

AWS B5.4:2005
An American National Standard



Specification for the Qualification of Welder Test Facilities



American Welding Society



Key Words—Test facility, qualification, laboratory,
welders, assessor, assessment

AWS B5.4:2005
An American National Standard

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Specification for the Qualification of Welder Test Facilities

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Prepared by
AWS B5J Subcommittee on Test Facilities

Under the Direction of
AWS Personnel and Facility Qualification Committee

Approved by
AWS Board of Directors

Abstract

This specification defines the requirements to qualify welder test facilities. It details the methods of qualification, test facility requirements, and the assessment requirements.



American Welding Society

550 N.W. LeJeune Road, Miami, Florida 33126

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Foreword

(This Foreword is not a part of AWS B5.4:2005, *Specification for the Qualification of Welder Test Facilities*, but is included for informational purposes only.)

Purpose

The purpose of this specification is to establish the requirements for a facility to conduct performance qualification testing of welders. These requirements include personnel, organization, procedures, equipment, capability, and commitment to conduct such testing. This specification also describes the activities and responsibilities of the test facility to achieve this purpose.

Note: It is the test facilities representative's responsibility to be sure their inspectors meet any state or local requirements for qualifications and reporting organization.

History

This specification supersedes and replaces in part AWS standard QC4-89, *Standard for the Accreditation of Test Facilities for the AWS Certified Welder Program*. This standard defines the requirements for qualification of the facility but does not address requirements for the accreditation of the facility. This approach is the result of the division of qualification from certification activities that AWS instituted in 1996. At that time, the functions of the existing AWS Qualification and Certification Committee were divided. Activities concerning qualification were assigned to a new B5 Qualification Committee under the direction of the Technical Activities Committee. Certification activities were assigned to a new standing committee, the AWS Certification Committee. The Certification Committee and the Technical Activities Committee report to the same AWS Standards Council.

In 1996, the B5J Subcommittee on Test Facilities was formed to draft a specification on the qualification of test facilities, independent of the accreditation of those facilities. Users of this standard who are interested in accreditation of welder test facilities should consult the corresponding certification standard.

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.

Official interpretations of any of the technical requirements of this standard may only be obtained by sending a request, in writing, to the Managing Director, Technical Services Division, American Welding Society (see Annex D). A formal reply will be issued after it has been reviewed by the appropriate personnel following established procedures.

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Specification for the Qualification of Welder Test Facilities

1. Scope

1.1 Requirements. This specification defines minimum requirements to enable welder qualification test facilities to consistently conduct welder qualification testing to meet the requirements of codes and other standards.

This specification may be used by all welder qualification test facilities. Test facilities may be part of an independent laboratory, manufacturing plant, educational institution, or other party. This document becomes mandatory when invoked by a referencing document such as a specification or contract document. It should also be noted that this specification does not establish welder certification requirements.

1.2 Procedure. This specification establishes procedures that allow welder qualification test facilities to consistently perform welder qualification testing.

1.3 Safety Precautions. Safety and health issues and concerns are beyond the scope of this standard and, therefore, are not addressed herein. Safety and health information is available from other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

1.4 Terminology Guidelines. As used in this specification, the word *shall* denotes a mandatory provision; the word *should* denotes a nonmandatory provision but is recommended as good practice; and the word *may* denotes an optional provision. Additionally, *welder* shall be construed to include welder, welding operator, tack welder, brazer, and brazing operator; *welding* shall be construed to include both welding and brazing.

2. Referenced Documents

(1) ANSI Z49.1, *Safety in Welding, Cutting and Allied Processes*¹

(2) AWS QC1, *Standard for AWS Certification of Welding Inspectors*¹

(3) AWS A3.0, *Standard Welding Terms and Definitions*¹

(4) AWS A5.01, *Filler Metal Procurement Guidelines*¹

(5) AWS B4.0, *Standard Methods for Mechanical Testing of Welds*¹

(6) AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*¹

(7) ASNT SNT-TC-1A, *Recommended Practice: Personnel Qualification and Certification in Nondestructive Testing*²

3. Definitions

Terms used in this specification are defined in AWS A3.0, *Standard Welding Terms and Definitions*, and as follows:

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

accreditation body. Any organization qualified to certify test facilities as acceptable suppliers of services including but not limited to AWS Certification Committee.

assessment. A systematic review and verification of a facility and operations in accordance with its Quality Control Manual.

assessor. A third party who is qualified for the task of performing assessments. (See Annex B.) In the case of self-assessing test facilities, the agent designated and trained by the test facility.

