ASME Nondestructive Examination and Quality Control Central Qualification and Certification Program

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

ASME ANDE-1–2015

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The American Society of Mechanical Engineers

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This Standard will be revised when the Society approves the issuance of a new edition.

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The American Society of Mechanical Engineers
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FOREWORD

In 2010, an ASME Project Team was formed with the intent to write a written practice type of document for the Qualification and Certification of Nondestructive Examination (NDE) personnel. The written practice document would have been used to support ASME qualification and certification efforts. After much discussion, it was determined that a Standard was more appropriate for accomplishing the goals of the ASME Project Team. The Project Team was dissolved in May 2012 and merged into a Standards Writing Committee. The Standards Writing Committee is now called the "ASME NDE (ANDE) Committee on Qualification and Certification of Nondestructive Examination Personnel and Quality Control Technicians" and, as used in this Standard, is referenced as the "ANDE Committee." The ANDE Committee (consensus Committee), with its supporting Subcommittees, has the responsibility to write, maintain, and approve this Standard.

This Standard has been written to provide the requirements for a "Central Qualification and Certification Program" conducted by a Third-Party Certification Organization (Certification Body) for NDE and Quality Control (QC) personnel and uses both performance-based and prescriptive requirements that serve as the program core for these activities.

This Standard has been written to meet the needs of many different industries such as the aerospace and defense industry, the automotive industry, the construction and building industry, and the energy industry. The energy industry, which by itself directly relates to many different specific industry sectors (SISs), such as power plants, fossil power, renewable energy, arctic engineering and offshore technology, nuclear power, and energy efficiency, has within these SISs many SIS activities that require NDE or QC to be performed by qualified and certified personnel. These SIS activities include manufacturing, fabrication, construction, installation, maintenance, preservice inspection, and inservice inspection. The use of performance-based requirements for qualification with a Systematic Approach to Training (SAT) process in this Standard, along with the use of Job Task Analyses (JTAs) for the Qualification and Certification of NDE and QC personnel, makes it unique and supports a goal of enhancing personnel capabilities to perform NDE and QC methods. These performance-based requirements are focused on training and true performance demonstration of the skills needed for personnel to perform specific job functions throughout initial Qualification and Certification and then during Certification periods.

It is expected that with the use of this Standard, NDE and QC Inspection reliability and qualification performance will be improved and that a larger pool of personnel will become available to support any industry or SIS that either requires or chooses to use this Standard.

This Edition of the Standard may be used beginning with the date of issuance printed on the copyright page. After such date of issuance, this Edition becomes the requirement for compliance with this Standard, except for equipment or services contracted for prior to the end of the period.

This Standard was approved as an American National Standard on April 22, 2015.

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Certification of Nondestructive Examination (NDE) Personnel and Quality Control (QC) Technicians

(The following is the roster of the Committee at the time of approval of this Standard.)

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General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a Case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, ANDE Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval, except that regulatory authorities may require prior approval of Cases to be used with this Standard. Cases shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the ANDE Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the ANDE Standards Committee at go.asme.org/Inquiry.

For inquiries that involve the intent of a provision in the Standard that cannot be answered with the current words in the Standard by the Committee, a revision to the Standard will be approved prior to issuing the interpretation.

The request for an interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject: Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition: Cite the applicable edition of the Standard for which the interpretation is being requested.
Question: Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The ANDE Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the ANDE Standards Committee.

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ASME NONDESTRUCTIVE EXAMINATION AND QUALITY CONTROL CENTRAL QUALIFICATION AND CERTIFICATION PROGRAM

Part 1 General Requirements

Section 1-1 Introduction

1-1.1 SCOPE

(a) This Standard includes both performance-based and prescriptive requirements to be used for an ASME Nondestructive Examination and Quality Control Central Qualification and Certification Program that applies to NDE personnel and QC Inspection personnel.

(b) This Standard uses a SAT process that integrates with JTAs and established Body of Knowledge (BoK) requirements, to provide personnel experience requirements, written examinations, and practical demonstrations.

(c) This Standard is applied by a Third-Party Certification Organization, which is referred to within this Standard as a Certification Body (CB).

(d) The use of the terms Level I, Level II, or Level III in this Standard apply to a CB certified individual.

(e) Specific requirements for industry sectors are included in the Mandatory Appendices of this Standard such as the Nuclear Sector in Mandatory Appendix I.

1-1.2 APPLICABILITY

This Standard is applicable to any Industry or Industry Sector that performs Industry Sector Activities such as Manufacturing, Fabrication, Construction, Installation, Maintenance, Preservice Inspection (PSI), and Inservice Inspection (ISI) that require NDE or QC Inspections to be performed by qualified and certified NDE and QC Inspection personnel.

1-1.3 USE OF THIS STANDARD

This Standard is required to be used when referenced by a user's Code, Standard, Specification, Procedure, or Instruction, which the user has committed to meet or is required to meet. Optional use of this Standard is not prohibited, but when this Standard is used, all requirements are mandatory, including Mandatory Appendices, except where specific alternatives are provided in this Standard. Use of Nonmandatory Appendices is optional, but when they are chosen to be used, all the requirements within a Nonmandatory Appendix become mandatory unless the Nonmandatory Appendix is specified for guidance only. See Nonmandatory Appendix A for guidance on maintenance of the Standard.

1-1.4 REGULATORY, ENFORCEMENT AUTHORITIES OR AUTHORIZED INSPECTION AGENCY INVOLVEMENT

When a referencing Code, Standard, Specification, Procedure, or Instruction requires the use of this Standard and has requirements that shall be met for the involvement of Regulatory, Enforcement Authorities or an Authorized Inspection Agency (AIA), then those authorities or agencies shall be provided full access with the certified individual's written approval, to any record of documentation, qualification, or certification activities performed to meet this Standard.

1-1.5 APPLICATIONS, CERTIFICATION FORMS, JOB TASK ANALYSES, RELATED BODY OF KNOWLEDGE REQUIREMENTS, AND QUALIFICATION/CONTINUITY CARDS

When required or referenced in this Standard, Application and related Forms, the latest applicable Specific Industry Sector (SIS) Committee approved NDE or QC method and endorsement related JTAs, BoKs, Qualification/Continuity Cards, and their instructions for use shall be used.

1-1.6 EYE EXAMINATIONS

(a) In addition to maintaining certification, candidates shall demonstrate satisfactory visual acuity to perform NDE or QC methods, as applicable. The eye examination shall be given on an annual basis (i.e., certified personnel shall receive and successfully pass vision acuity examinations at intervals not to exceed 1 yr, which expire on the last day of the month of the expiration date, in order to maintain their certifications in an active status) in accordance with the following requirements:

(1) Near Vision Acuity. Near vision acuity, natural or corrected, of Jaeger 1 or equivalent at a distance of not less than 12 in. (30 cm) or other requirements that may be required by the referencing Code, Standard, Procedure, Specification, or Instruction in at least one eye, shall be demonstrated by the candidate. Testing methods that are capable of determining equivalent (i.e., equivalency is to be determined by a medical professional who performs eye examinations) visual acuity may be used.

