



QUALITY ASSURANCE & CONTROL
PROCEDURES MANUAL
FOR THE
LOUISIANA DELTA COMMUNITY COLLEGE
West Monroe Campus

AWS QC4 ACCREDITED TEST FACILITY FOR
TESTING WELDERS

CONTROL NO:

Prepared by: _____ (Facilities Representative)

Approved by: _____ (Executive Director of Economic
and Workforce Development)



PREFACE

THE INFORMATION WITHIN THIS MANUAL IS DESIGNED TO MEET THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY (AWS), QC4 AND QC7 (CURRENT), STANDARD FOR ACCREDITATION OF TEST FACILITIES FOR THE AWS CERTIFIED WELDER PROGRAM AND (CURRENT) QC7 STANDARD FOR AWS CERTIFIED WELDERS.

ALL INFORMATION AND THE STRUCTURE OF THIS DOCUMENT ARE SOLELY OWNED AND PROTECTED BY LOUISIANA DELTA COMMUNITY COLLEGE. THIS DOCUMENT IS DESIGNED TO SATISFY PARTS 3.2. & 3.2.1, TEST FACILITY QUALITY ASSURANCE & CONTROL PROCEDURES MANUAL REQUIREMENTS PER THE (CURRENT) AWS QC4 STANDARD.

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POLICY STATEMENT

THIS POLICY STATEMENT FOR LOUISIANA DELTA COMMUNITY COLLEGE RELATES TO THE AWS ACCREDITED TEST FACILITY FOR WELDER QUALIFICATION CONDUCTED UNDER THE PROVISIONS OF THE (CURRENT) AWS QC7 STANDARD FOR AWS CERTIFIED WELDERS, AND SUPPLEMENTS C, F & G.

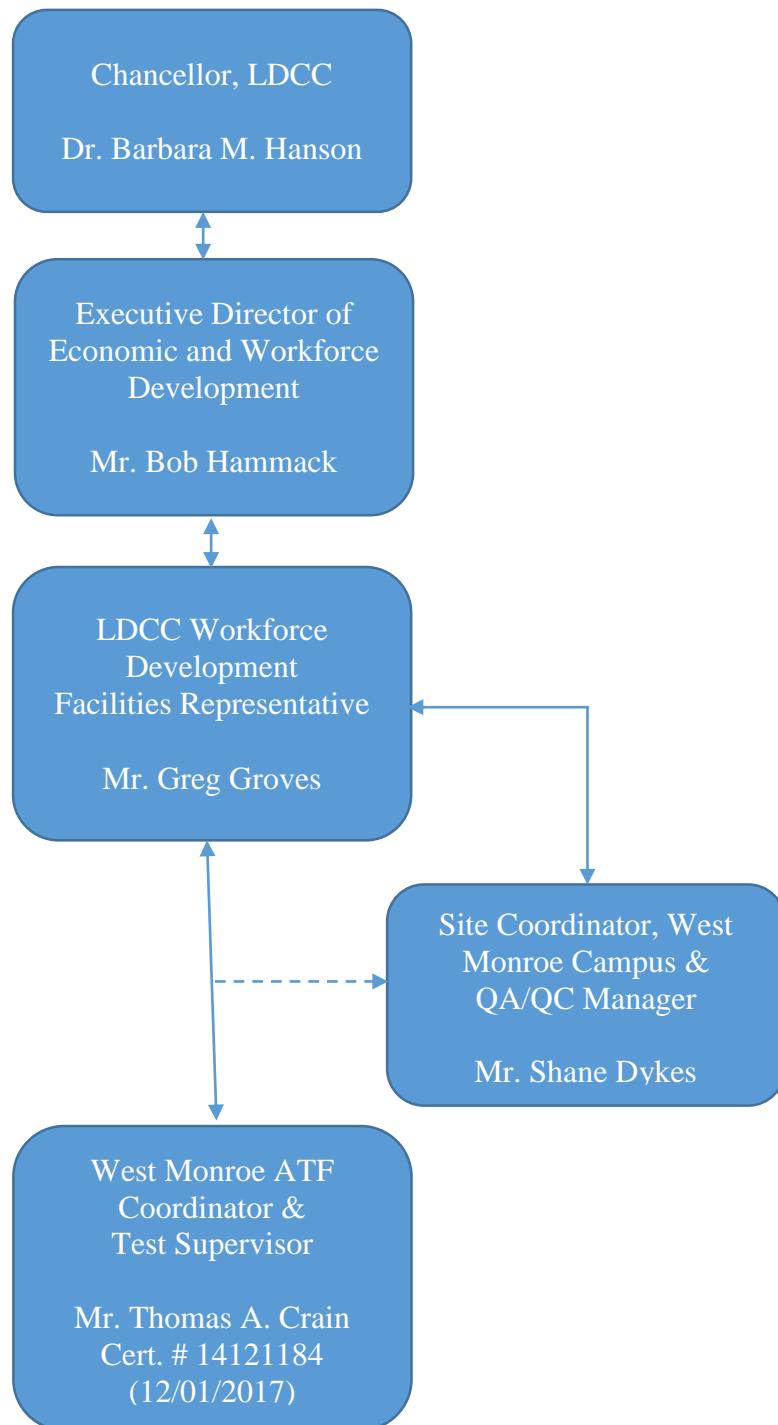
THE POLICY OF THE LOUISIANA DELTA COMMUNITY COLLEGE ACCREDITED TEST FACILITY IS TO ABIDE BY ALL OF THE REQUIREMENTS OF THE AWS QC4 (CURRENT) STANDARD FOR ACCREDITATION OF TEST FACILITIES FOR THE AWS CERTIFIED WELDER PROGRAMS, WHEN THE TRAINING FACILITY IS OPERATED AS AN AWS QC4 ACCREDITED TEST FACILITY.