1. ANSI Z49.1 and AWS standards are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

2. ASNT standards are published by the American Society for Nondestructive Testing, Inc., 1711 Arlingate Lane, Columbus, OH 43228-0518.

AWS. The American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

certification. The act of determining, verifying, and attesting in writing to the qualification of personnel in accordance with specified requirements.

Certification Department. The Certification Department of the American Welding Society, Miami, Florida.

essential variable. A change in a welding parameter which requires requalification.

facility representative. Individual(s) designated by the test facility to make legally binding commitments and statements on behalf of the test facility.

inspection. An examination or measurement to verify whether an item or activity conforms to specified requirements.

inspector. A person who performs inspection activities to verify conformance to specified requirements.

performance test description. A document which defines the dimensions, positions, and welding procedure specification to be used to make a test weldment.

qualification. Conformance to a prescribed set of parameters.

Qualification Committee. The Qualification Committee of the American Welding Society.

qualified facility. A facility which meets or exceeds the requirements of this specification.

test facility. A facility that has met the qualification requirements of this specification as verified by a designated third party assessor.

test supervisor. A current AWS Certified Welding Inspector (CWI) designated by the test facility.

test weldment. Workpieces joined by welding to qualify welding procedures, welders, or welding operators.

verification. The act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting the conformance of items, processes, services, and documents to specified requirements.

weldment. An assembly whose component parts are joined by welding.

4. Levels of Qualification

There is one level of qualification for test facilities. Once the test facility has met the requirements of this standard, the test facility shall be known as a qualified test facility.

5. Test Facility Requirements

5.1 General Requirements. The test facility shall have the following:

(1) An organizational structure, including a quality control program, that enables it to maintain the capability to perform satisfactorily the technical functions for which qualification is sought.

(2) The ability to demonstrate on request from assessors, that it is capable of administering and evaluating the required welder qualification tests.

(3) A written company policy that staff members shall have the freedom and authority to identify problems to a supervisor.

(4) An organization in which each staff member is aware of both the extent and limitation of areas of responsibility, and a clear designation of who is the "facility representative."

(5) A facility representative who has the overall responsibility for the technical operation of the test facility.

(6) Adequate security rules and measures for protection of proprietary and confidential information.

(7) Personnel having responsibility for quality verification shall be designated by the test facility management. Personnel shall have access to top management.

5.2 Quality Control Program. The test facility shall operate under a Quality Control Program appropriate to the type, range, and volume of work performed. This program shall be documented in a Quality Control Manual to be used by the test facility staff for the purpose of maintaining quality control. The manual shall be maintained current at all times, and shall be available for review by both internal and external assessors.

5.2.1 Manual. The Quality Control Manual shall contain information regarding the following:

(1) Company Quality Policy.

(2) The organizational structure of the personnel of the test facility (organizational charts).

(3) The operational and functional duties of individuals performing quality functions and services pertaining to quality, so that those concerned will know the extent and limits of their responsibilities (job descriptions).

(4) General Quality Control Procedures. (These procedures are to include but not be limited to material traceability, employee training, employee qualifications, purchasing, order review, etc.)

(5) Quality Control Procedures specific for each inspection or test including welding procedure specifications (WPSs), as appropriate.

(6) Procedures for equipment maintenance and calibration.

(7) Arrangements for timely feedback and corrective action whenever nonconformances are detected.

(8) Procedures for assessing customer satisfaction.

(9) Provisions for any subcontracted activities (machine shop, nondestructive examination tests) to comply with the quality control requirements of the test facility and the methods used by the test facility to verify the compliance.

(10) Procedures for preparing and reviewing required records.

(11) Assignment of a schedule and an individual responsible for review of the Quality Control Manual.

(12) A record retention policy.

(13) Procedure for positive identification of a test candidate

(14) For self-assessed test facilities only, the provisions governing assessors.

5.2.2 Management Review. The Quality Control Program shall be systematically reviewed by, or under the supervision of, test facility management to assure the continued effectiveness of the organization, personnel, and procedures. The review shall be performed at a minimum frequency of once a year and shall be documented with the results of the corrective actions initiated by the review and the outcome of previous corrective actions.

