or
- 3.7.1.3. Be a graduate of a two-year school of science, engineering, or NDE and have five or more years of experience as an NDE Level II, or equivalent, in the NDE method to be taught; or
- 3.7.1.4. Have 10 or more years of NDE experience as a Level II, or equivalent, in the NDE method to be taught.
- 3.7.2 Designation. The NDE instructor shall be designated by a Level III in the Method/Technique. The designation shall become part of the individual's qualification records.

4.0 Education, Training, and Experience Requirements for Initial Qualification

- 4.1. Candidates for certification shall have sufficient education, training, and experience to ensure qualification in the NDE methods in which they are being considered for certification. Documentation of prior certification may be used as evidence of qualification for comparable levels of certification. The Responsible Level III, or delegate, shall verify qualifications based on work at a previous employer. Verification by telephone is acceptable.
- 4.2. To be considered for certification, a candidate shall satisfy one of the following training and experience criteria for the applicable NDE Level:
- 4.2.1 NDE Levels I and II
- 4.2.1.1. Appendix A lists the required training and experience hours required for initial qualification and certification of LANL NDE Level I and II personnel.
- 4.2.1.2. Appendix B lists the initial training and experience hours for Limited certification in Radiographic, Ultrasonic, and Leak Test techniques as listed in the Appendix.

4.2.2 NDE Level III

- 4.2.2.1 Have a bachelor's degree or higher in engineering or science, plus one additional year of experience beyond Level II requirements in an assignment comparable to that of a Level II in the applicable method(s), or
- 4.2.2.2 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 Level II requirements in an assignment comparable to that of a Level II in the applicable method(s), or
- 4.2.2.3 Have four years of experience beyond the Level II requirements in an assignment comparable to a Level II in the applicable method(s).

Note: LANL does not certify "internal" or "corporate" Level III personnel; all Level III personnel must possess a valid ASNT, ACCP Level III, or ASNT 9712 certification. The above experience will be verified by a LANL Level III prior to submittal of the application to ASNT. ASNT will provide review of the application prior to allowing the candidate to sit for the examination.

- 4.3. It is recognized that expanded training programs at educational institutions and colleges may include additional hands-on application and lab hours in applicable methods and/or techniques beyond the required minimum training hours. These hours may be considered toward the required experience hours as approved by the Responsible Level III and the Level III in the particular method/technique. The maximum credit for those hours shall not exceed 25% of the required experience hours. A minimum of 75% of the required hours shall be gained in the field.
- 4.4. Appendix F is a sample form for verification of qualification for both initial and recertification, and Appendix H is a template for logging experience hours.

5.0 Training Programs

- 5.1. Personnel being considered for initial certification shall complete sufficient organized or formal training. The organized or formal training may include instructor-led training, personalized instruction, virtual instructor-led training, computer-based training, or web-based training. Computer-based training and web-based training shall track hours and the content of training with student examinations in accordance with this section. The organized or formal training ensure the student is thoroughly familiar with the principles and practices of the specified NDE method related to the level of certification desired, and applicable to the processes to be used and the products to be tested.
 - 5.1.1 All training programs shall be approved by a Level III responsible for the applicable method.
 - A. The training program shall include sufficient examinations to ensure understanding of the necessary information. Unless established as such and approved in advance by the Responsible Level III, the classroom final examination is not the same as the General Examination referred to in this document.
 - B. Training is considered a prerequisite to gaining experience. It is understood that scheduling training for some NDE methods can be challenging, therefore a candidate may obtain up to 20% of the required experience hours for the appropriate level of certification prior to completing classroom training. The Responsible III, may at his/her discretion, allow for a greater percentage of experience if there are extenuating circumstances (for example, difficulty in obtaining a seat in a training class).

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- 5.2. Training course outlines and references for NDE Levels I, II, and III are given in ANSI/ASNT CP-105, *ASNT Standard Topical Outlines for Qualification of Nondestructive Testing Personnel*. The outlines for training classes, as given in CP-105, shall be considered part of this document.
- 5.3. When LANL purchases training services, it is LANL's responsibility to ensure that the training provided complies with this Written Practice. Only training suppliers listed on the [Approved NDE Training Suppliers](#) listing, as given in the LANL Engineering Standards Manual, Chapter 13, [Vol. 6](#).

6.0 Examinations

- 6.1. All qualification examination questions shall be approved by the Level III responsible for the applicable method and documented. Questions shall conform to the guidelines contained in Appendix D.
 - 6.1.1. A Level III shall be responsible for the administration and grading of examinations specified below, for Level I, Level II, or other Level III personnel. The administration and grading of examinations may be delegated to a qualified representative of the Level III, as approved by the Responsible Level III, and documented. Training shall be provided to this delegate administering the examinations; this training and qualification shall be documented. A qualified representative of the Certifying Authority may perform the actual administration and grading of Level III examinations as specified below.
 - 6.1.1.1. To be designated as a qualified representative of the Level III for the administration and grading of Level I, II, and III personnel qualification examinations, the designee shall have documented, appropriate instruction by the Level III in the proper administration and grading of qualification examinations prior to conducting and grading independent qualification examinations for NDE personnel.
 - A. The Level I and Level II practical examination shall be administered by a person certified in the applicable NDE method as Level III.
 - B. Level I, II, and III written examinations shall be closed-book except that necessary data such as graphs, tables, specifications, procedures, codes, etc., may be provided with or in the appropriate examination. Questions using such reference materials shall require an understanding of the material rather than merely locating the answer.
 - 6.1.2. For Level I and II personnel, a composite grade is established by simple averaging of the results of the General, Specific, and Practical examinations described below. For Level III personnel, the grade shall be established by averaging of the results for the Basic, Method, Specific, and Practical (as applicable) examinations. ASNT Level III examinations shall be assigned a score of 80% when calculating the Level III composite grade.
 - 6.1.3. Examinations administered by LANL for qualification require a passing composite score of 80%, with no individual examination score below 70%. The minimum passing score for the Practical examination is 80%.
 - A. When an examination is administered and graded for LANL by an outside agency which only issues a pass or fail grade (for example, ASNT), on a certified report, LANL may accept the pass grade as 80% for that particular examination. Except for ASNT or other regulatory agencies, every effort should be made to obtain a numerical score from the agency.
 - 6.1.4. Any outside examination services purchased by LANL must be verified as meeting this Written Practice and any other applicable regulatory requirements.

