AWS B5.15:2010
An American National Standard

Specification for the Qualification of Radiographic Interpreters

American Welding Society

Approved American National Standard
ANSI

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Approved by the
American National Standards Institute
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Specification for the Qualification of Radiographic Interpreters

2nd Edition

Supersedes AWS B5.15:2003

Prepared by the
American Welding Society (AWS) B5K Subcommittee on NDE Personnel

Under the Direction of the
AWS Personnel and Facilities Qualification Committee

Approved by the
AWS Board of Directors

Abstract

This specification defines the requirements for the qualification of radiographic interpreters. The qualification of radiographic interpreters requires experience, knowledge, and skills unique to the interpretation of radiographic media and the determination of acceptance criteria for weldments and adjacent base metal. Training and work experience in radiographic theory, procedures, weld and adjacent base metal defect recognition, radiographic processing, handling, storage, and code requirements relating to radiographic acceptance criteria are essential to ensuring the competence of individuals engaged in radiographic interpretation.

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On occasion, text, tables, or figures are printed incorrectly, constituting errata. Such errata, when discovered, are posted on the AWS web page (www.aws.org).

Official interpretations of any of the technical requirements of this standard may only be obtained by sending a request, in writing, to the appropriate technical committee. Such requests should be addressed to the American Welding Society, Attention: Managing Director, Technical Services Division, 550 N.W. LeJeune Road, Miami, FL 33126 (see Annex A). With regard to technical inquiries made concerning AWS standards, oral opinions on AWS standards may be rendered. These opinions are offered solely as a convenience to users of this standard, and they do not constitute professional advice. Such opinions represent only the personal opinions of the particular individuals giving them. These individuals do not speak on behalf of AWS, nor do these oral opinions constitute official or unofficial opinions or interpretations of AWS. In addition, oral opinions are informal and should not be used as a substitute for an official interpretation.

This standard is subject to revision at any time by the AWS Personnel and Facilities Qualification Committee. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn. Comments (recommendations, additions, or deletions) and any pertinent data that may be of use in improving this standard are required and should be addressed to AWS Headquarters. Such comments will receive careful consideration by the AWS Personnel and Facilities Qualification Committee and the author of the comments will be informed of the Committee's response to the comments. Guests are invited to attend all meetings of the AWS Personnel and Facilities Qualification Committee to express their comments verbally. Procedures for appeal of an adverse decision concerning all such comments are provided in the Rules of Operation of the Technical Activities Committee. A copy of these Rules can be obtained from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Personnel

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Foreword

This foreword is not part of AWS B5.15:2010, *Specification for the Qualification of Radiographic Interpreters*, but is included for informational purposes only.

This specification was developed by the Personnel and Facility Qualification Committee in response to an industry demand for a qualification document for radiographic interpreters. This specification establishes the qualification requirements from which a central certification agency or an employer may develop a certification program for radiographic interpreters. This is the second edition of this specification. The first edition was published in 2003; the first edition was amended in 2007.

The primary revision between the first edition and this edition is the addition of Subclause 10.2 on examination structure. This specification now provides examinations subjects and weights for those examinations subjects. This change was made in response to organizations and companies who implemented the first edition in their personnel certification and qualification. Revisions to the previous edition are underlined throughout the standard.

The purpose of radiographic interpretation is to properly assess indications produced on radiographic media during the process of weldment or adjacent base metal evaluation. The Radiographic Interpreter must be thoroughly familiar with the process of radiography as well as the welding processes. This includes, but may not be limited to: welding processes, materials, limitation of various testing methods, drawings, procedures, specifications, behavior of different types of radioactivity (particles and photons), film construction, behavior of energy sensitive imaging systems, mathematics, radiographic film selection, handling, and storage. For Radiographic Interpreters to be effective, they must not only be technically competent, but also consistent and ethically principled in their dealings with clients and employers.

Personnel seeking qualification to this specification should be prepared to receive instruction by their employers with regard to specific duties required for employment. In addition to the competence level and areas specified herein, each employer must provide job orientation and/or training to ensure the competence of their employees.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS Personnel and Facility Qualification Committee, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Specification for the Qualification of Radiographic Interpreters

1. Scope

1.1 General. This specification establishes the requirements for qualification of radiographic interpreters. It describes how these personnel shall be qualified, establishes training requirements, defines experience requirements, and establishes areas and levels of knowledge required to perform the functions related to radiographic interpretation.