(2) Far Vision Acuity. Far vision acuity, natural or corrected, of at least 20/30 (Snellen) at a distance that is required by the referencing Code, Standard, Procedure, Specification, or Instruction in at least one eye, shall be demonstrated by the candidate. Testing methods that are capable of determining equivalent [i.e., equivalency same as in (1) above] visual acuity may be used.

(3) Color Differentiation/Contrast. Personnel shall demonstrate the capability to distinguish the colors applicable to the test methods for which certified and to differentiate contrast between these colors. Accepted examination types include H-R-R Pseudoisochromatic, Ishihara, Dvorine, and Farnsworth. Equivalent examinations may be performed when equivalency by a qualified and licensed medical professional has been determined. Any limitation in color perception shall be evaluated in accordance with the Employer's Eye Examination Program by a qualified individual. Limitations shall be documented on the candidate's eye examination documents.

(4) Vision Correction. When, vision correction is necessary to pass the visual acuity examinations, the same vision correction device shall be worn during all testing/inspections. Candidates utilizing multiple correction devices during testing/inspections such as eye lenses and contact lenses shall complete a visual acuity examination for each correction device.

(b) Responsibilities. The Employer has the responsibility to

(1) develop and maintain an Eye Examination Program or Written Practice that complies with this Standard and any other requirements that may be required by a referencing Code, Standard, Specification, Procedure, or Instruction

(2) ensure personnel conducting eye examinations are either a medical professional who performs eye examinations or other personnel trained to the Employer's Eye Examination Program or Written Practice

(3) maintain a candidate's eye examinations records

Section 1-2
Acronyms and Definitions

The following subsections list acronyms and definitions of terms that are provided to ensure a uniform understanding of these acronyms and terms as they are specifically used in this Standard.

1-2.1 ACRONYMS

AE:	Acoustic Emission Testing
AIA:	Authorized Inspection Agency
ANDE:	American Society of Mechanical Engineers Nondestructive Examination
ANSI:	American National Standards Institute
ASME:	American Society of Mechanical Engineers
BoK:	Body of Knowledge
BPV:	Boiler and Pressure Vessel
CB:	Certification Body
DDA:	Digital Detector Array
ET:	Electromagnetic (Eddy Current) Testing
I&C:	Instrumentation and Control
ISI:	Inservice Inspection
JTA:	Job Task Analysis
LT:	Leak Testing
MT:	Magnetic Particle Testing
NDE:	Nondestructive Examination
NDI:	Nondestructive Inspection
NDT:	Nondestructive Testing
PSI:	Preservice Inspection
PT:	Liquid Penetrant Testing
QA:	Quality Assurance
QC:	Quality Control
QC CIVIL:	Civil Inspection
QC ELECT:	Electrical Inspection
QC MECH:	Mechanical Inspection
QC RECPT:	Receipt Inspection
QC WELD:	Weld Inspection
RT:	Radiographic Testing
SAT:	Systematic Approach to Training
SIS:	Specific Industry Sector
SME:	Subject Matter Expert
TOFD:	Time of Flight Diffraction
UT:	Ultrasonic Testing
UV:	Ultraviolet
VT:	Visual Testing

1-2.2 DEFINITIONS

Authorized Inspection Agency (AIA): an organization that is empowered by an enforcement authority to provide inspection personnel and services as required by an applicable ASME BPV Code Section. The AIA is accredited by ASME in accordance with the provisions set forth in ASME QAI-1, Qualification for Authorized Inspection.

AIA Inspection: verification of the performance of examinations and the qualification and certification of NDE and QC Inspection personnel by an AIA Inspector.

AIA Inspector: The Authorized Inspector, Authorized Nuclear Inspector, or Authorized Nuclear Inservice Inspector.

candidate: an individual seeking certification to this Standard.

certification: written attestation that an individual is qualified in a NDE or QC method and endorsements as applicable in accordance with the requirements as stated in this Standard.

Certification Body (CB): a third-party certification organization that is an independent body, such as a nonprofit, technical society, research organization, or government agency, that assesses and attests to the individual's level of qualification and certification in accordance with this Standard, separate from the organizations that use the NDE or QC personnel that it certifies and not owned by any organization that uses such certified personnel.

defect: as used in NDE and QC, is a flaw or relevant condition (imperfection or unintentional discontinuity) of such size, shape, orientation, location, or properties as to be rejectable by a referencing Code, Standard, Specification, Procedure, or Instruction.

documented: information that is in a hard copy or electronic format that shows the existence or truth of evidence.

education: the knowledge or skill obtained or developed by such a process: learning.

employer: the legal entity, corporate, government, private or public entity that employs NDE or QC personnel and is solely responsible for authorizing employees to perform NDE or QC Inspection.

enforcement authority: a regional or local governing body, such as a State or Municipality of the United States or a Province of Canada, empowered to enact and enforce legislation.

evaluation: a determination of the significance of an indication.

examination: a formal, controlled, documented assessment conducted in accordance with a procedure or other specific requirements.

examination center: a center with facilities, equipment, and personnel used to administer examinations.

experience: actual performance, simulations, or verifications conducted during work time resulting in the acquisition of skills and knowledge. Classroom training is not considered as experience.

false call: reporting a defect when none exists.

flaw: an imperfection or unintentional discontinuity detected by NDE or QC Inspection.

grading unit: a section of a test sample. A grading unit can be of unequal length and spacing and either with or without relevant conditions or flaws.

industry: a distinct group of productive or profit-making enterprises that produces or supplies goods or services (e.g., the aircraft industry, the pipeline industry, the automotive industry, and the energy industry).

inspection: the verification of compliance of materials, components, or both to determine their acceptability in accordance with defined criteria.

instructor: an individual who teaches, trains, or educates NDE or QC Inspection personnel.

Job Task Analysis (JTA): the process of identifying the content of a job in terms of activities involved and attributes needed to perform the work and identifies major job requirements.

Nondestructive Examination (NDE): the development and application of nonintrusive methods to examine materials or components or both, in ways that do not impair future usefulness and serviceability in order to detect, locate, measure, interpret, and evaluate flaws or other defined attributes.