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6.1.5. In no case shall an examination be administered to oneself, or by a subordinate.

6.2. Vision

6.2.1. Near-vision Acuity. The examination shall ensure natural or corrected (no pharmacological agents) near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jager No. 1 or equivalent type and size letter at the distance designated on the chart but not less than 12 inches on a standard Jager chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This shall be administered annually.

6.2.1.1. Pharmacological agents (eye drops) that would improve or enhance visual acuity at any distance shall not be used.

6.2.2. Color-contrast Differentiation. The examination shall demonstrate the capability of distinguishing and differentiating between colors or shades of gray used in the method as determined by LANL. The Ishihara or HRR Pseudoisochromatic plates should be used for color vision. As an alternative, for methods such as MT or PT, demonstration of performance by a practical examination may be accepted as adequate differentiation.

6.2.3. For shades of gray, as encountered in radiography, the ability to distinguish shades of gray shall be evaluated by the Level III responsible for the RT method. The use of ASTM 3168 is preferred.

A. Frequency. Vision examinations shall be administered annually, except that color vision may be assessed at each recertification (color vision exams may, if desired by the Level III, be performed annually). Vision examinations expire on the last day of the month of expiration. If an individual has eye surgery, vision examinations are required prior to resumption of NDE activities.

B. Administration. Vision examinations shall be administered by an Ophthalmologist, Optometrist, Medical Doctor, Registered Nurse, Certified Physician Assistant, or by other ophthalmic medical personnel at LANL Occupational Medicine. A Level III in RT shall administer the examination to determine the ability to evaluate shades of gray. If Occupational Medicine is unable to provide the examination in a timely manner, a Level III can administer the Jaeger 1 test to cover the period until Occupational Medicine can perform the examination.

C. Appendix K depicts a sample visual acuity examination record.

6.3. General (Written, Levels I and II)

6.3.1. The General examination shall address the basic principles of the applicable method.

A. In preparing the examinations, the Level III shall select or devise appropriate questions covering the applicable method and techniques as described in this Written Practice and the applicable elements of the outline in CP-105. Questions used in general examinations for NDE Level I and NDE Level II individuals shall be similar in type and difficulty as those published by ASNT. Those questions published by ASNT shall not be used verbatim but shall be used as a guide in question development; the intent is questions differ sufficiently from published study questions, so the knowledge of the examinee is tested, not the ability to memorize published questions. Refer to Appendix D for detailed instructions on writing examination questions.

6.3.2. The minimum number of examination questions is given in Table 1.

A. A valid ACCP, ASNT NDT, or ASNT 9712 Level II certificate is acceptable as fulfilling the General examination criteria for each method, since the ASNT

examinations fulfill the requirements of this Written Practice. Recertification is required upon expiration of that ASNT-administered examination.

6.4. Specific (Written, Levels I and II).

6.4.1. The Specific examination shall address the equipment, operating procedures, and NDE techniques that the individual may encounter during specific assignments described by this Written Practice and the applicable elements of CP-105.

A. The Specific examination shall also cover the procedures, specifications or codes, and acceptance criteria used in the applicable method/technique. Higher level documents not utilized by the Level I or II (such as Design Agency documents) should not be included on the Specific examination since the Level I or II does not utilize them.

6.4.2. The minimum number of questions for the Specific examination are given in Table 1.

A. ACCP, ASNT NDT, and ASNT 9712 certificates do not fulfill LANL requirements for the Specific examination due to the inability to address LANL procedures in those standardized examinations.

Table 1: Minimum Number of Examination Questions

Method	General		Specific	
	Level I	Level II	Level I	Level II
Electromagnetic Testing				
Alternating Current Field Measurement	40	40	20	20
Eddy Current	40	40	20	20
Remote Field Measurement	30	30	20	20
Leak Testing				
Bubble Test	20	20	15	15
Absolute Pressure Leak Test (Pressure Test)	20	20	15	15
Halogen Diode Leak Test	20	20	15	15
Mass Spectrometer Leak Test	20	20	20	40
Magnetic Particle Testing	40	40	20	20
Penetrant Testing	40	40	20	20
Radiographic Testing				
Radiography Testing (Film Radiography)	40	40	20	20
Radiographic Image Interpretation – Non-Radiographer		40		20
Radiographic Image Interpretation – Radiographer (Certified Level II)		20		15
Computed Radiography Testing	40	40	20	20
Computed Tomography Testing	40	40	20	20
Digital Radiography Testing	40	40	20	20
Ultrasonic Testing	40	40	20	20
Time of Flight Diffraction		40		30
Phased Array		40		30
Full Matrix Capture		40		30
Ultrasonic Digital Thickness Measurement (Numeric Output Only)		20		10
Ultrasonic Straight Beam (A-Scan) Measurement		30		15
Visual Testing	40	40	20	20