5.3 Personnel. Test facility personnel shall have the necessary education, training, technical knowledge, and experience for their functions. The minimum personnel requirements for the test facility shall be:

(1) The inspection and testing services of the test facility shall be under the direction of a person charged with technical managerial responsibility. This person shall be a full-time employee of the facility having at least five documented years of technical experience in inspection and testing of welds.

(2) Welder qualification shall be administered by a test supervisor who holds current credentials as a Certified Welding Inspector (CWI) or Senior Certified Welding Inspector (SCWI) under the AWS Standard QC1. **Caution: Some jurisdictions may require inspection personnel to be supervised by a professional engineer.**

(3) This specification requires nondestructive examination (NDE) personnel to be qualified in accordance with and certified to AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*, ASNT Recommended Practice SNT-TC-1A, or equivalent. Only individuals having a NDE Level II or higher certification may perform NDE examination. Documents shall identify the Level II or III individual involved.

5.3.1 Job Description. There shall be a job description for each technical position specifying required education, training, technical knowledge, and experience.

5.3.2 Staffing. The proportion of supervisory to non-supervisory staff shall be such as to ensure adequate supervision. Suitable staff, designated as alternates, shall be available to handle the work of the senior technical and quality system managers in their absence. Information on the relevant qualification, training, and experience of the technical staff shall be maintained by the test facility.

5.4 Welding Equipment

5.4.1 Welding equipment to be used for qualification of welders shall be located at the test facility or controlled under the provisions of this specification. The equipment shall be designed for the process to be used and shall be capable of providing the full range of variables specified in the welding procedure specifications (WPSs).

5.4.2 Equipment shall be maintained in such a manner so as to provide steady electrical or mechanical characteristics required for successful welding of the test assemblies. Machine controls to change or adjust parameters shall be fully operational.

5.4.3 Upon agreement between the welder and the test facility, the welder may provide personal torches, tools, or other related welding equipment.

5.4.4 The welding monitoring equipment (e.g., a means for measuring volt/amp values on the welding machine such as using a calibrated volt/amp meter, verifying the gages on the welding machine, or calibration of the welding machine) shall be calibrated and the calibrations maintained as stated in the test facility Quality Control Manual. Equipment calibration records shall be available at the test facility (see 5.6).

5.5 Measuring and Testing Equipment. The test facility shall be furnished with, or have access to or subcontract, all necessary equipment required for correct performance of the welding test, examinations, and measurements. All mechanical test equipment such as guided-bend test fixtures, nick break testing fixtures, etc., shall meet the dimensions and requirements of the governing standard. In the absence of such standard, AWS B4.0 should be used.

5.5.1 Maintenance. All equipment shall be maintained to ensure protection from corrosion and other causes of deterioration. Maintenance procedures and documentation for those items of equipment, which require periodic maintenance, shall be available.

5.5.2 Defective Equipment. Any equipment which has been subject to overloading, mishandling, or which gives suspect results, shall be taken out of service and clearly labeled. The equipment shall not be used for its

intended function until it has been repaired and then shown by test or calibration to be performing its function satisfactorily

5.5.3 Records. Records shall be maintained on each major item of equipment. Each record shall include:

- (1) The name of the item of equipment.
- (2) The manufacturer's name and type identification and serial number.
- (3) Date of last calibration and calibration records, where appropriate.
- (4) Current location, where appropriate.
- (5) Details of maintenance.
- (6) Manufacturer's operating manuals.
- (7) For measuring equipment, the record shall include the maximum period of time permitted between calibrations.

5.5.4 Personnel. Personnel operating equipment in the test facility shall be trained in the safe operation and use of the measuring and testing equipment.

5.6 Calibration. Welding power supply systems used for welder/operator performance tests should be calibrated before being put into service, after repair, and thereafter according to an established program. When calibrated meters are required by contract specifications or standards (for welder/operator performance testing), the welding power supply system meters shall be calibrated and used or separate, calibrated (portable/auxiliary) test meters shall be used.

5.6.1 Program. The overall program of calibration of equipment shall be designed and operated so as to ensure that measurements made in the test facility are traceable (where the concept is applicable) to national standards of measurement. Where the concept of traceability to national standards of measurement is not applicable, the test facility shall provide satisfactory evidence of calibration or accuracy of test results.