1.2 Training. The employer shall be responsible for providing job-specific training and/or orientation of the radiographic interpreter to ensure his/her understanding of the special requirements of the employer.

1.3 Personal Capabilities. It shall be the responsibility of the employer to determine if the radiographic interpreter is physically and mentally capable of performing the duties involved in the work assignment. Visual acuity requirements are specified in this specification. Mental capabilities shall include, but not be limited to, an ability to render fair and unbiased judgment and communicate said judgments to others in a manner which is helpful and well understood.

1.4 Rights of Employers. This specification is intended to supplement the requirements of an employer, standard, or other documents and shall not be construed as a preemption of the employer's rights and responsibilities for the quality of work provided under contract to others.

1.5 Terminology. As used in this specification, the word ***shall*** denotes a requirement; the word ***should*** denotes a guideline; and the word ***may*** denotes a choice.

1.6 Safety and Health. Some safety and health issues may be beyond the scope of this standard and therefore not be fully addressed by this standard. Users of this standard should consult ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, applicable federal, state, and local regulations and other relevant documents concerning safety and health issues not addressed herein.

2. Referenced Documents

ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*[1]

API 1104, *Welding of Pipelines and Related Faci*lities[2]

ASME B31.1, *Power Piping*[3]

ASME B31.3, *Process Piping*[3]

ASME *Boiler and Pressure Vessel Code, Section I: Rules for Construction of Power Boilers*[3]

ASME *Boiler and Pressure Vessel Code, Section V: Nondestructive Examination*[3]

ASME *Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels*[3]

[1] Published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.
[2] Published by the American Petroleum Institute, NW 1220 L Street, Washington, DC 20005-4070.
[3] Published by the ASME International, Information Central, P.O. Box 2300, Fairfield, NJ 07007-2300.

ASNT Publication, *A Guide for Developing NDT Certification Examinations*[4]

AWS A3.0, *Standard Welding Terms and Definitions*[5]

AWS D1.1, *Structural Welding Code—Steel*[5]

AWS D15.1, *Railroad Welding Specification for Cars and Locomotives*[5]

3. Terms and Definitions

Specialized terms used in this specification are defined as follows. All other terms used in this specification are defined in AWS A3.0, *Standard Welding Terms and Definitions*.

acceptance criteria. Specified limits placed on characteristics of an item, process, or service defined in codes, other standards, or other documents.

candidate. An individual seeking qualification.

media. Mechanisms used to display a radiographic image (e.g., film, digital images, or real-time displays).

Radiographic Interpreter (RI). A person capable by training and/or experience to perform the duties and responsibilities of radiographic interpretation.

4. Qualification

4.1 A radiographic interpreter meeting the requirements of Clauses 6, 7, and 8 shall be considered qualified as a Radiographic Interpreter (RI).

4.2 Qualification of Radiographic Interpreters tested to the requirements of this specification shall remain in effect unless the Radiographic Interpreter has not been engaged in interpretation for a period exceeding six months.

5. Functions

The capabilities and duties of the RI shall be as follows:

5.1 Capabilities

5.1.1 The RI shall be physically and mentally able to perform radiographic interpretations and maintain records conforming to the requirements of the applicable standards and other documents.

5.1.2 The RI shall be able to assess the quality of radiographic media to verify its conformance with quality standards published in appropriate codes, specifications, or other standards.

5.1.3 The RI shall be capable of assessing images as well as the appearances of artifacts upon the radiographic media.

5.1.4 The RI shall be able to evaluate discontinuities in relation to standards or other mandatory requirements.

5.1.5 The RI shall be capable of evaluating the results of various radiographic exposure techniques including double wall view, single wall view, film side, source side, and double wall exposure. The RI shall be capable of understanding how the radiograph was processed in order to perform accurate interpretations.

5.1.6 The RI shall be capable of discussing his or her evaluations with others in order to permit their verification of results including physical excavation and visual confirmation, if necessary.

[4] Published by the American Society for Nondestructive Testing, P.O. Box 28518, 1711 Arlingate Lane, Columbus, OH 43228-0518.
[5] Published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

5.2 Duties. The radiographic interpreter's specific duties for an employer are defined by the employer; however, RIs shall be able to demonstrate an understanding of and the ability to perform the following duties:

5.2.1 Interpret drawings and other documents related to the film interpretation.

5.2.2 Verify proper selection, handling, and storage of the radiographic film prior to use.

5.2.3 Verify all required information for radiographic traceability and an image quality indicator is present and readable on the radiographic media.

