Standard for Accreditation of Test Facilities for AWS Certified Welder Program



**American Welding Society** 

Keywords – Test Facility Accreditation Laboratory Certification

# Standard for Accreditation of Test Facilities for AWS Certified Welder Program

Prepared by AWS Qualification and Certification Committee

Under the Direction of AWS Education and Certification Council

Approved by AWS Board of Directors October 31, 1989

## Abstract

This Standard describes a program directed by the American Welding Society for a third-party accreditation of test facilities used to perform welding qualification — welding and testing.



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International Standard Book Number: 0-87171-342-X

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## Foreword

(This Foreword is not a part of the *Standard for Accreditation of Test Facilities* for AWS Certified Welder Program AWS QC 4-89, but is included only for information).

**Purpose.** The purpose of the third-party accreditation of Test Facilities for welder qualification is to confirm that a Test Facility has the personnel, organization, experience, procedures, knowledge, equipment, capability, and commitment to conduct proper welder qualification testing for the AWS Certified Welder Program. This Standard describes the requirements and functions of the Test Facility to achieve this purpose and to complete reliable reports; and, to define relationships between the Test Facility and the other parties involved.

**Relationships.** A Test Facility shall be accredited to conduct welder qualification tests for the AWS Certified Welder Program. A person wishing to take tests to become an AWS certified welder shall prepare an application in accordance with AWS QC 3. The applicant is responsible to contact the Test Facility to arrange a specific date and time for the completion of the qualification test assembly. All acceptable test results and records will be returned to AWS by the Test Facility after the welder qualification test is completed.

**Dedication.** The Q&C Committee dedicates the publication of this Standard to Dalton E. Hamilton and Charla S. Cardoni. At the time of his death in May, 1988, Dalton Hamilton was the Chairman of the Q&C Committee. His efforts, clear thinking, ability to find consensus and tireless work contributed significantly to the Q&C Committee. At the time of her death in December, 1988, Charla Cardoni was the Special Assistant to the AWS Executive Director. From 1982 to September, 1988, she was the Director of the AWS Q&C Department. Her business management training and experience brought a sense of direction and order that contributed significantly to the AWS certification programs.

## **Table of Contents**

Page	No.
------	-----

	iii rewordiv
1.	Scope11.1Requirements11.2Procedure11.3Safety Precautions1
2.	Definitions1
3.	Test Facility Requirements23.1 General Requirements23.2 Quality Assurance System23.3 Personnel23.4 Welding Equipment33.5 Measuring & Testing Equipment33.6 Calibration33.7 Metals and Materials33.8 Test Methods and Procedures43.9 Environment43.10 Handling of Items to be Tested43.11 Records and Test Reports4
4.	Accreditation    .4      4.1    Information    .4      4.2    Application    .4
5.	On-Site Assessment
6.	Accreditation Decisions
7.	Appeals Procedure
8.	Reassessments
9.	Accreditation Renewal
10.	Revocation
11.	Reinstatement

# AWS Q C4-89 Standard for Accreditation of Test Facilities for AWS Certified Welder Program

### 1. Scope

1.1 Requirements. This Standard establishes minimum requirements for Test Facilities, their personnel, and equipment to qualify for accreditation to test and qualify welders in the AWS Certified Welder Program. This facility accreditation program is open to all Test Facilities that are qualified, whether or not they are members of AWS. The Test Facilities may be part of an independent laboratory, manufacturing plant, educational institution, or other party.

**1.2 Procedure.** This Standard establishes the procedure by which Test Facilities may seek, obtain, and maintain accreditation from an AWS designated third-party assessment agency to participate in the AWS Certified Welder Program.

**1.3 Safety Precautions.** Safety precautions shall conform to the latest edition of ANSI/ASC Z49.1-88, *Safety in Welding and Cutting*, published by the American Welding Society.

NOTE: This Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices. The user should determine the applicability of any regulatory limitations prior to use.

## 2. Definitions

Terms used in this Standard are defined in ANSI/ AWS A 3.0-88, *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, standards or other contract documents.