5.6.2 In-Service. Where relevant, in-service welding and testing equipment shall be subjected to checks between regular recalibrations.

5.6.3 Calibration Tag. A label or tag indicating the date of the last calibration and the due date of the next calibration should be attached to equipment requiring calibration.

5.7 Metals and Materials. All materials used for qualification testing shall be obtained and maintained in accordance with the Quality Control Manual. Material Test Certificates and/or certificates of conformity shall be obtained and be retrievable for all materials used in testing. Base metal and test specimens shall be permanently marked with identification that will allow traceability to the source as described in the test facility Quality Control

Manual. Filler metals utilized for testing shall be traceable to the source until consumed.

5.7.1 Welding filler materials provided by the test facility shall have a manufacturer's Certificate of Compliance or shall be certified in accordance with AWS A5.01, Schedule F. Welding materials shall be stored in accordance with manufacturer's recommendations.

5.7.2 The test weldment shall be prepared in accordance with the requirements of the test methods and procedures of 5.8. The location and orientation of mechanical test specimens or cross sections shall be taken and tested in accordance with the requirements of the applicable code or other qualification specification.

5.8 Test Methods and Procedures. It is the test facility's responsibility to prepare and/or maintain adequate records of the performance test description used and supporting WPS/PQR. The WPS utilized at the test facility are to be qualified or prequalified to a specific standard.

5.8.1 The test facility shall have adequate documented instructions on the use and operation of all facility weld test equipment, on the handling and preparation of test items, and on standard testing techniques.

5.8.2 All instructions, standards, manuals, and reference data relevant to the work of the test facility shall be maintained, up to date and be readily available to the staff.

5.8.3 The test facility shall use test methods and procedures required by the applicable qualification code or other standard. All calculations and data transfers shall be subject to appropriate review.

5.9 Environment. The environment in which the tests are undertaken shall not be such as to invalidate the test results or adversely affect the required accuracy of the measurement. The testing premises shall have adequate ventilation and shall be protected, as required, from conditions such as excessive dust, moisture, steam, vibration, electromagnetic disturbance, interference, and shall be maintained accordingly (see ANSI Z49.1). There shall be sufficient space in each test booth to allow the welder sufficient access to perform the test comfortably and safely. Adequate measures shall be taken to ensure good housekeeping in the test facility.

5.10 Handling of Items to be Tested. A system for identifying samples or items to be tested shall be applied. The system may be either through documents or through marking. Any relevant instructions provided with the item shall be observed. There shall be clear rules for the receipt, retention, and disposal of test weldments and associated specimens.

5.11 Records and Test Reports

5.11.1 Record System. The test facility shall maintain a record system to suit its particular circumstances and comply with any existing regulations. It shall retain on record all original observations, calculations and derived data, calibration records, and the final test reports for a five-year period. The records for each qualification test performed must contain sufficient information to permit satisfactory repetition of the test.

5.11.2 Security. All records and test reports shall be held secure and in confidence to the client and to the assessor, unless otherwise required by law. Computer records shall be safeguarded sufficiently to prevent unauthorized access.

5.11.3 Forms. Qualification records shall contain all information required by the qualification code or other standard. As a minimum, the essential variables of the welder qualification test shall be listed on the qualifica-

tion test record. This specification does *not* mandate a particular format for report forms, however, all records shall be legible and accurate. It should be noted that many standards have sample qualification record forms contained in the body of the standard.

5.12 Welder Training. Test facilities may perform welder training providing the facilities are part of an independent laboratory, manufacturing concern, educational institution or other party.

6. Assessments

Externally or self-assessed test facilities shall be assessed annually to verify personnel testing welders are in compliance with this specification. The assessment of self-assessed test facilities shall be performed by test facility personnel who are independent of the personnel testing welders (see Annex B).

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Nonmandatory Annexes

Annex A

Recommended Reference List

(This Annex is not a part of AWS B5.4:2005, *Specification for the Qualification of Welding Test Facilities*, but is included for informational purposes only.)