5.2.4 Evaluate the radiographic images to the required acceptance criteria.

5.2.5 Document the acceptance or rejection of the work using the forms provided or developed for radiographic interpreter.

5.2.6 Mark repair/reject areas when required.

5.2.7 Produce clear and concise documented records of interpretations and radiographic media quality.

5.2.8 Discuss findings in order to permit determination of root cause and corrective action.

6. Education, Training, and Experience Requirements

Each candidate for qualification as a Radiographic Interpreter shall meet the following minimum requirements:

6.1 Education Requirements. To be qualified as a Radiographic Interpreter, each individual shall hold a valid high school diploma or General Equivalency Diploma (GED).

6.2 Training Requirements. Shall have a minimum of 40 hours of organized training in radiographic interpretation/examination. The training should include the topics contained in Clause 9, Body of Knowledge.

6.3 Experience Requirements. Shall have a minimum of one year experience as a certified (company or nationally) individual in radiographic interpretation of media (i.e., Radiographic Level II or III Inspector or NAVSEA Inspector or Examiner), or under the direct supervision of such an individual. Direct supervision, for the purposes herein, means under the visual and audible control of another person. A maximum of six months experience may be substituted by one or more of the following:

6.3.1 Every month of post high school NDE or weld inspection education may be substituted for an equal number of months of radiographic interpretation experience; however, such substitution shall be acceptable by the employer. This acceptance shall be documented in the RI candidate's qualification record.

6.3.2 Every four months of experience as a certified (company or nationally) weld inspector using NDE methods other than radiography may be substituted for one month of radiographic interpretation experience.

6.3.3 Every four months of NDE weld inspection teaching experience may be substituted for one month of radiographic interpretation experiences, provided the teaching experience is documented by the educational institution or organization employing the teacher.

Note: When substitution of 6 months experience is requested, NDE weld inspection experience, course participation or teaching experience may not accumulate concurrently in such a manner that the total number of months being substituted exceeds the number of months in the calendar interval in which it was accumulated. Under no circumstances will more than six months be substituted toward the experience requirements listed in 6.3.

7. Examination Requirements

7.1 General Requirements. Candidates shall meet all of the following examination requirements in order to determine their comprehension and retention of the materials presented during training courses established for the purpose of qualification.

7.1.1 General Knowledge Examination. Successfully complete (minimum 70% correct score) a multiple choice, written examination covering subjects related to welding, metallurgy, mathematics, radiographic theory, film selection, film processing, film handling and storage, and codes, specifications, and other standards.

7.1.2 Code Knowledge Examination. Successfully complete (minimum 70% correct score) a multiple choice, written, open-book examination covering the contents relating to radiographic quality and film interpretation of API 1104, ASME B31.3, ASME B31.1, AWS D1.1, AWS D15.1, ASME Section VIII: Division 1, ASME Section I, ASME Section V, or others as new tests are developed.

7.1.3 Practical (Film Interpretation) Examination. Successfully complete (minimum 70% correct score) a multiple choice, written examination consisting of interpreting a minimum of 10 radiographs to a code, specification, or other standard.

7.1.4 Composite Score Examination Requirements. A composite score based on simple averaging of the three scores listed in 7.1.1, 7.1.2, and 7.1.3 shall be a minimum of 80% to successfully pass.

7.2 Examination Equipment. Equipment used to permit participants to view radiographic specimens shall be checked prior to use to ensure their proper operation. Other devices used to verify film density, etc., shall be calibrated and in good operating condition. Equipment shall be of a type and model which, as closely as possible, matches that needed to view and interpret production radiographs.

8. Visual Acuity

Good near-vision is necessary to perform the functions of the radiographic interpreter. The inability to differentiate relatively small indications on radiographic film may result in allowing weldments or adjacent base metal with rejectable defects to be placed into service. It is therefore important to ensure radiographic interpreters are capable of seeing adequately in the near field of 12 inches (305 mm) as this is typically the distance from the face to the viewed image.

