



American Welding Society

Accredited Testing Facility Program

QC 47 Quality Manual Guide

Welcome to the Quality Manual Guide for Accredited Testing Facilities (ATFs). This document serves as a comprehensive tool designed to assist both current and prospective ATFs in aligning their operations with the AWS QC47 standard.

Purpose of the Quality Assurance Manual

The purpose of an organization's quality manual is to provide a structured framework that ensures the highest levels of quality and consistency in the testing and certification of welders. The Quality Assurance Manual is crafted to help ATFs understand and implement the requirements of the AWS QC47 standard, which integrates and supersedes the previous QC4 and QC7 standards. This manual outlines the essential policies, procedures, and practices necessary for maintaining accreditation and delivering reliable, high-quality testing services. By adhering to the guidelines set forth in this document and its governing requirements, ATFs can ensure compliance with AWS program requirements, enhance operational efficiency, and uphold the integrity of the welder certification process.

How to Use This Guide

- **Comprehensive Framework:** The manual provides a detailed framework covering all aspects of quality management, from organizational structure and personnel responsibilities to testing procedures and record-keeping. Each section is designed to guide you through the specific requirements and best practices necessary for compliance.
- **Implementation and Maintenance:** Use this manual as a reference for implementing and maintaining a robust quality management system. It offers practical insights into managing key processes such as equipment calibration, material control, and nonconformance handling.
- **Continuous Improvement:** The manual emphasizes the importance of continuous improvement through regular audits and management reviews. It encourages ATFs to identify areas for enhancement and implement corrective actions to maintain high standards.
- **Flexibility and Adaptation:** While the manual provides a standardized approach, it also allows for flexibility in adapting procedures to meet specific operational needs. This ensures that ATFs can tailor their quality management systems to their unique contexts while remaining compliant with AWS requirements.
- **Resource for Training and Development:** The manual serves as a valuable resource for training staff and developing a culture of quality within your organization. It helps ensure that all personnel understand their roles and responsibilities in maintaining the quality and integrity of testing services.



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By following the guidelines in this Quality Assurance Manual, ATFs can confidently navigate the accreditation process, deliver exceptional testing services, and contribute to the advancement of the welding industry. Whether you are a current ATF seeking to enhance your operations or a prospective facility aiming for accreditation, this manual is your essential guide to achieving and maintaining excellence in welder certification.

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Quality Manual

1.0 References

Overview and Purpose

This template is intended as a guide for the purpose of developing a quality manual for use by facility employees and contractors. The quality manual captures the steps to be followed for implementation of the quality management program. This template is not meant to be comprehensive of all quality management systems but rather should be used as a guide to how quality steps may be followed to ensure compliance with the company's specific quality policy.

Best Practices

- Clearly communicate the intent of management to the employees, how quality processes are to be implemented within the company.
- Ensure all staff have access to the steps to be followed to maintain the quality standards and commitment to quality expressed in the quality policy.

Reference to QC47 Clause:

- Clause 1.1

Sample Language

The Quality Manual is a comprehensive document that outlines the organization's quality management system (QMS). It is a crucial tool that helps establish, document, and communicate the company's commitment to quality and continuous improvement. The manual provides a specific framework for how the company intends to meet and maintain its quality standards for internal operations, outside resources (contractors such as testing laboratories) as well as customer expectations. This manual is intended to demonstrate compliance with AWS.

2.0 Quality Policy Statement

Overview and Purpose

This section defines the boundaries and objectives of the quality management system, ensuring alignment with the AWS QC47 specification. It sets the organization's commitment to quality and compliance, covering all processes from welder qualification testing to certification.

Best Practices

- Clearly define the scope to include all relevant processes.



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- Ensure all staff are aware of the policy's implications for their roles.

Reference to QC47 Clause:

- Clause 10.1.3

Sample Language

This manual describes [Company Name]'s Quality System Policies and Procedures. These policies and procedures control all activities relating to conformance with the requirements established for American Welding Society Accredited Test Facilities and activities related to the testing of individuals for the AWS National Registry of Certified Welders. The quality program is developed to assure customer satisfaction by providing quality services and products. We will perform all activities in a manner which meets or exceeds the expectations of our customers. The quality system described herein is mandatory for all activities performed at [Location or Company's Name] to assure product conformance to the applicable standards, specifications, the regulating standard (QC47-2016-AMD2), and/or contract requirements.

3.0 Organizational Structure

Overview and Purpose

Defines roles, responsibilities, and authority within the organization, ensuring clarity and accountability in operations.

Best Practices

- Clearly define roles and responsibilities.
- Ensure effective communication within the organization.