NDE method: one of the disciplines of NDE. All or any of the NDE methods listed below are addressed within ASME Codes and Standards and as applicable may be addressed within the requirements of this Standard. Use of the term "Testing" in the acronyms of this definition intends to provide a universal term that can be understood to describe nondestructive methods across all Industries and Industry Sectors that may use this Standard such as those that specify NDE methods, Nondestructive Testing (NDT) methods, or Nondestructive Inspection (NDI) methods:

AE — Acoustic Emission Testing
ET — Electromagnetic (Eddy Current) Testing
LT — Leak Testing
MT — Magnetic Particle Testing
PT — Liquid Penetrant Testing
RT — Radiographic Testing
UT — Ultrasonic Testing
VT — Visual Testing

NDE technique: a specific way of utilizing a particular NDE method. For example: yoke testing for the MT examination method.

outside agency: an organization or individual providing support services to the CB.

performance-based requirements: for training, qualification, and certification of personnel, requirements for personnel to successfully demonstrate their ability to consistently perform tasks under real working conditions. This puts certification candidates in situations where they use their knowledge and demonstrate their skills in a manner that can quantitatively measure the elements that employers and certification organizations deem most important (i.e., job tasks, especially those requiring specialized skills, and knowledge to reliably detect relevant conditions and flaws).

practical demonstration: for Level I, Level II, and Level III candidates, a demonstration of an individual's ability to conduct NDE or QC methods.

procedure: a document containing written instructions used by personnel to perform NDE or QC methods.

psychometric process: the science and technology of measurement used to develop and analyze assessments of cognitive and skill ability.

qualification: an individual's possession of the education, skills, training, knowledge, and experience required for personnel to properly perform to a specified NDE or QC Level.

Qualification/Continuity Card: a card used to show that an individual has documented evidence of their demonstrated ability to perform the attributes needed for NDE or QC methods and endorsements associated with certification, maintenance of certification, and recertification.

Quality Control (QC): those quality assurance actions that provide a means to evaluate and measure the characteristics of an item or process in accordance with established requirements.

QC Inspection: a phase of quality control which by means of examination, verification, or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements.

QC method: one of the disciplines of QC. All or any of the QC Inspection methods listed below as addressed in referencing Codes, Standards, Specifications, Procedures, or Instructions used as applicable may be addressed within the requirements of this Standard.

QC CIVIL — Civil Inspection
QC ELECT — Electrical Inspection
QC MECH — Mechanical Inspection
QC RECPT — Receipt Inspection
QC WELD — Weld Inspection

regulatory authority: an authority having jurisdiction that is empowered to issue and enforce regulations.

relevant condition: an observation during NDE or QC Inspection that is evaluated as to its significance on the subject NDE or QC Inspection results.

specific industry sector (SIS): a subdivision of an industry such as the energy industry, which includes such specific industry sectors as power plants, fossil power, renewable energy, arctic engineering and offshore technology, nuclear power, and energy efficiency organizations. Activities that are needed to support a specific industry sector may include manufacturing, fabrication, construction, installation, repair/replacement activities, maintenance, and Preservice Inspection or Inservice Inspection.

SIS activity requirements: requirements in this Standard or those that are defined in a Code, Standard, Specification, Procedure, or Instruction that are used to perform the SIS activity. These requirements shall apply to a particular area in a specific industry sector or technology where using NDE or QC methods that may require specific skills, knowledge, equipment, or training.

Subject Matter Expert (SME): an individual with a definitive source of knowledge, technique, or expertise in a specific subject area, such as training or NDE or QC methods.

Systematic Approach to Training (SAT) Process: the methodology for design and development of the qualification and examination requirements in this Standard. It is an orderly and logical approach to determine what people need to know and do for their particular job in their certification area. The SAT process verifies that people are prepared for their work by having the necessary skills and knowledge to do their job. The SAT process includes five steps with a focus towards meeting the "performance-based requirements" of this Standard. The five steps are (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation.

testing: the determination or verification of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

test sample: an example or a simulation of the component for which the NDE or QC method is qualified and, as appropriate, replicates size, geometry, and material properties and contains attributes or deficiencies to be encountered on the job.

training: organized and documented program of activities designed to impart the skills and knowledge required to become qualified.

written examination: an examination that includes both general and specific knowledge questions based on the principles of a NDE or QC method applicable to Codes, Standards, Specifications, Instructions, Procedures, and their acceptance criteria.

Section 1-3
Responsibilities

1-3.1 GENERAL

(a) This Section contains the requirements for the overall responsibility of the CB program for NDE and QC Inspection personnel qualification and certification to this Standard.

(b) The ANDE Committee is responsible for the development and maintenance of this Standard.

(c) The CB QA program and the CB general administrative procedures for implementation of this Standard such as the operating procedures and instructions to candidates shall be made available to the applicable SIS Committee for review and comment and all comments shall be resolved prior to implementation by the CB.

(d) The applicable SIS Committee shall approve all technical documents including JTAs; BoKs; Qualification/Continuity Cards and their Instructions for use; technical procedures that include grading of written examinations; practical demonstrations; checklists; psychometric process instructions; and test samples and grading units.

1-3.2 CERTIFICATION BODY

The CB shall meet the following requirements:

(a) The CB shall have demonstrated experience in administration of programs for certification of personnel based on factors including training and examinations.

(b) The CB is responsible for maintaining a Quality Assurance (QA) program that meets the requirements of the latest Edition of ISO 9000 (ref. [1]) or equivalent [e.g., ASME NQA-1 (ref. [2]), as applicable].

(c) The CB is responsible for verifying qualification and certifying NDE and QC Inspection personnel in accordance with the requirements of this Standard. This includes its Mandatory Appendices and maintaining the infrastructure for the certification program including development and maintenance of written examinations, test samples, and organizations providing services, such as an outside agency.

(d) The CB shall maintain a database of certified individuals accessible for verification of certifications by Regulatory or Enforcement Authorities, Authorized Inspection Agencies, Owners, or Employers as applicable.

(e) The CB shall issue a certification form to those personnel satisfying the requirements for NDE or QC certification in accordance with this Standard and shall issue an examination record, which shall be maintained in a database.

(f) The CB is responsible for timely notification to candidates of the results of written examinations, practical demonstrations, when candidates are certified, or for certified individuals when certifications are revoked. These notifications shall be mailed or emailed by the CB within 30 days. Examination results shall not be given over the telephone.

(g) The CB certifies by issuing a certification form that the individual has satisfied the requirements of this Standard. However, the CB does not give authority or license to that individual to perform NDE or QC activities.

(h) The CB is responsible for development and maintenance of written examinations and practical demonstrations based on the psychometric process and other requirements of this Standard, including (1), (2), and (3) below.

(1) The CB shall develop and maintain a secure question bank, and written examinations shall be prepared based on the JTAs using a selection process that ensures no individual takes the same examination more than once.

(2) The CB or CB's approved outside agencies shall maintain a secure test sample bank containing a sufficient number of flawed samples to support the practical demonstrations.

(3) The CB shall ensure that the samples in the test sample bank shall be real or simulated with some flaws exceeding and others not exceeding the acceptance standards of the applicable referencing Code, Standard, Specification, Procedure, or Instruction.