8.1 Near Vision Acuity. Radiographic interpreters shall have the ability to read a minimum of Jaeger Number 2 letters at a minimum of 12 inches (305 mm) or better in at least one eye with or without correction.

9. Body of Knowledge

The following information should be used to create the course outline.

9.1 Nature and Properties of X and Gamma Radiation

(1) penetration

(2) absorption

(3) scatter

(4) diffraction

(5) transmission

(6) rectilinear propagation

(7) photographic properties

9.2 Photographic Aspects

(1) types of film and paper used in industrial radiography

(2) characteristic curves

(3) characteristics

  (a) speed

  (b) contrast

(c) definition

(d) density

(e) fog

(f) graininess

(g) inherent unsharpness

(h) latitude

(4) commercial films and their properties

(a) retention life

(b) long term storage

(5) filing and separation techniques

(6) dark room procedures

(a) layout

(b) light traps and entrance

(c) wet and dry benches

(d) film pass hatches

(e) processing units

(f) safe-lights and ancillary equipment

(g) storage, handling, and loading

(h) film processing (automatic and manual)

(i) temperature control

(7) intensifying screens

(8) spurious indications

(a) light (and safe-light) fogging

(b) light leaks

(c) chemical fog

(d) stains

(e) air bubbles

(f) reticulation

(g) pressure marks

(h) static marks

(i) drying marks

(j) finger marks

(k) defective screens

(l) incomplete fixing

(m) film manufacturing faults

9.3 Fundamental Aspects of Radiographic Quality

(1) quality of radiation

(2) optimum working densities

(3) radiographic contrast

(a) objective and subjective contrast

(b) methods of controlling radiographic contrast

(c) effects and control of scattered radiation

(d) use of filters, screens, masking, and blocking media

(e) influence of processing conditions and viewing conditions on contrast

(4) radiographic definition

(a) objective and subjective

(b) poor definition

(c) geometric unsharpness

(d) inter-relationship of dimensions of focal spot or source

(e) source-to-object and source-to-film distances

(f) inherent unsharpness

(g) movement

(h) film screen contact

(i) summation of factors controlling definition

(5) control of radiographic sensitivity and its assessment by the use of image quality indicators

9.4 Radiation Safety Principles

(1) controlling personnel exposure

(2) time, distance, and shielding

(3) ALARA (as low as reasonably achievable)

(4) radiation detection equipment

(5) exposure device operating characteristics

9.5 X-Ray and Gamma Ray Equipment

(1) the effects on radiographic quality in the event of equipment change.

9.6 Geometry of Image Formation

(1) geometric unsharpness

(2) control of source-to-object distance, object-to-film distance, source-to-film distance

(3) image quality indicator (IQI) sensitivity

(4) selection of beam angle

9.7 Exposure Calculations

(1) effect of distance on exposure

(2) use of exposure charts and calculators for X and gamma radiography

9.8 Application to Welds

(1) interpretation of radiographs of welds in different materials and joint geometries

(2) multiple-film techniques

(a) thickness-variation parameters

(b) film speed

(c) film latitude

(3) welds in small bore tubes

(4) the determination of the depth of a flaw from one surface in a specimen by the practical use of the tube or source shift method (triangulation method)

(5) exposure geometry

(6) coverage and number of exposures

9.9 Viewing Radiographs

(1) film illuminator requirements

(2) background lighting

(3) multiple-composite viewing

(4) image quality indicator (IQI) placement and selection

(5) personnel darkroom adaptation and visual acuity

(6) film identification

(7) location markers

(8) film density measurement and calibration

(9) film artifacts

(10) analyze the loss of sensitivity in order to rectify faulty techniques

9.10 Welding Technology

(1) terminology for welds

(2) welded joints

(3) welding procedures

(4) weld discontinuities

(5) base metal discontinuities

(6) influence on techniques of geometry, size, surface condition, base metal composition, and weld metal structure

(7) influence of surface cladding, heat treatments, and weld repairs

(8) basic principles of fusion welding processes

(9) types of discontinuities associated with particular base metal/welding process combinations

(10) types of discontinuities in welds and base metals detectable by radiography

(11) defect characteristics which influence detectability

(a) size

(b) geometry

(c) distance from surface

(d) orientation

(e) reflectivity

(f) opacity/atomic number effects

(12) welding safety

Course Duration: 40 Hours minimum

10. Examination Structure

10.1 Examination Basis Documents. The examination questions and answers may be based upon the following reference information.