Reference to QC47 Clause:

- Clause 10.1.4

Sample Language

The Quality Manager reports directly to [Title of Person] and is delegated authority and organizational freedom to identify and evaluate quality problems and to initiate, recommend, or provide solutions. Responsibilities include updating and controlling the distribution of the Quality Manual, planning to meet customer quality requirements, determining inspection points, approving quality work instructions, directing inspection activities, and maintaining quality records.



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The Qualifier reports directly to [Title of Person] and is responsible for the conduct of activities relating to the AWS Qualified Welder Program, including verification of materials and filler metals, preliminary inspections, preparation and fit-up, in-process inspections, final inspection, mechanical testing, and certification of results.

4. Personnel – Duties and Job Description

Overview and Purpose

This section provides the necessary guidance for employers to understand the need for describing the roles and responsibilities (duties and job description) of each employee. The absence of clear job descriptions leads to quality failures and violations of the QC47 standard. By clearly communicating job expectations for each employee, the employer can also avoid needless duplication of activities and process failures due to poor communication.

Best Practices

- Clearly define the roles of employees assigned to welder qualification testing. Include all relevant areas of responsibility.
- Ensure all staff are aware of their duties and how to ensure that any training received is consistent with their job description.

Reference to QC47 Clause:

Clause 10.1.5 specifies that the ATF is required to clearly define the roles and responsibilities for key employees and that the employees be made aware of these roles and responsibilities. A formal process ensures that each employee is made aware of their authority level and the expectations of senior management. If not kept in the QM, these descriptions shall be maintained in a place identified within the QM and periodically reviewed for adequacy. Staff members shall be informed of their responsibilities consistent with this document.

Sample Language

The Quality Manager maintains the Quality Management System (QMS) documents, monitors the work of other employees to ensure conformance with the QMS forms and instructions, conducts periodic surveillance of employee activities for conformance with the QMS, and provides instruction to employees for quality-related actions and records.

The Qualifier ensures that each applicant for qualification testing is provided with all necessary equipment (in good working order), materials, instructions (WPS), consumables consistent with the procedure being used. The Qualifier monitors all activities of the process including, but not limited to cleaning, joint preparation, pre-heat and interpass temperature maintenance, identification of test specimens with traceability to the individual welder, and proper preparation and testing of test specimens.



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The Laboratory Supervisor ensures that all equipment is properly maintained and in working order monitors supplies of base materials and filler metals and advises the procurement department of any deficiencies in a timely manner.

5.0 Quality Records

Overview and Purpose

Quality Records are those designated by the Company and listed within the Quality Manual. Quality Records are required to be assigned a “life expectancy” after which time they shall be removed from storage and discarded. Quality Records may be either electronic or hard copy; however, electronic media must be protected from magnetic sources which may damage or obscure their content. Photographic records must be protected from moisture and other detrimental environmental conditions (temperature and humidity) that may damage their content. Ensures all records related to testing and certification are maintained and accessible.

Best Practices

- Ensure all quality records are securely stored (archived) and easily retrievable.
- Facilitate surveillance, audits, and reviews.

Reference to QC47 Clause:

- Clause 10.1.6 specifies the requirements for maintaining quality records.

Sample Language

Quality records traceable to an AWS Welder Qualification are stored by an identifying number and retained to prevent damage or loss for at least three years. Quality records shall contain an easily identified “Destroy After” date. All records which reach their termination date shall be removed from storage and destroyed. Test specimens shall be maintained in a manner traceable to the individual applicant, preventing damage or loss for at least 30 days from the date of testing.

Quality Document List

Retention Period

- | | |
|--------------------------|---------|
| - Welder Application | 3 Years |
| - Test Report (internal) | 3 Years |
| - Test Report (external) | 3 Years |
| - Test Specimens | 30 days |



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6.0 Testing Procedures

Overview and Purpose

Provides detailed instructions and specifications for conducting tests, ensuring consistency and accuracy.

Best Practices

- Ensure all procedures and instructions are clear, concise, and accessible.
- Use approved procedures like AWS B2 Standard Welding Procedure Specifications.

Reference to QC47 Clause:

- Clause 10.5.1 specifies the use of AWS B2 Standard Welding Procedure Specifications for testing.

Sample Language

Work instructions are utilized to improve control of specific operations but shall not supersede the requirements of this manual. AWS Standard Welding Procedures using AWS B2 "Standard Welding Procedure Specifications (SWPSs)" form the basis of welder qualification and testing. Client procedures and pre-qualified welding procedures may be used for other welder qualification testing.

7.0 Test Records

Overview and Purpose

Test records form the basis for issuing credentials to a welder, are considered Quality Records, and shall be maintained in such a manner as to prevent deterioration for the life of the record. These records must be easily retrievable and may be either electronic or hard copy.