- accreditation. Certification as being able to meet a prescribed standard.
- **accredited facility.** A facility that applies to the AWS designated third party agency and received accreditation.
- AWS. American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126.
- **certification.** The act of determining, verifying, and attesting in writing to the qualification of personnel in accordance with specified requirements.
- facility representative. An individual(s) designated by the Test Facility who can make legally binding commitments and statements on behalf of the Test Facility.
- inspection. 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.
- **NDE.** A designation in this Standard for nondestructive examination of welds using one of the approved non-destructive testing methods.
- **Q&C Committee.** The Qualification and Certification Committee of the American Welding Society.
- **Q&C Department.** The Qualification and Certification Department of the American Welding Society Miami, Florida.
- test supervisor. An AWS Certified Welding Inspector (CWI) designated by the Accredited Test Facility.

1

- verification. The act of reviewing, inspecting, testing, checking, auditing or otherwise determining and documenting whether items, processes, services, and documents conform to specified requirements.
- welder. One who performs a manual or semiautomatic welding operation.
- welder performance qualification. The demonstration of a welder's ability to produce welds meeting prescribed standards.
- weldment. An assembly whose component parts are joined by welding.
- other guidelines. As used in this Standard, the word shall denotes a requirement; the word should denotes a guideline; and the word may denotes a choice.

### 3. Test Facility Requirements

**3.1 General Requirements.** The Test Facility shall be legally identifiable and have the following:

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

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

(3) An organization such that staff members are not under undue pressure or inducement that might influence their judgement or results of their work.

(4) An organization that each staff member is aware of both the extent and limitation of his area of responsibility, and a clear designation of a "Facility Representative."

(5) A technical manager (who may also be the "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.

**3.2 Quality Assurance System.** The Test Facility shall operate an internal quality assurance system appropriate to the type, range and volume of work performed. The quality assurance system shall be documented in a quality assurance manual which is available for use by the Test Facility staff for the purpose of maintaining quality control. A person or persons having responsibility for quality assurance within the Test Facility shall be designated by the Test Facility management and have access to top management.

**3.2.1 Manual.** The quality assurance manual shall contain information regarding the following:

(1) The organizational structure of the Test Facility (organizational charts).

(2) The operational and functional duties and services pertaining to quality, so that those concerned will know the extent and limits of their responsibilities.

(3) General quality control procedures.

(4) Quality control procedures specific for each inspection or test, as appropriate.

(5) Where relevant, proficiency testing, use of reference materials.

(6) Arrangements for timely feedback and corrective action whenever non-conformances are detected.

(7) Procedure for dealing with technical complaints.

(8) Provisions for any subcontracted activities (machine shop, NDE tests) to comply to the quality control requirements of the Test Facility and the methods that are used by the Test Facility to verify the compliance.

(9) Procedures for preparing and reviewing for accuracy the records to be provided to AWS.

**3.2.2 Management Review.** The quality assurance system shall be systematically reviewed by, or on behalf of, management to assure the continued effectiveness of the organization, procedures and corrective actions initiated. Such review shall be recorded (at a minimum) annually, together with the details of any actions taken as a result of the review.

**3.3 Personnel.** 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. He shall be a full time employee of the Test Facility. He shall have at least five years of technical experience in inspection and testing of metals or welding.

(2) Welder qualification tests that are performed by an Accredited Test Facility for the AWS Certified Welder program shall be administered by a Test Supervisor who is currently certified as a CWI under the AWS Standard QC 1.

(3) This Standard requires qualification and certification of NDE personnel in accordance with a written practice prepared in accordance with the ASNT Recommended Practice SNT-TC-1A. Only individuals qualified to NDT Level II or higher may perform NDT examination, however, a qualified Level I working under direct supervision of a Level II or higher may perform specific test functions according to written instructions and record the results. Documents shall identify the Level II individual involved. **3.3.1 Job Description.** There shall be a job description for each senior technical position category, which includes necessary education, training, technical knowledge and experience.

**3.3.2 Staffing.** The proportion of supervisory to non-supervisory staff shall be such as to ensure adequate supervision. Suitable staff, designated as alternatives, 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.

#### 3.4 Welding Equipment

**3.4.1** Welding equipment to be used for qualification of welders shall be located at the accredited Test Facility or controlled under the provisions of this Standard. The equipment shall be designed for the process to be used and be capable of providing the full range of parameters specified in the Welding Procedure Specifications (WPS).

**3.4.2** 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.

**3.4.3** At the option of the welder, the welder may provide his own torch, tools, or other related accessory equipment.

**3.5 Measuring & Testing Equipment.** The Test Facility shall be furnished with or have access to all items of equipment required for correct performance of the welding test, examinations and measurements for which it is accredited.