(1) American Society for Nondestructive Testing (ASNT), *Nondestructive Testing Handbook*, Volume 4—*Radiographic Testing*, 3rd ed., 2002. Columbus, Ohio: American Society for Nondestructive Testing.[6]

(2) American Society for Nondestructive Testing (ASNT), *Radiographic Testing Programmed Instruction Handbook* (PI-4-6), Volume IV—*Making a Radiograph*, 2nd ed., 1983. Columbus, Ohio: American Society for Nondestructive Testing.[6]

(3) American Society for Nondestructive Testing (ASNT), *Radiographic Testing Programmed Instruction Handbook* (PI-4-6), Volume V—*Film Handling and Processing*, 2nd ed., 1983. Columbus, Ohio: American Society for Nondestructive Testing.[6]

(4) Electric Power Research Institute (EPRI), *NDE Characteristics of Pipe Weld Defects*, NP-1590-SR, 1980. Palo Alto, California: Electric Power Research Institute.[6]

(5) Hellier, C., and G. Wheeler, *Radiographic Interpretation*, revised edition, 2004. Columbus, Ohio: American Society for Nondestructive Testing.[6]

(6) American Welding Society (AWS), *Welding Inspection Handbook*, 3rd ed., 2000, Miami, Florida: American Welding Society.[7]

(7) American Welding Society (AWS), *Practical Reference Guide To Radiographic Interpretation Acceptance Criteria*, 1995. Miami, Florida: American Welding Society.[7]

(8) American Welding Society (AWS), *Welding Handbook*, Volume 1—*Welding Science and Technology*, 9th ed. Miami, Florida: American Welding Society.[7]

(9) AWS B1.10:1999, *Guide For the Nondestructive Examination of Welds*. Miami, Florida: American Welding Society.[7]

10.2 Examination Structure. The body of knowledge as described in Clause 9 shall be represented on the examination in accordance with the following proportions. The taxonomy Cognitive Levels shall be as described in ASNT publication, *A Guide for Developing NDT Certification Examinations*.

[6] Published by the American Society for Nondestructive Testing, P.O. Box 28518, 1711 Arlingate Lane, Columbus, OH 43228-0518.
[7] Published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

10.2.1 General Knowledge Examination. These taxonomy of the questions shall be Cognitive Level 1 or 2 as follows:

Body of Knowledge Items (subclause)	Minimum Percentage of Questions
nature and properties of X and gamma radiation (9.1)	5%
photographic aspects (9.2)	15%
fundamental aspects of radiographic quality (9.3) and geometry of image formation (9.6)	40%
radiation safety principles (9.4)	2%
X-ray and gamma ray equipment (9.5)	1%
exposure calculations (9.7)	1%
application to welds (9.8)	5%
viewing radiographs (9.9)	1%
welding technology (9.10)	25%

10.2.2 Code Knowledge Examination. These taxonomy of the questions shall be Cognitive Level 2 or 3 as follows:

Body of Knowledge Items (subclause)	Minimum Percentage of Questions
nature and properties of X and gamma radiation (9.1)	0%
photographic aspects (9.2)	0%
fundamental aspects of radiographic quality (9.3) and geometry of image formation (9.6)	35%
radiation safety principles (9.4)	0%
X-ray and gamma ray equipment (9.5)	3%
exposure calculations (9.7)	1%
application to welds (9.8)	25%
viewing radiographs (9.9)	30%
welding technology (9.10)	1%

10.2.3 Practical (Film Interpretation) Examination. These questions shall be Cognitive Level 3 or 4 as follows:

Body of Knowledge Items (subclause)	Minimum Percentage of Questions
nature and properties of X and gamma radiation (9.1)	0%
photographic aspects (9.2)	0%
fundamental aspects of radiographic quality (9.3) and geometry of image formation (9.6)	40%
radiation safety principles (9.4)	0%
X-ray and gamma ray equipment (9.5)	0%
exposure calculations (9.7)	0%
application to welds (9.8)	40%
viewing radiographs (9.9)	15%
welding technology (9.10)	0%

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Annex A
Guidelines for the Preparation of Technical Inquiries

This annex is not part of AWS B5.15:2010, *Specification for the Qualification of Radiographic Interpreters,* but is included for informational purposes only

A1. Introduction

The American Welding Society (AWS) Board of Directors has adopted a policy whereby all official interpretations of AWS standards are handled in a formal manner. Under this policy, all interpretations are made by the committee that is responsible for the standard. Official communication concerning an interpretation is directed through the AWS staff member who works with that committee. The policy requires that all requests for an interpretation be submitted in writing. Such requests will be handled as expeditiously as possible, but due to the complexity of the work and the procedures that must be followed, some interpretations may require considerable time.