6.5. Practical (Level I and II)

- 6.5.1. The candidate shall demonstrate familiarity with and the ability to operate the necessary NDE equipment, record, and analyze the resultant information to the degree required.
- 6.5.2. At least one flawed specimen or component shall be examined, and the results analyzed by the candidate.
 - 6.5.2.1. Phased Array and Time of Flight Diffraction Practical Examination. Flawed samples used for practical examinations shall be representative of the components or configurations that the candidate would be examining with these techniques and approved by the Level III.
 - 6.5.2.2. Radiographic Image Interpretation Limited Certifications. The Practical examination shall consist of review and evaluation of sufficient images to demonstrate satisfactory performance to the Level III. A minimum of twenty images shall be used for the examination.
- 6.5.3. The description of the specimen (test prop), the NDE procedure, including checkpoints, and the result of the examination shall be documented.
- 6.5.4. Level I Practical Examination.
 - 6.5.4.1. Specimens. Proficiency should be demonstrated in performing the applicable NDE technique on one or more flawed specimens as appropriate for the method and approved and documented by the Level III.
 - 6.5.4.2. The NDE Level I candidate shall evaluate the results to the degree of responsibility described in this Practice. The candidate shall detect all discontinuities and conditions specified and documented by the Level III.
 - A. The detection rate shall be 100% for those discontinuities deemed critical by the Level III and documented (not all test props necessarily have a "critical flaw", but all exams have a critical checkpoint).
 - B. For non-critical discontinuities, a minimum detection rate of 80% is required. Maximum false calls (false positives) shall be equal to a number that is 50% of the number of non-critical indications in the test prop(s).
 - 6.5.4.3. Grading. A checklist containing at least 10 checkpoints requiring an understanding of the test variables and the procedural requirements shall be included in the practical examination. The practical examination shall be scored on a percentage basis, but as noted above there must be at least one checkpoint the failure to successfully complete will result in failure of the examination regardless of score.
 - 6.5.4.4. NDE Level I Practical Examinations. The NDE Level III shall use a written checklist in administering and grading NDE Level I practical examinations. This checklist shall address at least the following items:
 - 6.5.4.4.1. Proficiency in use of the equipment and technique
 - 6.5.4.4.2. Proper adherence to the:
 - 6.5.4.4.2.1. Procedure
 - 6.5.4.4.2.2. Sequence
 - 6.5.4.4.2.3. Standardization

6.5.4.4.2.4. Materials

6.5.4.4.3. Satisfactory detection and location of discontinuities

6.5.4.4.4. Proper documentation of the activities and test results

6.5.5. Level II Practical Examination.

6.5.5.1. Specimens. Proficiency should be demonstrated in selecting and performing the applicable NDE technique and interpreting and evaluating the results on one or more flawed specimens as appropriate for the method and approved and documented by the Level III.

6.5.5.2. The NDE Level II candidate shall detect all discontinuities and conditions specified and documented by the Level III.

A. The detection rate shall be 100% of those discontinuities deemed critical by the Level III and documented (not all test props necessarily have a "critical flaw", but all exams have a critical checkpoint). For non-critical discontinuities, a minimum detection rate of 80% is required; maximum false calls (false positives) shall be equal to a number that is 50% of the number of non-critical indications in the test prop(s).

6.5.5.3. Grading. A checklist containing at least 10 checkpoints requiring an understanding of the test variables and the procedural requirements shall be included in the Practical examination. The practical examination shall be scored on a percentage basis, but as noted above there must be at least one checkpoint the failure to successfully complete will result in failure of the examination regardless of score.

6.5.5.4. Checklist. The NDE Level III shall use a written checklist in administering and grading NDE Level II practical examinations. The checklist shall address at least the following items:

6.5.5.4.1. Proficiency in use of the equipment and technique

6.5.5.4.2. Proper adherence to

6.5.5.4.2.1. Procedure

6.5.5.4.2.2. Sequence

6.5.5.4.2.3. Standardization

6.5.5.4.2.4. Materials

6.5.5.4.3. Satisfactory detection and location of discontinuities

6.5.5.4.4. Proper extent of examination

6.5.5.4.5. Accuracy and completeness of interpretations and evaluations

6.5.5.4.6. Documentation of the activities and test results

6.5.6. A valid ACCP or ASNT 9712 certificate may be accepted by the Level III for the Practical examination if the ASNT examinations meet the requirements of this specification and adequately address the particulars of the examinations performed with that method at LANL.

6.6. NDE Level III Examinations

- A. Initial Requirement. Prior to LANL certification examinations, the candidate shall hold a current ASNT Level III certificate with a currently valid endorsement for each method for which LANL certification is sought. Verification using the ASNT website is acceptable documentation, by using a printed copy of the information displayed by ASNT.
- B. Specific Examination (for each method). LANL shall administer a written examination consisting of at least 30 questions related to the comprehension of the NDE-related requirements of specifications or standards used by LANL. Copies of the applicable specifications or standards shall be available as reference material during the examination. If no LANL Level III is qualified to create this Specific examination, an outside agency shall be utilized.
- C. Practical Examination. The candidate shall prepare an NDE procedure appropriate to LANL's needs; however, if documented experience demonstrates that the candidate has previously prepared acceptable NDE procedures in the method using specifications, codes, and standards that are applicable to LANL, a written practical examination (preparation of a procedure) is not required. If experience is substituted for the written practical, LANL shall document the pertinent practical experience of the NDE Level III candidate.
- D. If the NDE Level III will be required to perform tests or evaluate test results, the practical examination shall include the same demonstrations of the candidate's ability to perform the required activity(ies) as required for a Level II in the same method/technique. If the Level III candidate is a current Level II in the method(s), the Level II practical taken for the purpose of that/those Level II certification(s) will fulfill this requirement.
- E. A valid ACCP or ASNT 9712 certificate may be accepted as fulfilling the Practical examination requirements for each of the applicable methods if the Responsible Level III and NDE Level III have determined that the examination fulfills the requirements of this Written Practice and LANL practices – this shall be documented and form part of the Level III candidate's examination file.

Note: Appendix G is a Template of Practical Examination Checklist and Scoresheet.

6.7. Reexamination.

- A. Those individuals failing to attain the required grades shall wait 30 days or receive additional documented training as determined by the Level III prior to reexamination. Reexamination on portions of the test set which were passed is not required, unless a period greater than 90 days has passed since the examinations.

7.0 Certification

- 7.1. Responsibility for Documentation. LANL shall document certifications in accordance with this Written Practice. Documentation shall be maintained by LANL, administered by the Division Director, Engineering Services, or as delegated by the Division Leader of ES.
- 7.2. Certification is based upon successful completion of training, experience, and examination requirements given in this Written Practice.
- 7.3. Contents of Documentation. Documentation shall include at least a training record, certification record, a record of previous experience (if applicable), current LANL examinations, and a vision examination record.
- 7.4. Certification record. The certification record shall include at least the following information.
 - 7.4.1 The name of the certified individual.