**3.5.1 Maintenance.** All equipment shall be properly maintained to ensure protection from corrosion and other causes of deterioration. Instruction for a proper maintenance procedure for those items of equipment which require periodic maintenance shall be available.

**3.5.2** Abuse. Any item of the equipment which has been subject to overloading or mishandling, or which gives suspect results, or has been shown by calibration or otherwise to be defective, shall be taken out of service and clearly labelled until it has been repaired and then shown by test or calibration to be performing its function satisfactorily.

**3.5.3 Records.** Records shall be maintained of 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) Manufacturers operating manuals.

(7) In the case of measuring equipment, the record shall also include the maximum period of time permitted between calibrations.

**3.6 Calibration.** Measuring and test equipment used in the Test Facility shall be calibrated, where appropriate, before being put into service and thereafter according to an established program. Welding power supply systems shall be calibrated to show correlation of volt/amp meter readings vs. "actual" test meter values.

**3.6.1 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.

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

**3.6.3 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.

3.7 Metals and Materials. All base metals used for qualification testing under the AWS Certified Welder Program shall be obtained and maintained with rigid control. Certified Mill Test Reports shall be obtained and kept on file representing all test specimens base metal. Base metal and test samples shall be permanently marked with identification that will allow traceability to the Mill Test Report.

Base metal for qualification test samples and specimens from these test samples shall be prepared in accordance with all requirements of the Welding Procedure Specifications and test requirements. Upon completion of all testing, the test specimens shall be stored in such a way that the specimen will be free of contamination.

Manufacturer's Certification in accordance with AWS A5.01, Class F, shall apply to all welding filler materials that are provided by the Test Facility. Drying and storage ovens will be used for those materials affected by moisture. Electrodes and flux that have become wet shall not be used for welding.

**3.8 Test Methods and Procedures.** The Test Facility shall have adequate documented instructions on the use and operation of all equipment, on the handling and preparation of test items, and on standard testing techniques, where the absence of such instruction could jeopardize the efficacy of the testing process.

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.

The Test Facility shall use testing methods and procedures required by the AWS Certified Welder Program (AWS QC 3) for all testing performed. The AWS Certified Welder Program reference information shall be available to the staff conducting the test.

All calculations and data transfers shall be subject to appropriate review.

**3.9 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 (also see ANSI/ASC Z49.1-88). There shall be sufficient space in each test booth to allow the welder sufficient access to perform his test comfortably and safely. Environmental conditions in those areas where measurements and or specimen testing and evaluations are performed shall be such that the test results and accuracy of measurements shall not be invalidated or adversely affected. If appropriate for the tests being conducted, the effected area shall be equipped with environmental monitoring devices.

Adequate measures shall be taken to ensure good housekeeping in the Test Facility.

**3.10 Handling of Items to be Tested.** A system for identifying the samples or items to be tested shall be applied, either through documents or through marking, to ensure that there can be no confusion regarding the identity of the samples or test items and the results of the measurements made.

At all stages of storing, handling and preparation for test, precaution shall be taken to prevent damage to the items, for example contamination, corrosion or the application of stress, any of which would invalidate the results. Any relevant instructions provided with the item shall be observed.

There shall be clear rules for the receipt, retention and disposal of samples.

#### 3.11 Records and Test Reports

**3.11.1 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.

**3.11.2 Security.** All records and test reports shall be held secure and in confidence to the client and to AWS, unless otherwise required by law.

**3.11.3 Forms.** The standard report forms, as presented by AWS for the Certified Welder Program (AWS QC 3), shall be completed clearly, accurately and completely. The reports shall be promptly returned to AWS Q&C Department after each has been successfully performed.

## 4. Accreditation

**4.1 Information.** Additional information and the forms necessary to make application for Test Facility Accreditation may be obtained from:

American Welding Society Qualification and Certification Department 550 N.W. LeJeune Road Miami, Florida 33126

**4.2 Application.** An application for accreditation shall be made by completing the appropriate AWS forms and submitting them to AWS designated third-party assessment agency. Applicants shall also agree to a set of conditions for accreditation, pay the appropriate fees and provide detailed supporting information on:

(1) Scope of testing in terms of testing technologies, testing methods, and relevant standards

- (2) Organization structure
- (3) Staff, equipment and calibration schedules
- (4) Quality assurance system manual

(5) Current or past accreditation related to weld testing

Accreditation shall be granted only for those Supplements and Welding Procedure Specifications of AWS QC 3 for which the Test Facility has demonstrated the capacity and capability to conduct the required qualification function, i.e., welding and testing, Accreditation shall be granted for a one-year period. (See Article 9 for Renewals.)