A1. American Welding Society (AWS)

- (1) AWS A3.0, *Standard Welding Terms and Definitions*
- (2) AWS A5.01, *Filler Metal Procurement Guidelines*
- (3) AWS B1.11, *Guide for Visual Examination of Welds*
- (4) AWS B2.1, *Specification for Welding Procedure and Performance Qualification*
- (5) AWS B2.2, *Standard for Brazing Procedure and Performance Qualification*
- (6) AWS B4.0, *Standard Methods for Mechanical Testing of Welds*
- (7) AWS B5.1, *Specification for the Qualification of Welding Inspectors*
- (8) AWS B5.4, *Specification for the Qualification of Welder Test Facilities*
- (9) AWS B5.5, *Specification for the Qualification of Welding Educators*
- (10) AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*
- (11) AWS B5.17, *Specification for the Qualification of Welding Fabricators*
- (12) AWS D1.1, *Structural Welding Code—Steel*
- (13) AWS D1.2, *Structural Welding Code—Aluminum*
- (14) AWS D1.3, *Structural Welding Code—Sheet Steel*
- (15) AWS D1.4, *Structural Welding Code—Reinforcing Steel*
- (16) AWS D1.5, *Bridge Welding Code*
- (17) AWS D1.6, *Structural Welding Code—Stainless Steel*
- (18) AWS D9.1, *Sheet Metal Welding Code*
- (19) AWS D14.1, *Specification for Welding Industrial and Mill Crane and Other Material Handling Equipment*
- (20) AWS D14.2, *Specification for Metal Cutting Machine Tool Weldments*

- (21) AWS D14.3, *Specification for Welding Earth-moving, Construction, and Agricultural Equipment*
- (22) AWS D14.4, *Specification for Welded Joints in Machinery and Equipment*
- (23) AWS D14.5, *Specification for Welding of Presses and Press Components*
- (24) AWS D14.6, *Specification for Welding of Rotating Elements of Equipment*
- (25) AWS D15.1, *Railroad Welding Specification—Cars and Locomotives*
- (26) AWS QC1, *Standard for AWS Certification of Welding Inspectors*
- (27) AWS QC4, *Standard for Accreditation of Test Facilities for AWS Certified Welder Program*
- (28) AWS QC5, *Standard for AWS Certification of Welding Educators*
- (29) AWS QC7, *AWS Certification of Welders*

A2. American Petroleum Institute (API)

- (1) API-6A, *Specification for Wellhead and Christmas Tree Equipment*
- (2) API-16A, *Specification for Drill Through Equipment Second Edition*
- (3) API 1104, *Welding of Pipelines and Related Facilities*

A3. American Society for Testing and Materials (ASTM)

- (1) ASTM A 370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

(2) ASTM A 488, *Standard Practice for Steel Castings, Welding, Qualifications of Procedures and Personnel*

(3) ASTM E 94, *Standard Guide for Radiographic Testing*

(4) ASTM E 164, *Standard Practice for Ultrasonic Contact Examination of Weldments*

(5) ASTM E 165, *Standard Test Method for Liquid Penetrant Examination*

(6) ASTM E 709, *Standard Guide for Magnetic Particle Examination*

(7) ASTM E 1032, *Standard Test Method for Radiographic Examination of Weldments*

(8) ASTM E 1444, *Standard Practice for Magnetic Particle Examination*

A4. American Society of Mechanical Engineers (ASME)

A4.1 Standards

(1) ASME B31.1, *Power Piping*

(2) ASME B31.2, *Fuel Gas Piping*

(3) ASME B31.3, *Process Piping*

(4) ASME B31.4, *Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols*

(5) ASME B31.5, *Refrigeration Piping*

(6) ASME B31.8, *Gas Transmission and Distribution Piping Systems*

(7) ASME B31.9, *Building Services Piping*

A4.2 Boiler and Pressure Vessel Code

(1) ASME Sec. I, *Rules for Construction of Power Boilers*

(2) ASME Sec. III, *Rules for Construction of Nuclear Power Plant Components*

(3) ASME Sec. IV, *Rules for Construction of Heating Boilers*

(4) ASME Sec. VIII, *Rules for Construction of Pressure Vessels*

(5) ASME Sec. IX, *Welding and Brazing Qualifications*

(6) ASME Sec. XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*

A5. American Society for Nondestructive Testing (ASNT)

(1) ASNT SNT TC 1A, *Recommended Practice: Personnel Qualification and Certification in Nondestructive Testing*

