



# Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coating Work in Nuclear Facilities<sup>1</sup>

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 ( $\epsilon$ ) 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 coatings work whose satisfactory performance is required in order not to compromise systems used to mitigate the consequences of postulated accidents.

1.2 This guide provides a uniform interpretation of the requirements in ANSI/ASME N45.2.6-1978 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 are appropriate for special coating work outside of safety-related areas.

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 ANSI/ASME Standards:

- ANSI/ASME N45.2.6 Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants<sup>2</sup>
- ANSI/ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facilities.<sup>2</sup>

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

- 3.1.1 *certification*—written documentation of qualification.
- 3.1.2 *coating work inspection*—a phase of quality control which, by means of examination, observation, or measurement,

determines the conformance of coating work to predetermined quality requirements.

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

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

## 4. Significance and Use

4.1 The requirements of this guide apply to personnel who perform inspections of coating work 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 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.

## 5. General Requirements for Inspection Personnel

5.1 Provisions shall be made for the indoctrination of personnel 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 inspections. 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

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initially determined by a suitable evaluation of the candidate's education, experience, training, examination results, and capability demonstration.

5.4 The job performance of coating work inspection personnel shall be reevaluated at periodic intervals not to exceed three years. Reevaluation shall be by evidence of continued satisfactory performance 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 of Inspectors

6.1 All physical inspection activities can be performed by certified Level I, Level II, or Level III inspectors.

6.2 *Level I Coatings Inspector*, 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 *Level II Coatings Inspector*, shall be capable of the following:

6.3.1 Performing all of the duties and responsibilities of a Level I coatings inspector.

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 coatings inspectors.

6.3.5 Training and verifying the qualifications of Level I coatings inspectors for certification.

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 *Level III Coatings Inspector*, shall be capable of the following:

6.4.1 Carrying out all of the duties and responsibilities of a Level II coatings inspector.

6.4.2 Certifying Level I, Level II, and other Level III coatings inspectors.

6.4.3 Responsible for evaluating the adequacy of programs used to train coatings inspectors.

6.4.4 Responsible for authorizing Level II coatings inspectors to carry out training and examination duties.

6.4.5 Responsible for approving all safety-related inspection procedures.

## 7. Physical Qualifications of Inspectors

7.1 Each inspector 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 preception 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' 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. Inspectors requiring the identified physical qualifications shall have them confirmed by examinations at intervals not to exceed one year.

## 8. Education, Training, and Experience Qualifications

8.1 Candidates for certification as coatings inspectors 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 *Level I Coatings Inspectors*, 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.

8.3 *Level II Coatings Inspectors*, shall, as a minimum, meet one or more of the following requirements:

8.3.1 High school graduation plus one year of satisfactory performance as a Level I coating inspector in the corresponding inspection activity.

8.3.2 High school graduation plus three years of related experience in equivalent inspection activities.

8.3.3 Completion of college level work leading to an Associate Degree plus one year of related experience in equivalent inspection activities.

8.3.4 Four-year college graduation plus six months of related experience in equivalent inspection activities.

8.4 *Level III Coatings Inspectors*, shall meet one or more of the following requirements:

8.4.1 High school graduation plus six years of satisfactory performance as a Level II coatings inspector in the corresponding inspection activity.

8.4.2 High school graduation plus ten years of related experience in equivalent inspection activities; or high school



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
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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

graduation plus eight years experience in equivalent inspection activities, with at least two years as a Level II coatings inspector. The candidate shall have at least two years associated with nuclear facilities or sufficient training to be knowledgeable of the quality assurance requirements for nuclear coating work.

8.4.3 Completion of college level work leading to an Associate Degree and seven years of related experience in equivalent inspection activities. The candidate shall have at least two years of this experience associated with nuclear facilities or sufficient training to be knowledgeable of the quality assurance requirements for nuclear coating work.

8.4.4 Four-year college graduation plus five years of related experience in equivalent inspection activities. The candidate shall have at least two years of this experience associated with nuclear facilities or sufficient training to be knowledgeable of the quality assurance requirements for nuclear coating work.

8.5 Compliance with the requirements of 8.1, 8.2, 8.3, and 8.4 shall be documented on an Education and Experience Record (Fig. 2 or equivalent form).

