QC 47 Quality Manual Guide

American Welding Society

Accredited Testing Facility Program

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.

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.

Table of Contents

Quality Manual

1.0 Scope and Policy

Overview and Purpose

This section defines the boundaries and objectives of the quality management system, ensuring alignment with AWS QC47 standards. 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.
- Ensure all staff are aware of the policy's implications on their roles.

Reference to QC47 Clause

- Clause 1.2 outlines the program's application to welders and test facilities.

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-WD1), and/or contract requirements.

2.0 Amendments and Revisions

Overview and Purpose

Ensures the quality manual is current and relevant by incorporating changes in standards, technologies, or organizational practices.

Best Practices

- Implement a structured process for tracking changes.
- Ensure all revisions are communicated promptly to relevant personnel.

Reference to QC47 Clause

- Clause 1.3 discusses the requirements for maintaining and updating documentation.

Sample Language

This manual will be revised by Quality Assurance as required. Whenever revisions occur, all holders of controlled copies will be distributed copies of the revised pages, including a new revision page describing the changes. Management reviews of operations are continuous, and any nonconformance indicated within the Quality Program or its implementation shall be addressed, corrected, and preventive measures developed. Corrective and preventive measures shall be reviewed and monitored by Management.

3.0 Organization

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 requires an organizational structure that supports the quality management system.

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. The Qualifier 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.

4.0 Quality Program

Overview and Purpose

Provides a comprehensive overview of the quality management system, detailing how quality is maintained throughout the testing process.

Best Practices

- Develop comprehensive training programs.
- Ensure all employees are proficient in their roles and understand the quality standards.

Reference to QC47 Clause

- Clause 10.1.2 emphasizes the need for a documented quality management system.

Sample Language

The Quality Program is documented within this manual and may be supported by desk or work instructions to increase control of a quality function. These instructions shall be approved by the Quality Manager. The program is planned to control products from customer order requirements through procurement, receipt of material, handling, storage, and eventual shipment. Employees are trained to ensure proficiency is achieved and maintained, with procedural changes implemented through training.

5.0 Procurement Document Control

Overview and Purpose

Ensures that all materials and equipment used in testing meet specified standards and are properly documented.

Best Practices

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

Reference to QC47 Clause

- Clause 10.1.6 requires control over procurement processes to ensure quality standards are maintained.

Sample Language

Procurement documents are generated and include appropriate technical and quality requirements. When a customer has special 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.

6.0 Instructions, Procedures, and Drawings

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 prequalified welding procedures may be used for other welder qualification testing.

7.0 Document Control

Overview and Purpose

Maintains the integrity and accessibility of all documents related to testing and certification.

Best Practices

- Regularly audit document control processes.
- Ensure only current and relevant documents are in use.

Reference to QC47 Clause

- Clause 10.1.2 requires maintaining control over all quality-related documents.

Sample Language

The latest issue of drawings, specifications, catalogs, work instructions, and customer orders will be utilized to control articles throughout the operations system. Obsolete documents caused by modification or design change will be identified and removed from use.

8.0 Control of Purchased Items

Overview and Purpose

Ensures that all materials used in testing are verified and meet quality standards.

Best Practices

- Establish a rigorous inspection process for all incoming materials.
- Ensure they meet specified standards before use.

Reference to QC47 Clause

- Clause 10.4.1 outlines the requirements for controlling purchased items.

Sample Language

Receipt of purchased materials is documented in a Receiving Report. Articles are inspected for quantity, identification, and damage. Material Test Reports (MTRs) or Certificates of Conformance (CoCs) are reviewed for compliance. Rejected articles are documented as nonconforming to prevent inadvertent use.

9.0 Identification and Control of Items

Overview and Purpose

Maintains traceability of materials and test specimens throughout the testing process.

Best Practices

- Implement robust tracking systems.
- Ensure traceability of all materials throughout the testing process.

Reference to QC47 Clause

- Clause 10.4.2 emphasizes the importance of traceability in quality management.

Sample Language

OEM articles shall retain their identity through receipt, storage, and delivery, traceable to procurement and receipt documents. Base materials are identified by transferring Heat Numbers onto shapes designated for cutting, ensuring traceability survives cutting and grinding.

10.0 Inspection

Overview and Purpose

Ensures that all testing procedures are followed correctly and results are accurate and reliable.

Best Practices

- Conduct regular inspections and audits.
- Ensure all testing procedures are followed correctly and results are reliable.

Reference to QC47 Clause

- Clause 10.5.3 details the inspection procedures for test specimens.

Sample Language

Material reinspection is implemented for specific materials in storage if quality issues are suspected. Verification of test specimen material and thickness is conducted before testing. Inspectors ensure proper identification and fit-up of test plates before welding. Mechanical testing is overseen using ATF Inspection forms for evaluation.

11.0 Control of Measuring and Test Equipment

Overview and Purpose

Ensures that all equipment used in testing is calibrated and functioning correctly.

Best Practices

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

Reference to QC47 Clause

- Clause 10.3.2 requires control over measuring and test equipment.

Sample Language

Calibration of normal commercial equipment is not required, but special devices are calibrated at prescribed intervals. Each item is identified with its calibration status, and users are responsible for verifying serviceability.

12.0 Control of Nonconforming Materials

Overview and Purpose

Identifies and manages materials that do not meet quality standards to prevent their use in testing.

Best Practices

- Develop a clear process for identifying and managing nonconforming materials.
- Prevent their use in testing.

Reference to QC47 Clause

- Clause 10.4 outlines the procedures for handling nonconforming materials.

Sample Language

Nonconforming materials are reviewed for disposition, segregated from acceptable material, and documented. They may be used for training but must be identified to prevent their use in qualification testing.

13.0 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.
- 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 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.

14.0 Quality Records

Overview and Purpose

Ensures all records related to testing and certification are maintained and accessible.

Best Practices

- Ensure all quality records are securely stored and easily retrievable.
- Facilitate 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. Test specimens are maintained in a manner traceable to the individual applicant, preventing damage or loss for at least 30 days from the date of testing.

15.0 Appendices

See Table of Contents on page 2 of this guide.

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.