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- 7.4.2 Level of certification and NDE method, including the test technique covered;
- 7.4.3 Educational background and experience.
- 7.4.4 Statement indicating satisfactory completion of training in accordance with this Written Practice.
- 7.4.5 Results of the vision examinations for the current certification period.
- 7.4.6 Current examination copies (preferred) or evidence of successful completion of examinations.
- 7.4.7 Composite grades.
- 7.4.8 Signature of the Responsible Level III.
- 7.4.9 Date of certification and/or recertification and expiration date of certification.
 - 7.4.9.1 The date of certification shall be a date after all requirements for education, training, experience, and examinations have been completed for each method/technique, as stated in this Written Practice.
 - 7.4.9.2 The date of certification is the date the Certificate is signed by the Certifying Authority.
 - 7.4.9.3 The date of expiration is five years after the date established in 7.4.9.1.
- 7.4.10 Signature of the Certifying Authority.
- 7.5. NDE Training Record. A documented history of the employee's training shall be maintained that identifies:
 - 7.5.1 NDE training received by the individual,
 - 7.5.2 Organization providing NDE training,
 - 7.5.3 Dates of NDE training,
 - 7.5.4 Hours of NDE training,
 - 7.5.5 Evidence of satisfactory completion, and
 - 7.5.6 Instructor's name.
- 7.6. NDE Experience Record. A record which identifies the individual's experience performing various nondestructive tests shall be maintained for purposes of verifying initial certification experience and continuing experience.
- 7.7. Record of Previous Experience. Documented evidence of the individual's previous NDE training and experience shall be maintained if previous training and experience are used to satisfy any part of the requirements of this Written Practice.
- 7.8. Certification Statements. Certification statements issued by LANL shall meet the requirements of ASNT SNT-TC-1A 2024; see Appendix E, Certificate of Qualification Requirements.

8.0 Expiration, Suspension, Revocation, and Reinstatement of Employer Certification

- 8.1. Expiration. Individual certifications shall expire:
 - 8.1.1. When employment with LANL is terminated, or
 - 8.1.2. Five years from the day of the first examination for each method for NDE Level I, Level II, and Level III individuals.

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- 8.2. Suspension. LANL will suspend an individual's certification if:
 - 8.2.1. The vision examination interval exceeds one year, or
 - 8.2.2. The individual has not performed duties in the method(s) for which certified during any consecutive 12-month period, or
 - 8.2.3. The individual's performance is determined to be deficient in the required method or technique for specific, documented reasons, or
 - 8.2.4. For NDE Level III personnel, when the ASNT Level III certificate has not been renewed.
- 8.3. Revocation. LANL will revoke an individual's certification when:
 - 8.3.1. The individual has not performed the duties in the method(s) for which certified during any 24-month period, or
 - 8.3.2. For NDE Level III personnel, the ASNT Level III certificate has been revoked, or
 - 8.3.3. An individual's conduct is deemed by LANL to be unethical or incompetent.
 - A. LANL Certification shall be deemed terminated when employment at LANL is terminated.
- 8.4. Reinstatement.
 - 8.4.1. Suspended Certifications. Reinstatement of suspended certifications for NDE Level I and NDE Level II shall be determined by the Responsible Level III. Reinstatement of suspended NDE Level III certifications shall be determined by LANL, except that the requirement for ASNT Level III certification shall not be waived.
 - 8.4.1.1. If suspended due to an expired visual acuity examination, certification is reinstated upon successful completion of the visual acuity examination.
 - 8.4.1.2. If suspended due to not performing duties within 12 months, at minimum a Practical examination is required to reinstate certification.
 - 8.4.2. Expired or Revoked Certifications. Certifications which have expired or have been revoked may only be reinstated by completion of the full examination battery for the given Level/Method/Technique. Reinstatement after termination is only allowed when the employee's certification was terminated due to termination of employment at LANL. Such reinstatement of certification shall only be for the time period remaining on the original certification.
 - 8.4.3. Expired for Termination of Employment. An NDE Level I, Level II, or Level III whose certification has expired due to termination of employment with LANL may be reinstated to the former NDE Level, without a new examination, providing all the following conditions are met:
 - 8.4.3.1. LANL has maintained all personnel certification records required by this Written Practice
 - 8.4.3.2. The employee certification did not expire during termination.
 - 8.4.3.3. The employee is being reinstated within 12 months of termination.

9.0 Employer Recertification

- 9.1. NDE Level I and NDE Level II. NDE Level I and NDE Level II personnel shall be recertified by reexamination in accordance with Section 6.0 or by meeting the requirements of 8.1.1, when applicable.

- 9.1.1. Every five years, the individual must repeat the general, specific, and practical examinations described herein.
- 9.1.2. Technical Performance evaluations of Level I, Level II Limited, and Level II personnel consist of a Level III-administered practical examination. This examination shall be administered at least once during the certification period, typically near the mid-point of the certification cycle.
- 9.1.3. When new techniques are added to the Written Practice and the Level III is assigned to perform examinations using the new techniques, the Level III shall receive additional training, take appropriate examinations, and obtain the necessary experience such that the Level III meets the requirements of the new techniques prior to the Level III's next certification date.

10.0 References

- A. ANSI/ASNT CP-105, *ASNT Standard Topical Outlines for Qualification of Nondestructive Testing Personnel*, latest edition
- B. ASME Boiler and Pressure Vessel Code, Section V, Article 1, 2023.
- C. ASME NQA-1, ASME NQA-1-2008 with the NQA-1a-2009 addenda, *Quality Assurance Requirements for Nuclear Facility Applications*
- D. ASNT Recommended Practice No. SNT-TC-1A, *Personnel Qualification and Certification in Nondestructive Testing, 2024 Edition*
- E. ASNT ACCP Level II Certification Program, asntcertification.org
- F. ASTM E1316, *Standard Terminology for Nondestructive Examinations*, current edition
- G. LANL Procedure [P330-5](#) r6.3, *Special Processes*