(i) The CB shall develop criteria and monitor implementation results to ensure program effectiveness on performance improvement.

1-3.3 EXAMINATION CENTERS

(a) Examination Centers are responsible for administering examinations in accordance with this Standard.

(b) Examination Centers shall establish a controlled environment to ensure the integrity of the examination process and the security of examination materials.

(c) Examination Centers shall be operated directly by the CB or a CB approved outside agency.

1-3.4 INSTRUCTOR

A NDE or QC instructor (see subsection 1-4.5) shall have the skills and knowledge to plan, develop, organize, and professionally present classroom course materials and demonstrations and conduct laboratory exercises. Course materials (classroom, computer-based training, demonstrations, structured laboratory exercises, and on-the-job training) presented shall be reviewed and approved by a NDE or QC Level III in the methods or endorsements being taught.

1-3.5 EMPLOYER

The employer is responsible for the following requirements:

(a) Providing qualification records (i.e., training, experience, visual acuity, and other records related to certification) to the CB upon request provided release of such records is authorized by the certified individual or by the individual applying for certification;

(b) Reporting performance deficiencies to the CB;

(c) Authorizing employees to perform NDE or QC inspections; and

(d) For self-employed individuals they shall assume all employer responsibilities described herein.

1-3.6 CANDIDATE

Personnel applying for certification in accordance with this Standard or certified by the CB and applying for recertification are responsible for providing complete and accurate records, obtaining an eye examination in accordance with the requirements of subsection 1-1.6, and timely submittal of records required for maintenance of certifications.

1-3.7 SPECIFIC INDUSTRY SECTOR COMMITTEE

(a) Representatives from industry in cooperation with a CB shall establish a SIS Committee. The SIS Committee shall provide oversight of the CB activities performed in accordance with this Standard. The requirements for each SIS Committee are contained in the SIS requirements of the Mandatory Appendices of this Standard.

(b) Oversight activities performed by SIS Committees shall be organized to provide consistent, constructive feedback and collective results to the CB as described in the CB's operating procedures.

(c) This SIS Committee shall consist of a balanced membership of representatives recognized as knowledgeable or SMEs in various aspects of NDE or QC methods for the purpose of implementing this Standard and shall serve as the coordinator between interested and affected parties and the CB.

Section 1-4
Administration

1-4.1 GENERAL

This Section contains the general requirements for the overall administration of the CB program for NDE and QC Inspection personnel qualification and certification to this Standard.

1-4.2 APPLICATION PROCESS

Candidates shall prepare and submit an application form for examination to the CB. The application form describes their education, training, experience, and employment history. Candidates shall also submit a completed Qualification/Continuity Card for each NDE or QC method or endorsement that they are seeking to be certified. The form shall include contact information for individuals who can substantiate the validity of training and experience claims made by the candidate. In addition, the candidate shall submit eye examination records showing compliance with the requirements of this Standard. The CB shall review the applications and notify candidates of their eligibility for examination.

1-4.3 APPROVAL OF OUTSIDE AGENCIES

The approval and use of outside agencies shall be controlled by the CB's QA program.

1-4.4 QUALIFICATION AND UTILIZATION OF EXAMINATION CENTERS

Examination centers shall be subject to evaluation and periodic audits in accordance with the CB QA program.

1-4.5 INSTRUCTOR QUALIFICATIONS

(a) NDE Instructor. A NDE Instructor shall meet the following qualification requirements:

(1) be a certified NDE Level III in the NDE method that they instruct, or shall have passed a NDE Level III written examination in the NDE method they instruct; and

(2) shall meet one of the following requirements:

(-a) be a teacher or vocational instructor at a state, municipal, provincial, or federal learning institution; or

(-b) successfully complete a 40-hr course of instruction in training and teaching techniques

(b) QC Instructor. A QC Instructor shall meet the following qualification requirements:

(1) be a certified QC Level III in the QC method that they instruct; or

(2) have instructor experience in conducting training related to the specific inspection task within the method being instructed

1-4.6 PREPARATION, DISTRIBUTION, AND MAINTENANCE OF RECORDS

(a) The CB is responsible for the preparation of certificates, forms documenting results of the examinations it administers, and for records of evaluation of a candidate's application.

(b) The records supporting the qualification and certification of an individual, including education, training and experience records, affidavits, degrees, certificates, etc., shall be maintained on file by the CB (see subsection 1-7.4).

1-4.7 ACCESS TO RECORDS

Access to an individual's certification records maintained by the CB shall be made available to the certified individual and other entities including Owners, ASME Certificate Holders, Repair Organizations, and support organizations as authorized by the certified individual.

1-4.8 SPECIFIC INDUSTRY SECTOR ACTIVITY ENDORSEMENT

A SIS activity endorsement applied to the certification in each method is based on the scope of the written examination and the practical demonstration evaluation as established by the SIS. A candidate can apply and be examined for multiple methods and endorsements.

Section 1-5
Eligibility

1-5.1 GENERAL

This Section contains the requirements for eligibility of NDE and QC Inspection personnel to apply for certification and examination.

1-5.2 EDUCATION

All Level I, Level II, or Level III candidates shall have a high school, general education diploma or equivalent education.

1-5.3 TRAINING

(a) Candidates for NDE and QC personnel qualification and certification shall complete sufficient training to be familiar with the principles and practices of the applicable NDE or QC method including any endorsements being sought.

(b) Training for each NDE or QC method including any endorsements being sought shall be developed by a group of SMEs in accordance with the performance-based SAT process. Training may be provided in the classroom or laboratory or by means of a self-paced, computer-based, self-study or distance-learning technique. As an integral part of the SAT process, the JTA and BoK shall be used for the skills and knowledge required for training.

(c) A NDE or QC Inspection Level III shall, in all cases, be ultimately responsible for the sequence, content, and depth of coverage for each topic. Sufficient evaluation during the process of achieving training is essential to ensure comprehension prior to examination for qualification and certification.

(d) All training courses shall address the content contained in the applicable BoK, that is developed from the JTA, addressed in this Standard and shall be approved by a NDE or QC Level III certified individual (see subsection 1-3.4).

1-5.4 EXPERIENCE

(a) Experience shall be documented on the Qualification/Continuity Card for each NDE or QC method.

(b) Completed Qualification/Continuity Cards shall be submitted to the CB as part of the candidate's application.

1-5.5 EYE EXAMINATIONS

A candidate shall have documented evidence of a current eye examination in accordance with subsection 1-1.6 in order to be considered for certification.

1-5.6 WRITTEN EXAMINATIONS

(a) A candidate shall be eligible to take the written examination upon completion of the education requirements in subsection 1-5.2 and training requirements in subsection 1-5.3.

(b) Upon successful completion of the written examination, the candidate shall be issued a certificate of completion. This certificate does not imply certification.