Best Practices

- Ensure all records are assigned a unique identifier (alpha/numeric) immediately upon registration of the applicant.
- Use approved procedures like AWS B2 Standard Welding Procedure Specifications.

Reference to QC47 Clause:

- Clause 10.1.8 specifies the PQTR and shall list all actual test values. This suggests that test reports must contain all values necessary to represent a complete text. Values not



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appropriate for the process or other values not required or available should show “N/A” in that field to indicate consideration of the value by the author.

Sample Language

Performance Qualification Test Records (PQTR) shall be completed by the Qualifier with actual test values entered in the appropriate field on the test form. Values may not be altered from those originally observed and documented. The test records are Quality Records and shall be maintained in accordance with the Quality Record Retention List. All fields on the test form shall be completed with the appropriate value or, if not appropriate to the process or test, shall have “N/A” entered indicating consideration by the author.

8.0 Internal Audit

Overview and Purpose

The necessity of internal periodic surveillances and audits have long been understood to evaluate the effectiveness and appropriateness of Quality Management Systems (QMS). Surveillance and audits of selected activities allow for a better understanding of whether the activity is being executed in accordance with the QMS, and if changes are warranted. Surveillance and audits are predictive – if properly conducted – of potential shortcomings within the QMS, employee training, and implementation of the QMS on the shop floor.

Best Practices

- Ensure that the Quality Manager and designated auditors conduct internal audits timely (at least annually) so that any deficiencies in the QMS may be discovered and corrected.
- Periodic audits involving employees help improve quality awareness and inform employees in the proper method of identifying quality issues before they become critical.

Reference to QC47 Clause:

- Clause 10.1.9 specifies that the ATF shall conduct at least one internal audit per year. Audits are an essential tool for use in discovering root cause of failures of the quality management system, implementing corrective and preventive measures, and should be conducted whenever it becomes apparent that the QMS is not being followed.

Sample Language

It shall be the responsibility of the Quality Manager to ensure that internal audits conducted at least annually, or more frequently should compliance with the QMS indicate (quality failures). Employees not involved in the activities or departments selected for audit shall be selected by the QM for instruction on how to conduct effective audits. These trained employees will serve as auditors overseen by a lead auditor.



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9.0 Management Review

Overview and Purpose

In addition to having responsibility for the commercial success of the company, senior management has a responsibility to demonstrate to employees their commitment to the success of the Quality Management Systems. This is demonstrated by active participation by senior management and a demonstration of quality commitment by conducting an annual review of the QMS and its effectiveness. This assessment requires documentation of any corrective and preventive measures required.

Best Practices

- Ensure that senior management is fully committed to the success and effectiveness of the QMS, and the active focus on quality by all employees.
- Periodic reviews demonstrate the commitment of senior management to quality.

Reference to QC47 Clause:

- Clause 10.1.10 indicates the importance of periodic (at least annually) of Management review of the QMS to ensure continued effectiveness of the organization, personnel, and procedures. These reviews are required to be documented as well as any corrective/preventive measures initiated because of the review.

Sample Language

As evidence of Senior management's commitment to quality within (Company Name), it shall be the responsibility of the President to initiate and participate in a review of overall commitment to quality improvement by conducting desk audits of company operations at least once per calendar year. These audits will focus on nonconformances discovered during departmental audits to ensure that corrective and preventive measures implemented are producing desired continuous improvements within company systems.

10.0 Nonconformance and Corrective Action

Overview and Purpose

Addresses issues or nonconformities in the testing process to prevent recurrence.

Best Practices

- Implement a systematic approach to identifying and addressing quality issues.



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- Ensure continuous improvement.

Reference to QC47 Clause:

- Clause 10.1.11 requires a corrective action process to address quality issues.

Sample Language

Conditions adverse to quality are promptly identified in the audit report and corrected. Significant conditions require determining the cause and planning actions to correct and prevent recurrence. Customer complaints are documented and addressed, including the cause, corrective actions, and prevention measures.

11.0 Complaints

Overview and Purpose

ATFs must have available a documented program for receiving and addressing both employee complaints as well as those of welders undergoing testing at the facility.

Ethics complaints either by welders or employees involving misconduct or ethical violations, by Qualifiers require documentation in accordance with the AWS QC9 standard. This does not preclude the ATF from maintaining the records of ethical violations as part of their complaint documentation system.

Best Practices

- Implement a system to receive, track, and analyze client (external) complaints regarding conditions, materials, or individuals employed by the company.
- Maintain an internal complaint system that allows employees to submit complaints or commendations to upper management in a manner that protects the employees' identity unless expressly allowed otherwise.
- Implement a system to review, analyze, act on complaints, and maintains information regarding the nature of the complaint and actions taken to correct and prevent future recurrence (if negative) or of recommendations if positive.