11.0 Revision Record

Rev	Date	Description	POC	RM
0	10/01/09	Initial issue based on 2006 editions of ASNT documents.	Kelly Bingham, <i>ES-DE</i>	Larry Goen, <i>CENG</i>
1	02/06/13	Paragraph 7.B.1 changed "five" to "three" to meet SNT-TC-1A.	David Bingham, <i>ES-DE</i>	Larry Goen, <i>ES-DO</i>
2	11/21/13	Added AWS-CWI & AWS-SCWI = VT Level II; added VT hours of training to Table I, and VT examination questions to Table II.	David Bingham, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>
3	12/15/16	Para 7.B.1 changed from "three" to "five" and updated Table I, both to meet current (2016) ASNT SNT-TC-1A recommendations; replaced P330-8 with P330-5; admin changes.	David Bingham, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>
4	01/24/17	Fully aligned with ASNT SNT-TC-1A-2016. Defined Responsible Level III, SME Level III, and Reverted Certification (not ASNT terms). Created a path for a Level III to revert to Level II under certain circumstances.	David Bingham, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>
5	11/01/18	Aligned with 2018 addendum to ASNT SNT-TC-1A- 2016 (7.0.H.3), clarified requirements to obtain experience (5.0.E).	David Bingham, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>

6	12/10/19	Changed vision expiry to last day of the expiration month per SNT-TC-1A 8.2.3 (6.0.A); removed direct reciprocity with AWS for CWI/Visual; SNT-TC-1A only recognizes ACCP which does have reciprocity with ASNT (6.0.C–E).	David Bingham, <i>ES-EPD</i>	Jim Streit, <i>ES-DO</i>
7	4/11/22	Added need to meet additional requirements such as coming from ASME B&PVC and PAUT and UT Thickness Level II Limited requirements.	David Bingham, <i>ES-EPD</i>	Jason Apperson, <i>ES-DO</i>
8	12/19/22	Completely revised to adopt ASNT CP-189-2020 in lieu of SNT-TC-1A-2016/18.	David Harvey, <i>ES-FE</i>	Michael Richardson, <i>ES-DO</i>
9	06/14/23	Correction of omission in Table of Contents (Appendix B). Clarified that supplemental staff reporting to LANL (e.g., Triad) supervisors may be qualified and certified under this Procedure in the same manner as employees. Prohibited the use of pharmaceuticals (eye drops) when undergoing visual acuity examination; added that visual acuity examination is required after eye surgery.	David Harvey <i>ES-FE</i>	Michael Richardson, <i>ES-DO</i>
10	06/16/25	Major revision to comply with SNT-TC-1A versus CP-189. Added Limited Certifications for techniques in the Leak Testing Method. Added Appendices H–Template for Logging of Experience; I–Rationale for Limited Certifications; J–Deviations from ASNT SNT-TC-1A, 2024 Edition, and K–Vision Acuity Examination Record. Multiple other changes throughout.	David Harvey, <i>ES-OPS</i>	Michael Richardson, <i>ES-DO</i>

12.0 Appendices

- Appendix A. Initial Training and Experience Requirements for NDE Level I and Level II
- Appendix B. Initial Training and Experience Requirements for NDE Level II Limited Certification
- Appendix C. Training of NDE Personnel
- Appendix D. Procedures for Writing Examinations
- Appendix E. Certificate of Qualification Requirements
- Appendix F. NDE Qualification Verification
- Appendix G. Practical Examination Checklist and Scoresheet Template
- Appendix H. Template for Logging Experience Hours
- Appendix I. Rationale for Limited Certifications
- Appendix J. Deviations from ASNT SNT-TC-1A, 2024 Edition
- Appendix K. Vision Acuity Examination Record

Appendix A: Initial Training and Experience Requirements for NDE Level I and Level II

(see App B for L-II Limited)

Evaluation Method	Level	Technique	Required Training (Hours)	Required Experience	
				Minimum Hours in Method or Technique	Total Hours in NDE
Electromagnetic Testing (ET)	I	ECT	40	210	400
	II		40	630	1200
Leak Testing (LT)	I	BT	2	3	15
	II		4	35	80
	I	PCT	24	105	200
	II		16	280	530
	I	HDLT	12	105	200
	II		8	280	530
	I	MSLT	40	280	530
	II		24	420	800
Magnetic Particle Testing (MT)	I		12	70	130
	II		8	210	400
Penetrant Testing (PT)	I		4	70	130
	II		8	140	270
Radiographic Testing (RT)	I	RT	40	210	400
	II		40	630	1200
	I	CR	40	210	400
	II		40	630	1200
	I	CT	40	210	400
	II		40	630	1200
	I	DR	40	210	400
	II		40	630	1200
Ultrasonic Testing (UT)	I		40	210	400
	II		40	630	1200
	II	TOFD	40	320	n/a
	II	PAUT	80	320	n/a
	II	FMC	80	320	n/a
Visual Testing	I		8	70	130
	II		16	140	270

BT = Bubble Testing
 CR = Computed Radiography Testing
 CT = Computed Tomography Testing
 DR = Digital Radiography Testing
 ECT = Eddy Current Testing
 FMC = Full Matrix Capture

HDLT = Halogen Diode Leak Testing
 MSLT = Mass Spectrometer Leak Testing
 PAUT = Phased Array Ultrasonic Testing
 PCT = Pressure Change Testing
 RT = Radiographic Testing
 TOFD = Time of Flight Diffraction

NOTES:

- A: A person may be qualified directly to NDE Level II with no time as a certified NDE Level I, providing the required training and experience consists of the sum of the hours required for NDE Level I and NDE Level II.
- B: For NDE Level III certification, the experience shall consist of the sum of the hours for Level I and Level II, the additional time as required in Section 4.0 (e.g., 4.2.2.3) as applicable. The formal training shall consist of the NDE Level I and Level II training. Training equivalency with formal education (such as Engineering,

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Physics, Radiological Technician, etc.) may be used if properly documented and meeting the requirements of this Written Practice.