A2. Procedure

All inquiries shall be directed to:

Managing Director
Technical Services Division
American Welding Society
550 N.W. LeJeune Road
Miami, FL 33126

All inquiries shall contain the name, address, and affiliation of the inquirer, and they shall provide enough information for the committee to understand the point of concern in the inquiry. When the point is not clearly defined, the inquiry will be returned for clarification. For efficient handling, all inquiries should be typewritten and in the format specified below.

A2.1 Scope. Each inquiry shall address one single provision of the standard unless the point of the inquiry involves two or more interrelated provisions. The provision(s) shall be identified in the scope of the inquiry along with the edition of the standard that contains the provision(s) the inquirer is addressing.

A2.2 Purpose of the Inquiry. The purpose of the inquiry shall be stated in this portion of the inquiry. The purpose can be to obtain an interpretation of a standard's requirement or to request the revision of a particular provision in the standard.

A2.3 Content of the Inquiry. The inquiry should be concise, yet complete, to enable the committee to understand the point of the inquiry. Sketches should be used whenever appropriate, and all paragraphs, figures, and tables (or annex) that bear on the inquiry shall be cited. If the point of the inquiry is to obtain a revision of the standard, the inquiry shall provide technical justification for that revision.

A2.4 Proposed Reply. The inquirer should, as a proposed reply, state an interpretation of the provision that is the point of the inquiry or provide the wording for a proposed revision, if this is what the inquirer seeks.

A3. Interpretation of Provisions of the Standard

Interpretations of provisions of the standard are made by the relevant AWS technical committee. The secretary of the committee refers all inquiries to the chair of the particular subcommittee that has jurisdiction over the portion of the standard addressed by the inquiry. The subcommittee reviews the inquiry and the proposed reply to determine what the response to the inquiry should be. Following the subcommittee's development of the response, the inquiry and the response are presented to the entire committee for review and approval. Upon approval by the committee, the interpretation is an official interpretation of the Society, and the secretary transmits the response to the inquirer and to the *Welding Journal* for publication.

A4. Publication of Interpretations

All official interpretations will appear in the *Welding Journal* and will be posted on the AWS web site.

A5. Telephone Inquiries

Telephone inquiries to AWS Headquarters concerning AWS standards should be limited to questions of a general nature or to matters directly related to the use of the standard. The AWS *Board Policy Manual* requires that all AWS staff members respond to a telephone request for an official interpretation of any AWS standard with the information that such an interpretation can be obtained only through a written request. Headquarters staff cannot provide consulting services. However, the staff can refer a caller to any of those consultants whose names are on file at AWS Headquarters.

A6. AWS Technical Committees

The activities of AWS technical committees regarding interpretations are limited strictly to the interpretation of provisions of standards prepared by the committees or to consideration of revisions to existing provisions on the basis of new data or technology. Neither AWS staff nor the committees are in a position to offer interpretive or consulting services on (1) specific engineering problems, (2) requirements of standards applied to fabrications outside the scope of the document, or (3) points not specifically covered by the standard. In such cases, the inquirer should seek assistance from a competent engineer experienced in the particular field of interest.

List of AWS Documents on Personnel and Facilities Qualification

Designation	Title
B5.1:2003	*Specification for the Qualification of Welding Inspectors*
B5.2:2001	*Specification for the Qualification of Welding Inspectors Specialists and Welding Inspector Assistants*
B5.4:2005	*Specification for the Qualification of Welder Test Facilities*
B5.5:2000	*Specification for the Qualification of Welding Educators*
B5.9:2006	*Specification for the Qualification of Welding Supervisors*
B5.14:2009	*Specification for the Qualification of Welding Sales Representatives*
B5.15:2010	*Specification for the Qualification of Radiographic Interpreters*
B5.16:2006	*Specification for the Qualification of Welding Engineers*
B5.17:2008	*Specification for the Qualification of Welding Fabricators*