Reference to QC47 Clause:

- Clause 10.1.12 the facility shall have a documented process for addressing employee and welder complaints. Complaints and resolution shall be documented and maintained as quality documents.



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- Complaints of ethical violations by qualifiers shall be made as per *AWS QC9, Administrative Procedures for Alleged Violations of AWS Certification Programs* by the individual making the complaint.

Sample Language

This section contains instructions for submitting complaints to company management relating to actions or inactions by any individual which may compromise the quality of activities contained within the QMS or which violate company business or qualification activities which may reflect negatively upon the company or the welder qualification program. The form for submitting complaints anonymously is contained in the Appendices (Form Number – Insert Number) of the Quality Manual. Complaints against any Qualifier conducting oversight of welder testing on the company premises must be submitted using the AWS form contained within the Appendices (Form Number – Insert Number). Complaints may be expressed directly to senior management without fear of reprisal from any individual within company management or may be submitted without signature in writing or orally to the HR Manager.

12.0 Subcontracted Services

Overview and Purpose

The use of subcontracted services is sometimes critical to the operation of the ATF. Those subcontractors engaged in NDE, machining, material testing, and other operations outside the ability of the ATF, shall be evaluated by the QM or their designee to ensure that their services are conducted in accordance with a Quality Program, and the requirements of the ATF QMS. All approved subcontractors shall appear on a list of approved suppliers within the QA Manual periodically reviewed and updated by the Quality Manager.

Best Practices

- Review subcontractors for compliance with their QMS as well as the ATF QMS.
- Maintain an “approved” supplier list that is periodically (at least annually) reviewed, and deficient suppliers are removed.

Reference to QC47 Clause:

- Clause 10.1.13 requires review of subcontractors for conformance with their QMS as well as the ATF QMS, maintenance of an approved subcontractors list, and periodic review of subcontractors.

Sample Language

Section (insert number) of the QMS contains the list of approved subcontractors and sub-suppliers who have undergone review by the Quality manager, or designee, and have been found to be in



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compliance with their Quality Management Systems as well as the requirements of (Company Name)'s QMS. The date following each company name identifies the date of approval. Each subcontractor or sub-supplier shall be reviewed for continued use annually.

13.0 Equipment

Overview and Purpose

Ensures that all equipment used in testing is calibrated either by using internal standards or by a subcontracting agency and is functioning correctly at the time of use.

Best Practices

- Maintain a schedule for regular calibration and maintenance.
- Ensure accuracy of all testing equipment.

Reference for QC47 Clause:

- Clause 10.3.2 requires control over measuring and test equipment.

Sample Language

Routine commercial equipment does not need calibration, but special devices are calibrated at set intervals. Each item is physically labeled (calibration tag) by the equipment manager with its calibration status, and users are required to check for serviceability.

14.0 Material Control

Overview and Purpose

All testing materials and equipment must meet standards and be documented by the employee responsible for maintenance and calibration.

Best Practices

- Implement a robust review process for procurement documents.
- Ensure all requirements of the QMS are met and documented.



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Reference to QC47 Clause:

- Clause 10.4 requires control over procurement processes to ensure quality standards are maintained.

Sample Language

Procurement documents are prepared, incorporating relevant technical and quality specifications. When a customer has specific requirements, such as a Certified Material Test Report (CMTR), these are included in procurement documents. Procurement documents are reviewed and approved by the Purchasing Manager, with random surveillance by the Quality Manager to ensure compliance with the QMS. A Receiving Report records purchased materials. Items shall be inspected by receiving inspection for quantity, identification, and damage. Material Test Reports and Certificates of Conformance for purchased materials are reviewed for compliance. Rejected articles must be labeled as “NONCONFORMING” to prevent inadvertent use.

15.0 Appendices

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Closing

The Quality Manual Guide is an essential tool for establishing a robust quality management system that aligns with industry standards and best practices. It emphasizes the critical importance of documenting actual processes and ensuring that these documented procedures are consistently followed across all operations.

Documenting what you do serves multiple purposes: it provides a clear framework for operations, ensures compliance with regulatory standards, and facilitates continuous improvement by identifying areas for enhancement. By adhering to documented procedures, organizations can maintain consistency, reduce errors, and enhance overall efficiency.

Following the documentation is equally crucial. It ensures that all team members are aligned with the organization's quality objectives and that operations are conducted in a standardized manner. This alignment not only supports compliance but also fosters a culture of accountability and excellence.

As you implement and maintain your quality manual, remember that it is a living document. Regular reviews and updates are necessary to keep it relevant and effective in addressing the evolving needs of your organization and industry standards.

In conclusion, the success of your quality management system hinges on the integrity of your documentation and the commitment of your team to follow it. By doing so, you can achieve operational excellence, meet customer expectations, and sustain a competitive edge in the marketplace.