(c) The candidate has 1 yr to complete the experience requirements in subsection 1-5.4 and successfully complete the practical demonstration.

1-5.7 PRACTICAL DEMONSTRATIONS

A candidate shall be eligible to perform a practical demonstration upon completion of the eye examination requirements in subsection 1-5.5 and the experience requirements in subsection 1-5.4 and successful completion of the written examination. The practical demonstration shall be successfully completed within 1 yr of successful completion of the written examination.

1-5.8 REEXAMINATIONS

(a) Candidates who fail to pass either the written examination or the practical demonstration may be reexamined after a period of at least 30 days provided that documented evidence of additional training is submitted to the CB for review prior to the candidate being permitted to be reexamined.

(b) No candidate shall be reexamined more than twice within any consecutive 12-month period.

Section 1-6
Maintenance of Certification

1-6.1 GENERAL

This Section contains requirements associated with continuity of certifications, expiration, recertification, and revocation of certifications for NDE and QC Inspection personnel.

1-6.2 CONTINUITY OF CERTIFICATION

(a) To maintain a certification in a defined NDE or QC method or endorsement, it is required that personnel remain actively engaged in the method for which certified. The uninterrupted service shall be documented and maintained as part of the individual's CB certification record. Personnel who have not performed the duties associated with their certification level during any 12-month (365-day) period shall be considered to have interrupted service and shall be required to successfully complete a reduced scope practical demonstration to ensure continued proficiency prior to a further assignment to perform NDE or QC inspection [see para. 1-3.5(c)]. The results of a reduced scope practical demonstration shall be documented and maintained as part of the individual's CB certification records.

(b) As an alternative to the requirements to perform the duties associated with each individual's certification in (a) above, a reduced scope practical demonstration and a new Qualification/Continuity Card associated with a specific applicable JTA for each NDE or QC method or endorsement for which the individual is certified shall be completed and submitted to the CB at least 60 days, but no more than 90 days, before the anniversary date of each 12-month period after initial certification. The CB shall then notify the individual of the reduced scope practical demonstration results and the Qualification/Continuity Card approval status before the certification expiration date. The reduced scope practical demonstration in (a) above, and this paragraph, shall be performed in accordance with an applicable SIS Committee approved procedure.

1-6.3 EXPIRATION

Certifications for all NDE and QC Inspection personnel expire every 5 yr, and if these certifications are not renewed by recertification or by evidence of maintenance of continuity in accordance with para. 1-6.4(b), their certification shall expire.

1-6.4 RECERTIFICATION

(a) Recertification is based on successful completion of the applicable written examinations required in accordance with subsection 2-2.2 and the practical demonstrations required in accordance with subsection 2-2.3 as applicable for NDE personnel and subsections 3-2.2 and 3-2.3 as applicable for QC Inspection personnel.

(b) Reexamination for NDE and QC Inspection personnel at the required expiration interval of 5 yr is not required provided that a new Qualification/Continuity Card and practical demonstration has been submitted in accordance with para. 1-6.2(b) to and approved by the CB prior to the end of each 12-month period that the individual is certified. The CB shall notify the individual of the approval status before the certification expiration date.

1-6.5 REVOCATION

The CB may revoke an individual's certification when

(a) the individual has not documented performance or continuity of the duties required to be performed for a NDE or QC method or endorsement for which the individual is certified during any consecutive 24-month period, and if this revocation occurs, then the requirements in para. 1-6.4(a) shall apply; or

(b) the certified individual's performance is determined by the CB to be deficient in a NDE or QC method or an endorsement for specific documented reasons the certification shall be revoked and then the requirements of para. 1-6.4(a) shall apply; or

(c) the CB has determined that an individual has violated the CB's code of conduct

Section 1-7
Records

1-7.1 GENERAL

This Section contains the requirements for NDE and QC records and associated activities for these records required in accordance with this Standard.

1-7.2 TYPES AND CONTENT OF RECORDS

The following records shall be included in the individual's files package maintained by the CB:

(a) certification forms issued for each NDE or QC method, stating any endorsements, if applicable

(b) the results of examinations administered by the CB including examination checklists used for practical demonstrations

(c) the individual's application

(d) copies of records supporting the verification of qualification of an individual, including education, training, and experience records; Qualification/Continuity Cards; affidavits; eye examination records; degrees and certificates, etc.

(1) Training records shall identify the history of the candidate's training, the organization providing the training, dates of the training, evidence of satisfactory completion, and the instructor's name, if available.

(2) Qualification/Continuity Cards shall be used as a record for verification by the CB for required initial qualification and annual continuity performance.

(3) Eye examination records shall show the test results that are used for Qualification or Certification.

1-7.3 CONFIDENTIALITY

An individual's records are maintained in confidence by the CB and released after written authorization by the individual.

1-7.4 RECORD RETENTION

Records shall be retained by the CB in accordance with the CB QA program and shall be subject to audit in accordance with the referencing Code, Standard, Specification, Procedure, or Instruction and the CB QA program.

Section 1-8
References

1-8.1 GENERAL

This Section contains a list of all the references used in this Standard.

1-8.2 REFERENCE LIST

[1] ISO 9000, Quality management systems — Fundamentals and vocabulary
[2] ASME NQA-1, Requirements for Quality Assurance Programs for Nuclear Facilities
[3] ASME BPV Code, Section III, Rules for Construction of Nuclear Facility Components, Division 1 (latest edition referencing this Standard)
[4] ASME BPV Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, Division 1 (latest edition referencing this Standard)
[5] Code of Federal Regulations (CFR), Title 10, Part 50, Appendix B (latest edition)
[6] ASME BPV Code, Section II, Materials (latest edition)
[7] ASME BPV Code, Section IX, Welding, Brazing, and Fusing Qualifications (latest edition)

Part 2
NDE Personnel Qualification and Certification Requirements

Section 2-1
NDE Methods and Levels of Qualification

2-1.1 GENERAL

This Section provides the descriptions and requirements for NDE Levels of Qualification and Certification used in this Standard. These Levels of Qualification and Certification currently apply to the following NDE methods:

ET — Electromagnetic (Eddy Current) Testing
MT — Magnetic Particle Testing
PT — Liquid Penetrant Testing
RT — Radiographic Testing
UT — Ultrasonic Testing
VT — Visual Testing

2-1.2 TRAINEE

A trainee shall pursue qualification and certification under the direction of a certified Level I, Level II, or Level III personnel in the method while gaining appropriate experience in the applicable NDE method. Additionally, a trainee shall not independently conduct any examinations.

2-1.3 LEVEL I

(a) A certified Level I shall have received documented training and experience to demonstrate competence in setting up equipment, performing examinations, and recording results in accordance with written instructions. With prior documented Level III approval, a Level I may perform acceptance or rejection of indications in accordance with specific instructions, unless restricted by SIS requirements as listed in the Mandatory Appendices of this Standard or by a referenced Code, Standard, Specification, Procedure, or Instruction.

