Designation: D 4537 – 04

Standard Guide for Establishing Procedures to Qualify and Certify Personnel Performing Coating Work Inspection in Nuclear Facilities[1]

This standard is issued under the fixed designation D 4537; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide delineates the requirements for development of procedures for the qualification of personnel who perform inspection of coating work. These activities are accomplished to verify conformance to specified requirements for nuclear facility coating work whose satisfactory performance is required in order not to compromise safety-related coating systems.

1.2 This guide provides a uniform interpretation of the intent of the requirements in ANSI/ASME N45.2.6 for the inspection of coating work in nuclear facilities.

1.3 This guide meets the intent of ANSI/ASME NQA-1.

1.4 It is the intent of this guide to provide a recommended basis for qualification, not to mandate a singular basis for all qualifications. Variations or simplifications of the qualifications described in this guide may be appropriate for special coating work other than safety-related coating systems. Similarly, the qualification and certification process might be abbreviated for work of minor scope such as touch-up.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 5144 Guide for Use of Protective Coating Standards in Nuclear Power Plants

2.2 *ANSI/ASME Standards:*

ANSI/ASME N45.2.6 Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants[3]

ANSI/ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facilities.[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *certification, n*—written documentation of qualification.

3.1.2 *coating work inspection, n*—a phase of quality control which, by means of examination, observation, or measurement, determines the conformance of safety-related coating system applications to predetermined quality requirements. The term inspection as used in this standard shall be understood to mean coating work inspection.

3.1.3 *Level I, II, and III inspection, n*—indicative of the time in grade classification for personnel who perform coating work inspection. Each level reflects progressive experience and responsibility. This term is separate from and differs distinctly from Coating Service Levels. The latter terms reflect differing location throughout a nuclear plant where safety-related and other coatings are found. (See 3.2.2 through 3.2.4 of Guide D 5144.)

3.1.4 *personnel performing coating work inspection, n*—individuals whose job functions include but are not necessarily limited to coating work inspection.

3.1.5 *qualifications, n*—skills, training, and experience required for personnel to perform properly the duties and execute the responsibilities of the appropriate certification level.

3.1.6 *safety-related coating system, n*—a coating system used inside or outside of the reactor containment, the detachment of which could adversely affect the safety function of safety-related system structure or component (SSC).

3.1.7 *training, n*—the program developed to ensure that personnel receive the knowledge and skills necessary for qualification.

[1] This guide is under the jurisdiction of ASTM Committee D33 on Protective Coating and Lining Work for Power Generation Facilities and is the direct responsibility of Subcommittee D33.04 on Quality Systems and Inspection.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American National Standards Institute, 11 W. 42nd Street, 13th Floor, New York, NY 10036.

4. Significance and Use

4.1 The requirements of this guide apply to personnel who perform coating work inspection during (*1*) fabrication, (*2*) receipt of items at the construction site, (*3*) construction, (*4*) pre-operational and startup testing, and (*5*) operational phases of nuclear facilities.

4.2 It is the responsibility of each organization participating in the project to ensure that only those personnel within their respective organizations who meet the requirements of this guide are permitted to perform coating work inspection activities covered by this guide.

4.3 The organization(s) responsible for establishing the applicable requirements for activities covered by this guide shall be identified, and the scope of their responsibility shall be documented. Delegation of this responsibility to other qualified organizations is permitted and shall be documented.

4.4 It is the responsibility of the organization performing these activities to specify the detailed methods and procedures for meeting the requirements of this guide, unless they are otherwise specified in the contract documents.

4.5 In the event of conflict, users of this guide must recognize that the licensee's plant-specific quality assurance program and licensing commitments shall prevail with respect to the process of qualifying personnel performing inspection of coating work.

5. General Requirements

5.1 Provisions shall be made for the indoctrination of personnel performing coating work inspection as to the technical objectives of the project, the codes and standards that are to be used, and the quality assurance elements that are to be employed.

5.2 The need for formal training programs shall be determined, and such training activities shall be conducted as required to qualify personnel who perform coating work inspection. On-the-job participation shall also be included in the program, with emphasis on first-hand experience gained through actual performance of inspections.

5.3 A candidate's qualifications for certification shall be initially determined by a suitable evaluation of the candidate's education, experience, training, examination results, and by a capability demonstration. The qualifying organization's determinations must reflect definitive criteria with respect to the extent and currency of a candidate's experience and training.

5.4 The job performance of personnel who perform coating work inspection shall be reevaluated at periodic intervals not to exceed three years. The reevaluation process shall weigh evidence of continued satisfactory performance of inspection for the required extent or redetermination of capability in accordance with 5.3. If, during this evaluation or at any other time, it is determined by the responsible organization that the capabilities of an individual are not in accordance with the qualifications specified for the job, that person shall be removed from that activity until the required capability has been demonstrated.