- C: While fulfilling total NDE experience requirement, experience may be gained in more than one (1) method; however, the minimum hours must be met for each method.
- D: If an individual is certified in one ET technique, the minimum experience to qualify in another technique at the same level or to the next level may be reduced by up to 50% by the NDE Level III responsible for the method (the default reduction is 50%, though additional hours may be required and documented by the NDE Level III responsible for the method).
- E: If an individual is currently certified in a Radiographic technique and a full-course format was used to meet the initial qualifications in that technique, the minimum training hours to qualify in another technique at the same level shall be 24 hours (of which at least 16 hours shall be in equipment familiarization). If an individual is certified in a technique, the minimum additional experience to qualify for another technique at the same level may be reduced up to 50% by the NDE Level III responsible for the method (the default reduction is 50%, though additional hours may be required and documented by the NDE Level III responsible for the method).
- F: FMC, TOFD, and PAUT require Ultrasonic Level II certification as a prerequisite. Training may be obtained prior to Level II certification at the discretion of the NDE Level III and the Responsible Level III.
- G: Independent of the RT, CR, CT, DR, or NR training required for NDE Level I or Level II certification, a trainee is required to receive radiation safety training as required by LANL.
- H: In addition to the training requirements in this table for Full Matrix Capture, Time of Flight Diffraction, and Phased Array, supplemental specific hardware and software training is required for automated or semiautomated technique applications. Specific equipment and software training may be included in the classroom session (preferred), but in the case of hardware and software system changes (e.g., to a different manufacturer as opposed to a software or hardware update, unless the NDE Level III determines the update to be a significant change). Qualification of the individual on the new hardware and/or software shall be demonstrated via a practical examination using the new system.

Appendix B. Initial Training and Experience Requirements for NDE LEVEL II Limited Certification

Method	Evaluation Technique	Technician's Starting Point	Required Training (Hours)	Required Experience Minimum Hours in Technique ^{A,B}
Radiographic Testing	Film Interpretation	Non-Radiographer	40	220
	Film Interpretation	RT Level I	24	220
	CR Image Interpretation	Non-Radiographer	40	220
	CR Image Interpretation	CR Level I	24	220
	DR Image Interpretation	Non-Radiographer	40	220
	DR Image Interpretation	DR Level I	24	220
	CT Image Interpretation	Non-Radiographer	40	220
	CT Image Interpretation	CT Level I	24	220
Ultrasonic Testing	Ultrasonic Digital Thickness Measurement (Numeric Output Only)	Trainee	8	40
	Ultrasonic Straight Beam (A-Scan) Thickness Measurement	Trainee	24	175
Leak Testing ^C	MSLT – Detector Probe Glove Boxes	Trainee	64	250
	MSLT – Tracer Probe	Trainee	64	100
	MSLT – Hood	Trainee	64	250
	MSLT - Bomb	Trainee	64	100
	Pressure Change	Trainee	40	385

TABLE NOTES:

- A: Experience shall be based upon the actual hours worked in the specific method.
- B: The required minimum experience shall be documented by method and by hour with supervisor or NDE Level III approval. Refer to Appendix H for log template example.
- C: For Leak Testing experience, there is no credit given for hours in another technique. The noted hours are the minimum established for each technique. Although experience levels have been reduced for this limited certification, there is no reduction in the formal classroom training and qualification examination number of questions.

Appendix C. Training of NDE Personnel

This appendix clarifies Section 5.0, Training Programs.

1. All training programs for qualification of NDE personnel shall be conducted in accordance with an outline.
2. ANSI/ASNT CP-105-2020 provides topical outlines for qualification training of NDE personnel. These outlines are considered the minimum training course content for qualification to the various Levels of NDE.
3. Deviation from CP-105 is permitted, if approved by the Responsible Level III and the NDE Level III.
4. All training provided at LANL or by LANL personnel for purposes of training per this Procedure shall have an outline prepared prior to commencement of the training session.
5. As stated above at Certification/NDE Training Record (e.g., paragraph 7.4), it is the responsibility of the Responsible Level III and the NDE Level III to ensure that training to be offered meets the requirements of this Procedure. The Responsible Level III shall post a listing of Approved Training Providers; see the [Approved NDE Training Suppliers](#) listing, as given in the LANL Engineering Standards Manual, Chapter 13, [Vol. 6](#).
6. It is the responsibility of the line management of a candidate for training to verify with the Responsible Level III or NDE Level III that the training provider meets the requirements of this Procedure.

Appendix D. Procedures for Writing Examinations

This appendix provides guidance for creating examinations for Level I, II, and III qualification.

1. Written Examinations – Basic Format

Questions for written examinations shall take the form of multiple-choice questions. The questions shall consist of the 'stem' and for possible answers. There shall be only one correct answer, so there will be three 'distractors.' For example:

Q1. Stem

- A. Distractor (wrong answer)
- B. Correct Answer
- C. Distractor
- D. Distractor

Distractors, to the extent practicable, should be plausible answers. The correct answer shall be unambiguous.

There shall be no "True or False" questions, or questions such as "Both A and B", "All of the above", or "None of the above".

2. General Examinations

General examination questions are intended to address the general theory and practice of the method/technique for which the candidate is being examined.

Supplemental materials such as graphs and figures, and a listing of formulae, shall be attached as deemed appropriate by the Level III.

3. Specific Examinations

Specific examinations are intended to ascertain the understanding of the procedures used at LANL and are not intended to address general method/technique concepts.

- Level I examinations should concentrate on the operation of the instrumentation or equipment, the performance of the examination process, and reporting within the bounds of procedural instructions.
- Level II examinations should emphasize origin of defects, evaluation of discontinuities for acceptance or rejection, and advanced concepts of performance of the examination procedures.
- Level III examinations should emphasize the understanding and application of relevant Codes and Standards.

Codes, Standards, procedures, IWDs, charts, and graphs shall be supplied with the Specific examination as appropriate for each Level.

4. Practical Examinations

Practical examinations are required for all Levels of Certification and must be performed on test props/samples or production materials. In all cases, all indications present shall have been evaluated by the Level III prior to the examination being administered.

It is acceptable to have test props with no discontinuities, but there must be sufficient test props or grading units that the minimum required number of flawed samples are examined.

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Practical examination test prop/sample items or sets used shall contain "critical flaws", where failure to detect and properly categorize is direct cause for failure.

All practical examinations shall be scored using a 10-point (minimum) checklist, with appropriate scores for the items evaluated.

5. Review of Examinations

The examinations shall be reviewed with the Candidate, pass or fail.

Missed questions on written examinations shall be reviewed with the examinee in detail.

Practical examinations cannot be discussed in detail, due to the need to keep the nature of the test prop/sample confidential. General discussion of the examination is encouraged, but detail must be avoided.