8.6 Training leading to certification or recertification as a qualified coatings inspector shall be documented on an Orga-

nizational Training Record (Fig. 3 or equivalent form).

9. Examination

9.1 Each candidate for coatings inspector shall be given an examination covering the general, specific, and practical aspects of coatings inspection. The general and specific portions of the examination may be written, in the form of a personal interview, or a combination of both. The examination results shall be documented in accordance with 11.1.

9.1.1 The general portion of the examination shall cover the basic principles of quality assurance and coating work inspection.

9.1.2 The specific portion of the examination shall cover specific coating work requirements and inspection procedures.

9.1.3 The practical portion of the examination shall cover the use of coating work inspection equipment and inspection procedures.

9.1.4 All parts of the examination for a Level I or Level II coatings inspector shall be administered by a Level III coatings inspector or a duly authorized Level II coatings inspector.

9.1.5 Examinations for a Level III coatings inspector shall be administered by a certified Level III coatings inspector or by

## EDUCATION AND EXPERIENCE RECORD

NAME: \_\_\_\_\_  
(Last) (First) (Middle Initial)*EDUCATION:**EXPERIENCE:**PROFESSIONAL DATA:*

I certify that the above information is accurate.

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Candidate**FIG. 2 Sample Education and Experience Record**

the responsible organization's management.

**10. Performance**

10.1 Personnel assigned the responsibility and authority to perform functions covered by this guide shall have, as a minimum, the appropriate level of capability given in Section 6. When a single inspection requires implementation by a team or group, personnel not meeting the requirements of this Guide may be used in data-taking assignments or in plant or equipment operation provided they are supervised or overseen by a qualified individual participating in the inspection.

10.2 A certified coatings inspector shall submit annually a summary of coatings related inspection/testing activities performed between certification anniversary dates in order to maintain the validity of the certification. This summary for a Level I or Level II coatings inspector shall be reviewed by a certified Level III coatings inspector or his designee, signed and placed in the coatings inspector's certification file. The summary review for a Level III coatings inspector shall be conducted by another certified Level III coatings inspector or the responsible organization's management, signed and placed in the inspector's certification file.

10.3 Any certified coatings inspector not performing coatings related inspection/testing work between certification anniversary dates shall be recertified in accordance with 11.2, after it is reconfirmed that the inspector's capabilities meet the requirements of this guide.

**11. Certification of Inspectors**

11.1 Level I and Level II coatings inspection certifications are valid for a period not to exceed three years. Level III coatings inspector certifications are valid for a period not to exceed five years. Coatings inspectors are certified after review of the candidate's qualifications for compliance with this guide. The examiner shall document the interview of the candidate and the review of the candidate's capabilities, education, experience, vision records, training records, and applicable examination records. Certifications are documented on a Record of Certification (Fig. 4 or equivalent form).

11.2 Coatings inspectors shall be recertified as required by 11.1 after evaluation of their work record. Individual work records shall show evidence of continuing satisfactory performance.

11.3 Level I and Level II coatings inspectors are certified or





RECORD OF CERTIFICATION

Date Certified: \_\_\_\_\_

Expiration: \_\_\_\_\_

TO WHOM IT MAY CONCERN:

SUBJECT: Coatings Inspector Certification, Level \_\_\_\_

REFERENCE: ASTM Standard Guide \_\_\_\_\_ Rev. \_\_\_\_

\_\_\_\_\_ has complied with, and successfully passed, all of the applicable requirements of the referenced Standard Guide.

EXAMINATION SCORES	GENERAL PORTION _____
	SPECIFIC PORTION _____
	PRACTICAL PORTION _____

I certify that the above statements are correct and recommend certification as a Level \_\_\_\_ Coatings Inspector.

RECOMMENDED BY

NAME: \_\_\_\_\_  
Type or print followed by signature

TITLE: \_\_\_\_\_

The above statement and recommendation have been reviewed for conformance to the requirements of the referenced Standard, and are correct. This individual is certified as Level \_\_\_\_ coatings inspector in accordance with the referenced Standard Guide.

CERTIFIED BY

\_\_\_\_\_  
Type or print name followed by signature  
(must comply with 11.3 of the Standard Guide)

**FIG. 4 Sample Record of Certification**

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