A6. Other

(1) Mil-Std 100, *Engineering Drawing Practices*

(2) Mil-Std 248, *Welding and Brazing Procedure and Performance Qualification*

(3) Mil-Std 271, *Requirements for Nondestructive Testing Methods Nondestructive Testing Personnel Qualification and Certification*

(4) NAS 410, *Qualification and Certification of Nondestructive Test Personnel*

(5) Mil-Std 2035, *Nondestructive Testing Acceptance Criteria*

(6) Mil-Std 1688, *Fabrication, Welding, and Inspection of HY80/100 Submarine Application*

(7) SAE AMS-STD 1595, *Qualification of Aircraft, Missile, and Aerospace Fusion Welders*

Note: The test facility should have access to the latest edition of these recommended references.

Annex B

Qualification of Assessors

(This Annex is not a part of AWS B5.4:2005, *Specification for the Qualification of Welding Test Facilities*, but is included for informational purposes only.)

B1. Scope

B1.1 This annex describes the methods for qualification of personnel performing assessing activities, and applies to the assessment of test facilities as described in Annex C.

B1.2 Personnel selected by the employer to perform assessment activities should have the experience or training commensurate with the scope, complexity, or special nature of the activities to be performed.

B2. References

(1) AWS QC1, *Standard for AWS Certification of Welding Inspectors*

B3. Levels of Certification

There should be two levels of assessors as follows:

B3.1 Lead Assessor. A lead assessor should be capable of organizing and directing assessments, reporting assessment findings, and evaluating corrective action to accepted quality standards.

B3.2 Assessor. An individual who participates in an assessment such as a technical specialist, management representative, and assessors-in-training.

B4. Activities

The detailed activities, which a lead assessor should be capable of performing and/or demonstrating, include:

B4.1 Knowledge and understanding of quality control programs, codes, other standards, regulations, etc. as applicable to this specification.

B4.2 Assessment techniques such as examining, questioning, evaluating, and reporting.

B4.3 Identifying and following up on corrective action and closure of assessment findings.

B4.4 Assessment planning in any of the quality areas of this specification.

B5. Education and Experience

B5.1 As a minimum, any assessor candidate should be a high school graduate (or military or state approved equivalent).

B5.2 A lead assessor should meet the following education and experience criteria:

B5.2.1 Graduate of a four year accredited engineering or science college or university with a degree in Engineering or Science plus one year of experience in a comparable assignment; or

B5.2.2 Completion with a passing grade of at least two years of engineering or science study at accredited university, college, or technical school plus two years applicable experience in a comparable assignment; or

B5.2.3 High school graduation, or its equivalent, and four years applicable experience in a comparable assignment.

B5.3 Personnel performing assessments should be either a Senior Certified Welding Inspector (SCWI) or a Certified Welding Inspector (CWI) per AWS QC1 or a person with equivalent training and experience.

B5.4 Personnel who perform assessments should receive on-the-job indoctrination in the technical objectives and

requirements of the applicable codes, standards, and quality control program elements of this specification.

B5.5 Training

B5.5.1 The need for additional training should be determined by the employer and training completed as required to qualify personnel for the assessment activity to be performed. On-the-job training should be conducted as required with emphasis on obtaining the experience needed through actual performance of the activity.

B5.5.2 A prospective lead assessor and assessor should have training to the extent necessary to assure competence in assessment skills identified above, this specification, and on-the-job training.

B6. Examination Requirements

B6.1 Determination of Initial Capability. Assessment candidates should have prior experience in assessment, which may include evidence of prior certification as an assessor or lead assessor including education, experience, training, and either test results or practical demonstration of proficiency should be provided by the applicant.

B6.2 A prospective lead assessor should have participated in quality assessments of educational, manufacturing or field organization within a period of time not to exceed one (1) year.

B6.3 Job performance should be evaluated by the employer at intervals not to exceed three years. Reevaluation should be by evidence of continued satisfactory performance. If during this evaluation it is determined the capabilities are not in accordance with job requirements, the person should be removed from the activity until such time as the required capability has been demonstrated. Any person who has not performed the activity for a period of one (1) year should also be reevaluated as above.