6. "Legacy" questions already existing in the Method Test Question Banks and which are true/false or otherwise do not comply with 1. may be utilized until the Test Question Bank is modified to delete such questions. Such questions should be deleted from the Test Question Bank as soon as feasible.

Appendix E. Certificate of Qualification Requirements

The certificate for qualified and certified personnel shall contain the following information:


1. "Los Alamos National Laboratory"
2. This Written Practice's Document Number and Revision
3. "ASNT SNT-TC-1A" and the year of the revision used in the Written Practice
4. Full legal name of the certified individual
5. Level of Certification, NDE Method(s) and/or Technique(s), and any applicable restrictions or limitations
6. Full legal name of the NDE Level III and Certifying Authority. ASNT Level III Certificate numbers as applicable.
7. Dates of Certification and Expiration

Although all the above information is electronically recorded in the Welding Program Database, the signed certificate shall be uploaded with the individual's other records (sample form follows).

Sample:

NDE

Certification



This is to certify that the individual named below has successfully completed the experience, training, and examination requirements in accordance with the provision of ASNT SNT-TC-1A, 2024, as given in Los Alamos National Laboratory NDE Procedure WIGN 06-02 Attachment 1, Revision 10.

Insert Name Here

is hereby certified to perform the following Nondestructive Examination methods and techniques

NDE Method	NDE Level	NDE Techniques	Restrictions (if any)	Date of Certification	Date of Certification Expiration

Printed name here

Responsible Level III

Printed name here

Certifying Authority

Appendix F. NDE Qualification Verification

Following is a sample form for verification of qualification for both initial and recertification. Instructions follow the form.

NOTE: Section 1 is required for all initial NDE Method and/or Technique Certifications. Section 2 is required for recertification or certification to a higher level. This information is required prior to designation of an individual as a Trainee. All Trainees MUST have current eye examinations on record to accrue experience hours. Refer to detailed instructions.

Initial Certification ☐

Recertification ☐

Name		Z#	
Location		Mail Stop	
Phone		Email	

Section 1 – Initial Certification

Educational background	
Highest level attained	
School name	
School city, state	
Technical school, college, or university relevant course emphasis (e.g., NDE, General Science, Engineering, etc.)	

Name _____ **Z#** _____

NDE Experience (most recent first)

Position 1	From		To	
Employer Name				
Employer Address and Phone				
Certifications Held				

☐ Verified by Level III Initial/Date:

Remarks:

Position 2	From		To	
Employer Name				
Employer Address and Phone				
Certifications Held				

☐ Verified by Level III Initial/Date:

Remarks:

Name _____ **Z#** _____

Position 3	From		To	
Employer Name				
Employer Address and Phone				
Certifications Held				

☐ Verified by Level III Initial/Date:

Remarks:

Position 4	From		To	
Employer Name				
Employer Address and Phone				
Certifications Held				

☐ Verified by Level III Initial/Date:

Remarks:

The above information is true and correct to the best of my knowledge:

Printed Name _____
Candidate's Full Name

Signature/Date _____

Name _____ Z# _____

Section 2 – Documentation

Training		
Objective Evidence Attached	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "No" explain the basis of acceptance		
Experience		
Objective Evidence Attached	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "No" explain the basis of acceptance		
Certification Statement(s) from previous employer		
Objective Evidence Attached	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "No" explain the basis of acceptance		

Method		Level	
---------------	--	--------------	--

Examination	Score %
General	
Specific	
Practical	
Average	

Passes ☐ Fails ☐

Continued Satisfactory Performance Verified ☐

Date of Technical Performance Evaluation _____

Required Training Completed and Documented ☐

Required Experience Hours Completed and Documented ☐

Vision Examination Current ☐

Verified: Level III _____ Date _____

Accepted: Responsible Level III _____ Date _____

Instructions for NDE Qualification Verification Record

This document provides the Level III and the Responsible Level III with a record of verification of qualification of a candidate for certification or recertification in NDE. This document becomes a record when complete and is to be stored electronically with the individual's documentation of qualification.

1. Check the appropriate box, "Initial Certification" or "Recertification."
2. Complete the identifying information required.
3. Section 1 is for initial certification. If the individual has already been certified at LANL, this information is not required if verified to be on file.
4. For new-hires, or those claiming experience from other employers, the Level III must verify the prior certification, whether or not the individual can present documents such as certificates or logbook entries.
5. The candidate for initial certification must sign and date this information and certify it to be true and correct.
6. Section 2 is for all personnel.
7. Is objective evidence of training attached? Objective evidence consists of certificates of completion or a letter (on Company letterhead) from the training provider stating the dates of training and that the candidate did in fact attend and successfully complete the course. If objective evidence is not attached or on file, explain the basis for acceptance.
8. Is objective evidence of experience (hands-on experience or OJT) attached? Objective evidence consists of reports, logbook entries, etc. A memorandum from a supervisor stating that an individual has XXX hours of experience is not acceptable as objective evidence. If objective evidence is not attached or on file, explain the basis for acceptance.
9. For individuals claiming NDE experience from previous employment, objective evidence is required and verification of the validity of that documentation must be obtained by the Level III. If not, explain the basis for acceptance.
10. The score sheet must be completed for each Method and/or Technique. Continued Satisfactory Performance, Required Training, Experience Hours, and a Current Vision Examination must be verified prior to certifying a candidate. For initial certification in a Method and/or Technique, a Technical Performance Evaluation is not required.
11. The LANL NDE Level III performing the verification of qualification signs this document. If there is not another Level III to perform the verification, the Responsible Level III may sign both "verified" and "accepted."
12. The LANL Responsible NDE Level III signs as a "checker."

Appendix G. Practical Examination Checklist and Scoresheet Template

This is an example of the checklist and scoresheet for the Level I, Level II, and Level III Practical Examinations. The actual checklist will be developed by the NDE Level III for the method and/or technique.