(b) In addition to basic UT straight beam and angle beam techniques, a Level I qualified and certified in the basic UT method shall be capable of performing thickness measurements with either a digital ultrasonic thickness gauge or an A-scan instrument for manual conventional applications. This includes all longitudinal 0 deg examinations and thickness measurements.

2-1.4 LEVEL II

A certified Level II shall have received documented training and experience to demonstrate competence in performing NDE in the method certified, including acceptance or rejection of indications in accordance with Level III approved procedures. The Level II shall also be capable of providing direction, assisting in training, or both to trainees and Level I individuals.

2-1.5 LEVEL III

A certified Level III shall have demonstrated competence in performing NDE in the method, including evaluation of indications in accordance with applicable requirements and the following:

(a) develop procedures and instructions

(b) evaluate and apply applications and examination results in terms of existing Codes, Standards, Specifications, Procedures, or Instructions

(c) specify an examination method, procedure, or instruction to be used

(d) provide training, direct field experience (administer Qualification/ Continuity Cards), and examine NDE personnel in the NDE methods for which the Level III is qualified per the requirements of subsection 1-5.3

(e) develop NDE techniques and assist in establishing acceptance criteria where none are otherwise available, based on sufficient practical knowledge of applicable materials, fabrication, processes, and product technology

Section 2-2
NDE Certification Examinations

2-2.1 GENERAL

(a) This Section contains requirements for certification examinations of NDE Personnel to this Standard.

(b) This Section requires the use of JTAs that can be applied to a set of duties, a group of tasks, a job, or an occupation. The purpose of the JTA is to get data to support the development of performance-based examinations. The data is used to develop BoKs, written examinations, and practical demonstrations that are developed by SMEs and criteria to judge experience.

2-2.2 WRITTEN EXAMINATIONS

(a) The scope of the written examination requirements contained in this subsection shall meet the NDE personnel qualification requirements of the applicable SIS contained in Mandatory Appendix I.

(b) Level I, Level II, and Level III NDE personnel are required to take written examinations for certification that shall be based on the applicable SIS Committee approved JTAs. A written examination shall be administered for each basic NDE method and then for any endorsement shown in Table 2-2.2-1. The written examinations are closed book except for reference materials identified by the CB.

(c) All written examination questions shall be developed and maintained by the CB from approved JTAs and shall include questions addressing

(1) physical principles and theory of the method and any endorsements

(2) Codes, Standards, Specifications, Procedures, Instructions, and their interpretations

(3) practical applications and problems encountered in implementation

(d) The passing criteria for each basic/endorsement written examination is 80%.

(e) Written examinations shall be approved, administered, and graded by the CB in accordance with specific procedures approved by the applicable SIS Committee.

2-2.3 PRACTICAL DEMONSTRATIONS

(a) Performance Requirements. Practical demonstrations shall be performed that evaluate an individual's skills and knowledge in a particular NDE method as specified in the JTA.

(b) NDE Procedure Qualification. To ensure effective and consistent evaluation of personnel, the NDE procedures used for practical demonstrations shall be approved by the applicable SIS Committee. The procedure qualification shall demonstrate the capability to resolve detectable flaws under representative conditions.

(c) Level-Specific Requirements. The Level I, Level II, and Level III requirements for practical demonstrations are as follows:

(1) Level I Practical Demonstration Requirements. The Level I practical demonstration shall be a proficiency demonstration requiring examination of test samples in the NDE method and endorsement for which certification is being sought. The practical demonstration shall include documenting the results of the examination.

(-a) The test samples to be used shall be representative of those encountered in the performance of NDE for the SIS activities that the Level I is seeking to qualify.

(-b) The Level I practical demonstration shall include performance of the tasks representative of the Level I capabilities as described in subsection 2-1.3 and any additional capabilities required in Mandatory Appendix I.

(-c) The passing criteria for the practical demonstration shall be 80%.

(2) Level II Practical Demonstration Requirements. In addition to the requirements for a Level I practical demonstration in (1) above, the Level II practical demonstration shall include interpreting, evaluating, and documenting the results of examinations performed.

(-a) The test samples used shall be representative of those encountered in the performance of NDE for the SIS activities that the Level II is seeking to qualify for, such as under the Nuclear Industry, PSI, ISI, and fabrication or construction of nuclear power plant components.

(-b) The SIS shall specify the targeted flaw sizes and types to be detected, in consultation with the regulator, original equipment manufacturer, or design authority where appropriate, using applicable Codes, Standards, and engineering principles.

(-c) The flaws in the representative test samples required in (-a) above may be actual or simulated flaws and shall range in size from below the minimum acceptable flaw size required by the applicable Code, Standard, Procedure, or Instruction and not more than the maximum size specified by the SIS Committee. Tolerances

Table 2-2.2-1 NDE Written Examinations

Written Examinations Based on Competency		Number of Questions for Levels I, II, and III [Note (1)]		
Method	**Basic/Endorsements [Notes (2) and (3)]**	**I**	**II**	**III**
Ultrasonic	Basic ^{UT}, includes principles, product forms, failure mechanisms, and applications based wholly on thickness gauges and A-scan instruments for manual conventional application. Includes all Longitudinal 0 Degree exams, thickness, and manual conventional (fixed angle) ultrasonics	X	X	X
	Manual Phased Array	X	X	
	Encoded/Computer Recorded — Fixed Probe	X	X	
	Encoded/Computer Recorded — Phased Array	X	X	
	Encoded/Computer Recorded — Time of Flight Diffraction (TOFD)	X	X	
Radiographic	Basic ^{RT}, radiation sources and media interpretation, product forms, failure mechanisms, and film	X	X	X
	Computed	X	X	
	Digital Detector Array (DDA)	X	X	
Liquid Penetrant	Basic ^{PT}, principles, product forms, failure mechanisms, visible systems, UV systems, and Solvent Removable	X	X	X
	Water Wash	X	X	
	Post Emulsifiable	X	X	
Magnetic Particle	Basic ^{MT}, principles, product forms, failure mechanisms, visible systems, UV systems, and Indirect Continuous (yoke)	X	X	X
	Bench — include coils, head shot, and central conductor	X	X	
	Portable Equipment — includes prods and head shot and coil wraps	X	X	
Eddy Current	Basic ^{ET}, principles, product forms, and failure mechanisms, and includes material sorting and plate/weld crack detection	X	X	X
	Tubing (Steam Generator)	X	X	
	Tubing (Balance of Plant)	X	X	
Visual	Pressure testing	X	X	X
	Welds	X	X	
	Components — i.e., mechanical measurement, valves, pumps, vessels, and supports	X	X	

NOTES:
(1) X = numbers of examination questions shall be determined by the CB using psychometric processes approved by the applicable SIS Committee.
(2) Each BASIC ^{METHOD} is the required knowledge and examination required for all techniques of the method.
(3) Endorsements — are for techniques that are subcategories of a NDE method. The subcategories apply the basic physics and theory of the NDE method but are specialized in application so as to not require a full demonstration of knowledge and competency and shall be used for a candidate's specific certification for that technique.

for reporting flaw dimensions by candidates shall also be established.