B7. Records

The following records are to be retained by the employer as applicable:

- (1) Examination results
- (2) Experience summaries
- (3) Previous certification (when applicable)
- (4) Education and Experience Verification Record
- (5) Diplomas and other training certificates
- (6) Employer's job performance evaluation

Annex C

Assessment Requirements

(This Annex is not a part of AWS B5.4:2005, *Specification for the Qualification of Welding Test Facilities*, but is included for informational purposes only.)

C1. Scope of Assessments

Test facilities qualified and operating in accordance with this specification should be assessed by an assessor qualified in accordance with Annex B. A typical assessment generally involves:

- (1) An entry briefing with test facility management
- (2) Review of quality control program manual
- (3) Interviews with the staff
- (4) Observation of selected tests
- (5) Examination of equipment and calibration records
- (6) An exit briefing of assessor findings

C2. Methods of Assessment

There are two methods for assessing these facilities.

C2.1 Qualified Test Facility—Externally Assessed. The test facility should be assessed by a qualified Accreditation Body in accordance with 5.0, Test Facility Requirements, and 6.0, Assessment Requirements.

C2.2 Qualified Test Facility—Self-Assessed. The test facility should be assessed by employees of the test facility who meet the requirements of Annex B, and the assessment should be performed in accordance with Section 5, Test Facility Requirements, and Section 6, Assessments.

C3. Checklist

Assessors should complete an assessment checklist while performing the assessment. Checklists are intended to ensure that assessments are conducted uniformly, accurately, and consistently among facilities.

C4. Objectives

The objective of an assessment is to establish that the test facility complies with the criteria contained within this specification.

C5. Assessment Report

At the conclusion of an assessment, a written report should be provided to the test facility and the accreditation body (if applicable).

C6. Frequency of Assessment

Externally or self-assessed test facilities should be assessed annually to verify personnel testing welders are in compliance with this specification. The assessment of self-assessed test facilities should be performed by test facility personnel who are independent of the personnel testing welders.

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Annex D

Guidelines for Preparation of Technical Inquiries for AWS Technical Committees

(This Annex is not a part of AWS B5.4:2005, *Specification for the Qualification of Welding Test Facilities*, but is included for informational purposes only.)

D1. Introduction

The AWS Board of Directors has adopted a policy whereby all official interpretations of AWS standards will be handled in a formal manner. Under that policy, all interpretations are made by the committee that is responsible for the standard. Official communication concerning an interpretation is 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 shall be followed, some interpretations may require considerable time.

D2. Procedure

All inquiries shall be directed to:

Managing Director, Technical Services
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 fully understand the point of concern in the inquiry. Where that point is not clearly defined, the inquiry will be returned for clarification. For efficient handling, all inquiries should be type-written and should also be in the format used here.

D2.1 Scope. Each inquiry shall address one single provision of the standard, unless the point of the inquiry involves two or more interrelated provisions. That provision shall be identified in the scope of the inquiry, along

with the edition of the standard that contains the provisions or that the inquirer is addressing.

D2.2 Purpose of the Inquiry. The purpose of the inquiry shall be stated in this portion of the inquiry. The purpose can be either to obtain an interpretation of a standard's requirement, or to request the revision of a particular provision in the standard.

D2.3 Content of the Inquiry. The inquiry should be concise, yet complete, to enable the committee to quickly and fully understand the point of the inquiry. Sketches should be used when appropriate and all paragraphs, figures, and tables (or the Annex), which 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.

D2.4 Proposed Reply. The inquirer should, as a proposed reply, state an interpretation of the provision that is the point of the inquiry, or the wording for a proposed revision, if that is what inquirer seeks.

D3. 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 will be an official interpretation of the Society, and the secretary will transmit the response to the inquirer and to the *Welding Journal* for publication.

D4. Publication of Interpretations

All official interpretations will appear in the *Welding Journal*.

D5. 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 Board of Directors' policy 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. The Headquarters staff cannot provide consulting services. The staff can, however, refer a caller to any of those consultants whose names are on file at AWS Headquarters.

D6. The AWS Technical Committee

The activities of AWS Technical Committees in regard to interpretations, are limited strictly to the interpretation of provisions of standards prepared by the Committee or to consideration of revisions to existing provisions on the basis of new data or technology. Neither the Committee nor the staff is in a position to offer interpretive or consulting services on: (1) specific engineering problems, or (2) requirements of standards applied to fabrications outside the scope of the document or 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.