Name _____ Z# _____

Date _____ NTD Method _____

Procedure _____

Specimen(s) Description _____

Time Allotted: _____ Time Started: _____ Time Completed: _____

No.	Checkpoint	Points	Score	Remarks
1	Knowledge of NDT Procedure <ul style="list-style-type: none"> Familiarity, Utilization, Consideration of Limitations. Adherence to details of procedure 	10		Record the presence or absence of actions that support the score.
2	Equipment and Material <ul style="list-style-type: none"> As stated in Procedure Proficiency in all required facets of use Proficiency in technique and standardization 	5		Record the presence or absence of actions that support the score.
3	Test Specimen Care and Custody <ul style="list-style-type: none"> Appropriate surface preparation Maintenance and control Appropriate post-cleaning 	5		Record the presence or absence of actions that support the score.
4	Operations – Performance of the Procedure <ul style="list-style-type: none"> Calibration verification Adherence to procedure and sequence of steps Utilize appropriate testing media Inspect designated areas of interest 	10		Record the presence or absence of actions that support the score.
5	Detection of Indications ¹ <ul style="list-style-type: none"> Adherence to procedure Accuracy (detects critical defects)² Finding detectable indications 	15		Record the presence or absence of actions that support the score.
6	Interpretation of Indications <ul style="list-style-type: none"> Adherence to procedure Accuracy in evaluation of critical defects Interpreting relevant v nonrelevant/false 	15		Record the presence or absence of actions that support the score.
7	Evaluation of Indications ³ <ul style="list-style-type: none"> Adherence to procedure Accuracy in evaluation of critical defects Interpreting relevant indications 	20 ⁴		Record the presence or absence of actions that support the score.
8	Documentation and Records <ul style="list-style-type: none"> Accurate documentation and data processing Appropriate control of records Compliance with procedure routing 	10		Record the presence or absence of actions that support the score.
9	General Health and Safety – Policy and Procedure Compliance <ul style="list-style-type: none"> Understanding of H&S requirements Compliance with site-specific requirements 	5		Record the presence or absence of actions that support the score.
10	General Observable Conduct <ul style="list-style-type: none"> Knowledge of method Proficient application Proficient in determination of results Professional manner 	5		Record the presence or absence of actions that support the score.

¹ The candidate shall detect all discontinuities and conditions specified by the Level III in the exam instructions.

² Critical defects are those which, if missed, result in failure regardless of score.

³ No more than 10% false calls ("false positives") allowed.

⁴ 80% of the designated defects correctly classified (16 points required to pass)

Level III Name: _____ Level III Signature: _____ Date: _____

Appendix H. Template for Logging Experience Hours

This provides an example of how experience (OJT) hours can be logged for initial qualification as a Level I or II. Continued tracking of jobs and hours is recommended, but not required, after certification as Level II.

[illegible]

Examiner/Level_____

Appendix I. Rationale for Limited Certifications

Ref. App. B and elsewhere in this Written Practice

1. For the Leak Test Method, limited certifications have been added, as permitted by ASNT SNT-TC-1A, 2.1.3.
2. Since LANL employs a limited range of leak tests on a limited spectrum of parts, the Limited certifications show a reduced number of experience hours. Classroom training, however, is maintained at the prescribed number of contact hours and content as given for Level II qualification.
3. The determination of the appropriate hours for each Limited certification was made by LANL Leak Testing NDE Level IIIs.

Appendix J. Deviations from Minimum Requirements of ASNT SNT-TC-1A

A summary of deviations from ASNT SNT-TC-1A, 2024 follows. None of these deviations relax requirements therein but provide clarifications for the benefit of the users of this document.

1. The term "Responsible Level III" has been defined to delineate the single Level III assigned responsibility for the Written Practice and the qualification and certification program for LANL.
2. LANL spells out six levels of qualification, adding the "Trainee", "Level II Limited", and "Instructor" for clarity.
3. For Level II, LANL will accept the ASNT NDT, ACCP, and ASNT 97132 Level II General examinations for qualification. Because both Specific and Practical examinations must be tailored to LANL's specific applications, such examinations are not accepted as qualification examinations by LANL.
4. For Level III, as a prerequisite for certification, LANL requires an ASNT Level III, ACCP Level III, or ASNT 9712 certificate. (LANL-internal Level III Method and Basic examinations would not be as rigorous as the ASNT examinations, nor psychometrically evaluated.)
5. The maximum experience that can be credited before completing classroom training is 20% of the requirement for the given method/technique. This can be adjusted by the Responsible Level III if there are extenuating circumstances.
6. Vision examinations are required after eye surgery, e.g., cataract removal.
7. When an examination has been failed, the other successfully completed examinations in the battery of exams do not need to be retaken unless 90 days have passed. This provides incentive to complete the examination battery in a reasonable time.

Appendix K. Vision Acuity Examination Record

This is an example of a record of visual acuity and color perception. The actual form is located with WIGN 6-02 [here](#).

FORM 01 VISUAL ACUITY RECORD

NDE Personnel are required to pass a vision examination, with or without corrective lenses, to prove:

- (1) near vision acuity Jaeger J1* distance of not less than 12 inches, and
- (2) color perception for blue/yellow and red/green differentiation as measured on Ishihara or HRR pseudo-isochromatic plates.

This form is to be completed by the person administering the vision examinations and is subject to the following conditions:

- The person administering the eye test must be an Ophthalmologist, Optometrist, Medical Doctor, Registered Nurse or Certified Physician Assistant or by other ophthalmic medical personnel at LANL Occupational Medicine. If specifically approved by the Level III, the examination may be performed by offsite (non-LANL) personnel with the noted qualifications.
- Pharmacological agents (eye drops) that would improve or enhance visual acuity at any distance shall not be used.
- This examination is invalid and must be repeated if the individual has any form of eye surgery after this examination.

NOTE: Visual acuity records which do not comply with the above will be returned to the applicant as unacceptable.

Applicant's Name	Certification Number	Z Number

Check one for each vision test listed below

	Pass: Without Eye Correction	Pass: With Eye Correction	Does not meet Requirement
Distance Vision 20/40 or better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Near Vision Jaeger J1 Letter or Snellen 20/22 at a distance not greater than 12 inches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Color Perception Red/Green Differentiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blue/Yellow Differentiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I certify that the result of an examination administered listed to the above-named applicant has vision capability as listed above:

Signature of Examiner	Date
Type or Print Name Examiner	Title
Address	

*J1 is preferred, but Snellen 20/22 can be accepted as equivalent.