(-d) All test samples and grading units shall be approved by the applicable SIS Committee.

(-e) Visual examination test samples may be made up of items other than welds. The test samples are to provide examples of relevant conditions for evaluation as part of the practical demonstration for visual examination (e.g., General, Detailed, Bare Metal Visual, etc.).

(-f) Test samples shall have sufficient volumes or areas of materials to minimize spurious indications that may interfere with the interpretation process.

(-g) The test sample grading unit set for each practical demonstration shall be assembled from the test sample bank using a selection process that addresses

the difficulty level of each flaw or set of flaws including geometric reflectors within a test sample to establish multiple practical demonstration sets of approximately equal difficulty.

(-h) Test samples with unflawed grading units or flawed grading units shall be included in the test sample sets so that no more than one-third of the test samples or grading units in the sets contain flaws required to be detected.

(-i) The unique identification of test samples or grading units with or without flaws shall be masked such that either cannot be identified.

(-j) The passing criteria for the practical demonstration shall be 80%.

(3) Level III Practical Demonstration Requirements. The Level III practical demonstration shall have met the requirements of the Level II practical demonstration as described in (2) above.

(d) Standardized Checklist Requirements. A standardized checklist approved by the applicable SIS Committee shall be used in grading of Level I, Level II, or Level III practical demonstrations. This checklist becomes part of the candidate's certification records and shall be maintained by the CB.

(e) Grading of Practical Demonstrations. All practical demonstrations shall be graded by the CB in accordance with the applicable SIS Committee approved procedures.

Part 3
QC Personnel Qualification and Certification Requirements

Section 3-1
QC Methods and Levels of Qualification

3-1.1 GENERAL

(a) This Section provides the descriptions and requirements for QC Levels of Qualification and Certification used in this Standard. These Levels of Qualification and Certification currently apply to the following QC methods:

QC CIVIL — Civil Inspection
QC ELECT — Electrical Inspection
QC MECH — Mechanical Inspection
QC RECPT — Receipt Inspection
QC WELD — Weld Inspection

(b) Written examination and practical demonstration requirements shall be applied to Level II and Level III QC Inspection personnel.

(c) Trainee or Level I personnel shall be addressed in the employer's written practice or procedures and are not within the scope of this Standard.

3-1.2 LEVEL II

Level II QC personnel shall have all of the capabilities for performing the method, specific inspection, examination, or test category as required by the referencing Code, Standard, Specification, Procedure, or Instruction. Additionally, Level II personnel shall have demonstrated capabilities in planning inspections, examinations, and tests; in setting up tests including preparation and setup of related equipment; as appropriate, in documenting and reporting inspection, examination and testing results; and in evaluating the validity and acceptability of inspection, examination, and test results.

3-1.3 LEVEL III

A QC Level III shall be qualified and hold previous Level II certification in all endorsements within each method that the individual is certified. This Level III shall also be qualified to perform Level III functions needed to

(a) establish techniques

(b) evaluate and apply Codes, Standards Specifications, Procedures, and Instructions

(c) designate inspection tasks to be used

(d) verify the adequacy of procedures

(e) conduct or direct the training and testing of QC Inspection personnel in the methods for which the individual is qualified

(f) have general familiarity with other QC Inspection methods

Section 3-2
QC Certification Examinations

3-2.1 GENERAL

(a) This Section contains requirements for certification examinations of QC Inspection personnel to this Standard.

(b) This Section requires the use of JTAs that can be applied to a set of duties, a group of tasks, a job, or an occupation. The purpose of the JTA is to get data to support the development of performance-based examinations. The data is used to develop BoKs, written examinations, and practical demonstrations that are developed by SMEs criteria to judge experience.

3-2.2 WRITTEN EXAMINATIONS

(a) The scope of the written examination requirements contained in this subsection shall meet the QC Inspection personnel qualification requirements of the applicable SIS contained in Mandatory Appendix I.

(b) Level II and Level III QC Inspection personnel are required to take written examinations for certification that shall be based on the applicable SIS Committee approved JTAs. A basic written examination shall be administered for all QC methods and then for any endorsement shown in Table 3-2.2-1. The written examinations are closed book except for reference materials identified by the CB.

(c) All written examination questions shall be developed and maintained by the CB from approved JTAs. Written examination questions shall address applicable

(1) physical principles and theory

(2) Codes, Standards, Specifications, Procedures, Instructions, and their interpretations

(3) practical applications and problems encountered in implementation

(d) The passing criteria for each basic/endorsement written examination is 80%.

(e) Written examinations shall be administered and graded by the CB in accordance with specific procedures approved by the applicable SIS Committee.

3-2.3 PRACTICAL DEMONSTRATIONS

(a) Practical demonstrations shall be performed that evaluate an individual's skills and knowledge within an endorsement that is a subcategory in a particular QC method as specified in the JTA.

(b) The passing criteria for the practical demonstration shall be 80%.

(c) Test samples for QC Level II and Level III practical demonstrations shall include a secure test sample bank containing at least five attributes for evaluation. Defects in the test sample bank may be actual defects or simulated defects. The test samples or grading units used for each practical demonstration shall be randomly assembled from the test sample bank defined by the psychometric process. Blank (nondefective) test samples or defective test sample grading units shall be included in the sample set so that no more than one-third of the test samples or defective grading units in the set contain defects required to be detected.

(d) Level II Practical Demonstration Requirement. The candidate shall demonstrate proficiency by performing QC inspections for the endorsement qualification and certification being sought and by passing a practical demonstration that has been developed based on the requirements of the applicable JTA.

(e) Level III Practical Demonstration Requirements. The Level III candidate may be required to perform QC inspections or evaluate examination results. This practical demonstration shall include demonstrations of the candidate's ability to perform the required activity by passing a Level II practical demonstration as specified in (d) above.

(f) The CB shall use a standardized checklist approved by the applicable SIS Committee in grading the Level II and Level III practical demonstrations and this checklist becomes part of the candidate's certification records and shall be maintained by the CB.

(g) Practical demonstrations shall be graded by the CB in accordance with the applicable SIS Committee approved procedures.