5.5 Any person who has not been actively engaged in the performance or supervision of coating work inspection for a period of one year shall be reevaluated in accordance with 5.3.

6. Functional Qualifications

6.1 All physical coating work inspection activities can be performed by personnel certified as qualified to perform coating work inspection as Level I, Level II, or Level III status.

6.2 Personnel certified as having attained Level I status shall be capable of the following:

6.2.1 Implementing and recording all inspections required by the applicable procedures.

6.2.2 Verifying instrument calibration.

6.2.3 Performing hold point inspections in accordance with the applicable procedures.

6.3 Personnel certified as having attained Level II status shall be capable of the following:

6.3.1 Performing all of the duties and responsibilities of Level I status personnel.

6.3.2 Planning and supervising inspections, initiating and reviewing inspection procedures, and evaluating the adequacy of activities.

6.3.3 Reviewing, organizing, and approving results of inspections.

6.3.4 Monitoring the performance of and supervising the work of Level I status personnel.

6.3.5 Training and verifying, for certification, the qualifications of candidates for Level I inspection.

6.3.6 Initiating changes to quality procedures.

6.3.7 Implementing the Quality Assurance Program if assigned that authority by company policy or the Quality Assurance Program.

6.4 Personnel certified as having attained Level III status, shall have verifiable experience in the U.S. commercial nuclear power industry. As indicated in 5.3, criteria with respect to the extent and currency of that experience must be established. Further, the following capabilities are required:

6.4.1 Carrying out all of the duties and responsibilities of Level II status personnel.

6.4.2 Training and verifying, for certification, the qualifications of candidates for Level I, Level II, and Level III inspection.

6.4.3 Evaluating the adequacy of programs used to train and certify personnel who will perform coating work inspection.

6.4.4 Authorizing personnel certified to perform Level II inspection to carry out training and examination duties.

6.4.5 Approving safety-related coating work inspection procedures.

7. Physical Qualifications

7.1 Individuals who perform coating work inspection shall be examined annually to ensure natural or corrected near-distance visual acuity in at least one eye. The individual shall read the J-1 letters on a Standard Jaeger Test Chart, or equivalent, at a distance of not less than 12 in. with one or both eyes, uncorrected or corrected.

7.2 Each candidate shall be examined for color perception using the Ishihara Test or the Farnsworth D-15 Test when being certified or recertified. If a candidate does not pass the Red/Green Sensitive Ishihara Test, the candidate may take the Farnsworth D-15 Test.

7.3 If a candidate does not pass the Farnsworth D-15 Test, the candidate may be evaluated by a licensed medical practitioner to provide the necessary data to determine the candidate's color perception. Individuals certified after an evaluation by a licensed medical practitioner may only be certified to perform inspection work that is within the candidates's color perception capability.

7.4 The examinations required by 7.1 and 7.2 shall be administered by a licensed medical practitioner or a person familiar with the tests involved. The results of vision tests shall be documented on a Vision Test Record (Fig. 1 or equivalent form).

7.5 The responsible organization shall identify any other physical qualifications required to perform the assigned inspection duties. Personnel performing inspection activities requiring the identified physical qualifications shall have those qualifications confirmed by examinations at intervals not to exceed one year.

8. Education, Training, and Experience Qualifications

8.1 Candidates for certification to perform coating work inspection shall have sufficient education, experience, and training to ensure an understanding of the principles and procedures in those areas of inspection, examination, and testing activities for which they are being considered for certification.

8.2 Candidates for certification to perform Level I inspection shall, as a minimum, meet one or more of the following requirements:

8.2.1 High school graduation plus six months of related experience in equivalent inspection activities.

8.2.2 Completion of college level work leading to an Associate Degree or higher, plus three months of related experience in equivalent inspection activities.

VISION TEST RECORD

Expires _____

NAME: _____
(Last) (First) (Middle Initial)

JOB NUMBER: _____ JOB NAME: _____

NEAR DISTANCE VISUAL ACUITY

1. Jaeger J-1 letters

Uncorrected, normal	YES	NO
Corrected, normal	YES	NO

-OR-

2. Alternative Method: _____

Uncorrected, normal	YES	NO
Corrected, normal	YES	NO

COLOR VISION

1. Ishihara's test chart YES NO

2. Alternative Method: _____

Color vision test findings: _____

The above-named individual has Passed/Failed the vision test as specified in Section 7 of this Guide.

THIS CERTIFICATION IS VALID FOR ONE YEAR FROM THE DATE OF EXAMINATION.

EXAMINER: _____
Type or print name followed by signature

TITLE: _____ DATE: _____

FIG. 1 Sample Vision Test Record