## 5. On-Site Assessment

**5.1 Agency.** The American Welding Society shall designate the third-party agency to perform on-site assessments. The agency providing this service shall be under contract with AWS. Assessments may take from one to several days.

**5.2 Checklist.** Assessors are given an assessment guide and checklist to follow in performing an assessment. These documents are intended to ensure that assessments are conducted as uniformly and completely as possible among the assessors from Test Facility to Test Facility.

The assessment generally involves:

- (1) An entry briefing with Test Facility management
- (2) Review of quality assurance system 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.

**5.3 Objectives.** The objective of an assessment is to establish whether a Test Facility complies with the AWS criteria for the accreditation which is sought. Assessors may provide advice in response to questions or on the basis of observations to provide help to improve the Test Facility's potential of being in compliance.

5.4 Assessment Report. At the conclusion of an assessment, the assessor will prepare a report of findings, identifying deficiencies (i.e., deviations from the criteria and test method procedures for which accreditation is requested) which, in the opinion of the assessor, the Test Facility must correct in order to be accredited. After the exit briefing with top management of the Test Facility, or the designee of the Test Facility, the Facility Representative is asked to sign the deficiency report to attest that he has reviewed the deficiency report with the assessor. If any deficiencies are noted on the deficiency report, the Test Facility is requested to respond within one month of the date of the exit briefing. It is entirely possible that the Test Facility may disagree with the findings. In that case, the Test Facility is requested to write to AWS Q&C Department explaining why it disagrees with the assessor.

## 6. Accreditation Decisions

**6.1 Submittal.** The assessor's report, communications from the Test Facility, and other information from the application is submitted to the members of the Q&C Committee for information.

6.2 Grant. If accreditation is granted, the third-party assessment agency shall prepare and forward a certifi-

cate and scope of accreditation to the Test Facility. The Test Facility should keep the scope of accreditation available to show clients or potential clients, the Welding Procedures Specifications and test methods for which it is accredited. AWS Q&C Department also uses each Test Facility's scope of accreditation to respond to inquiries.

## 7. Appeals Procedure

The third-party assessment agency shall advise the Test Facility of its right to appeal adverse accreditation decisions to the Q&C Committee. If the Test Facility is not satisfied with the Q&C Committee's decision, the Test Facility may make an appeal to the AWS Board of Directors.

## 8. Reassessments

The third-party assessment agency shall conduct a full on-site reassessment of all accredited Test Facilities at least every three years. Assessment shall also be conducted when evaluation and submissions from the Test Facility or its clients indicate significant technical changes in the capability of the Test Facility have occurred.

## 9. Accreditation Renewal

**9.1 Period.** Accreditation shall be granted for a one year period of time. Each Accredited Test Facility will be sent a renewal questionnaire, in advance of the expiration date of accreditation, to allow sufficient time to complete the renewal process. A successful on-site reassessment shall be completed before reaccreditation is extended every three years.

**9.2** Annual Report. Annually, changes in equipment or key personnel shall be monitored by questionnaire. AWS requires the immediate submission to the third-party accrediting agency, changes in location, ownership, management and supervisory staff, corporate representative, or major facilities of the Test Facility.

**9.3 Expiration.** Applicants for renewal of accreditation that has expired or those choosing reaccreditation by on-site assessment will be considered as new applicants.

## 10. Revocation

**10.1 Q&C Committee.** The Q&C Committee shall have the power to suspend, refuse to renew, or revoke the Test Facility accreditation for misrepresentation of facts regarding the AWS Welder Certification program or any test pertaining to the program; to place on probation or to reprimand the accredited Test Facility, if found guilty of an unauthorized practice in a proceeding conducted in accordance with the "ADMINISTRATIVE PROCE-DURE MANUAL". (Available from the AWS Q&C Department.) **10.2 Enforcement.** The American Welding Society may apply to any court of competent jurisdiction for further enforcement of its administrative decisions and rulings.

## 11. Reinstatement

Reinstatement of a revoked accreditation shall be allowed with no penalty or prejudice to the Test Facility, provided the reason for such revocation has been rectified to the Q&C Committee's satisfaction.