Table 3-2.2-1 QC Written Examinations

Written Examinations Based on Competency		Number of Questions for Levels II and III [Note (1)]	
Method	**Basic/Endorsements [Notes (2), (3) and (4)]**	**II**	**III**
All QC Inspection Methods	Basic QC Inspection	X	X
Civil Inspection [Note (5)]	Concrete and Grout Pre-placement	X	
	Concrete Placement	X	
	Grout Placement	X	
	Concrete Field Testing	X	
	Laboratory Testing of Concrete/Grout Materials	X	X
	Protective Coatings	X	
	Fire-stops and Seals/Fire Rated Barriers	X	
	Structural and Miscellaneous Steel	X	
	Backfill	X	
	Perform Level III Functions		X
Electrical Inspection [Note (5)]	Cables/Raceway	X	
	Electrical Equipment	X	X
	Instrumentation & Control (I&C)	X	
	Perform Level III Functions		X
Mechanical Inspection [Note (5)]	Dimensional Inspection	X	
	Piping and Tubing	X	
	Mechanical Equipment & Components	X	X
	Supports	X	
	Perform Level III Functions		X
Receipt Inspection	Item Receiving Inspection	X	
	Storage Area Inspection	X	X
	Perform Level III Functions		X
Weld Inspection	Welding Inspection	X	X
	Perform Level III Functions		X

NOTES:

(1) X = numbers of examination questions shall be determined by the CB using psychometric processes approved by the applicable SIS Committee.

(2) The written examination for each Basic QC Inspection is the required knowledge and examination for all inspection tasks of all QC methods and shall be administered with the first endorsement examination in that method. Additionally, the Basic QC Inspection method examination is only required for the first endorsement to be obtained.

(3) Endorsements — are for inspection tasks that are subcategories of a QC method. The subcategories are activities that include all the parameters and theory for that task and shall be examined and certified within each method.

(4) Perform Level III Functions — endorsements shall be gained after the candidate has obtained all method Level II endorsements and has successfully completed the method Level III examination.

(5) Common tasks within endorsements include the following: torquing and tensioning, anchor inspection, and rigid supports.

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MANDATORY APPENDIX I
NUCLEAR NDE AND QC SPECIFIC INDUSTRY SECTOR REQUIREMENTS

I-1 GENERAL

(a) This Appendix contains the SIS requirements that are additional to those in Part 1, Part 2, or Part 3, as applicable, of this Standard or its Cases.

(b) This industry sector shall set up a SIS Committee that provides technical guidance and oversight to the CB in accordance with this Standard.

(c) Within this Appendix, the subsection titles under each set of requirements for this SIS begin with the title of the corresponding Section in the Standard, such as Section 1-3, Responsibilities, or Section 1-4, Administration, where the requirements in this Appendix shall be applied.

I-2 SECTOR REQUIREMENTS

This Section of this Appendix contains specific requirements for NDE and QC personnel qualification and certification activities required by the Nuclear Sector.

I-2.1 Responsibilities — ASME Certificate Holders, Owners, and Repair Organizations NDE and QC

ASME "N" Certificate Holders and Owners and Repair Organizations are responsible for verification of CB certifications of personnel performing examinations as required by the ASME BPV Code of record. This shall include the following:

(a) checking the status of certifications through the certification database maintained by the CB

(b) reviewing and approving experience records for NDE personnel consistent with their project work assignments

(c) establishing a procedure in accordance with the ASME Code of record meeting the requirements of this Standard for qualification and certification of NDE and QC personnel

I-2.2 Responsibilities — Authorized Inspection Agencies

Authorized Nuclear Inspectors and Authorized Nuclear Inservice Inspectors verify the qualifications of NDE and QC personnel in accordance with the referencing Nuclear BPV Code Section. Verification includes, but is not limited to, monitoring of examinations and reviewing the status of certifications through the certification database maintained by the CB.

I-2.3 Responsibilities — Specific Industry Sector Committee for NDE or QC Inspection Personnel Qualification and Certification

(a) This SIS Committee establishes qualification and certification requirements for specific industry applications and advises the CB on all technical and procedural matters concerning those qualification and certification requirements.

(b) This SIS Committee shall be used to provide oversight of CB activities performed in accordance with this Standard. The oversight activities shall be accomplished by an audit, assessment, or surveillance and the frequency shall be determined by this SIS Committee.

I-2.4 Responsibilities — Quality Assurance Program NDE and QC

(a) When the CB is used for Nuclear Sector activities contained in the ASME BPV Code Section III, Division 1 (ref. [3]) or Section XI, Division 1 (ref. [4]), its QA program shall meet the requirements of the Code of Federal Regulations, Title 10, Part 50, Appendix B (ref. [5]) or ASME NQA-1 (ref. [2]), as applicable.

(b) For other Nuclear Sector activities such as those addressed by other federal regulations or different Codes, Standards, Specifications, Procedures, or Instructions, the CB QA program shall meet the requirements of ASME NQA-1 (ref. [2]), as applicable, or the Code of Federal Regulations, Title 10, Part 50, Appendix B (ref. [5]).

I-2.5 Eligibility and Maintenance of Certification — Qualification/Continuity Cards

When a Qualification/Continuity Card is required to be used in this Standard for NDE personnel, it shall be verified by an Authorized Nuclear Inspector or an Authorized Nuclear Inservice Inspector prior to submittal to the CB.

I-2.6 Maintenance of Certification

For continued proficiency in performing the duties required for a NDE method or endorsement in which the individual is certified, it is necessary to maintain certification. If the referencing Code for the use of this Standard is ASME BPV Code Section III, Division 1 (ref. [3]) or ASME BPV Code Section XI, Division 1 (ref. [4]), an Authorized Nuclear Inspector Section III or an Authorized Nuclear Inservice Inspector Section XI, an Owner, an ASME Certificate Holder, or an Employer shall document any personnel deficiencies and report these to the CB for review. The CB shall determine the significance of the deficiency and the appropriate action to be taken relative to the individual's certification.

I-2.7 NDE Methods and Levels of Qualification — Level I Responsibilities

When applying NDE under ASME Section XI requirements for PSI and ISI, a Level I certified in accordance with this Standard shall not perform independent examinations, but shall work under the direct and immediate supervision of a qualified Level II or Level III individual. The supervising individual shall hold a current certification in accordance with this Standard in the method being applied. One exception to these requirements is for UT thickness testing in which a qualified Level I may perform independently. In this case, all results and documentation of UT thickness testing shall be reviewed by a UT Level II or Level III individual.

I-2.8 NDE Certification Examinations — Written Examinations

The scope of the written examination requirements contained in subsection 2-2.2 shall meet the NDE personnel qualification requirements of the ASME BPV Code Section III, Division 1 (ref. [3]) and Section XI, Division 1 (ref. [4]) and may include NDE personnel qualification requirements from other Codes and Standards that are used to support refs. [3] and [4].

I-2.9 QC Certification Examinations — Written Examinations

The scope of the written examination requirements contained in subsection 3-2.2 shall meet the QC personnel qualification requirements of the ASME BPV Code Section II (ref. [6]), Section III, Division 1 (ref. [3]), and Section IX (ref. [7]).