TO IMPLEMENT SUCH POLICY, MR. THOMAS A. CRAIN (WEST MONROE ACCREDITED TEST FACILITY COORDINATOR) WILL SERVE AS THE ACCREDITED TEST FACILITY TEST SUPERVISOR. THE WEST MONROE CAMPUS SITE COORDINATOR WILL SERVE AS THE QA/QC MANAGER AND WILL REPORT DIRECTLY TO THE EXECUTIVE DIRECTOR OF ECONOMIC AND WORKFORCE DEVELOPMENT, OR HIS OR HER DESIGNATED REPRESENTATIVE.

SHOULD ANY CONFLICTS OR TECHNICAL COMPLAINTS DEVELOP THAT CANNOT BE RESOLVED BY THE QA/QC MANAGER AND THE CONFLICTING PARTIES, THE QA/QC MANAGER IS DIRECTED TO REFER THE PROBLEM TO MR. BOB HAMMACK, THE EXECUTIVE DIRECTOR OF ECONOMIC AND WORKFORCE DEVELOPMENT, FOR RESOLUTION. MR. HAMMACK, OR HIS DESIGNATED REPRESENTATIVE, WILL RESOLVE THE ISSUE IN A TIMELY MANNER AND PROVIDE FEEDBACK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT AWS QC4 STANDARD AND THE NONCONFORMANCE PROCEDURES IN THIS MANUAL.

Dr. Barbara M. Hanson
Chancellor, Louisiana Delta Community College

**LDCC, WEST MONROE ACCREDITED TEST FACILITY
ORGANIZATION CHART**



Personnel Duties and Responsibilities

1.0 Test Supervisors/AWS Certified Welding Inspectors shall either be full-time employees or contractors that meet the requirements of the current AWS QC1. Their duties are as follows:

1.1 All test supervisors shall have a minimum of five years experience in administering welder certification tests and interpreting codes and specifications.

The Test Supervisor shall be responsible for the following:

- 1.2 Ordering materials as required by the Welding Procedure Specifications, using Exhibit #2, a Banner Requisition Request, for base materials, consumables and any contract testing or NDT services. The West Monroe Site Coordinator will enter requisitions into the Banner Requisition System for approval by the Executive Director of Economic and Workforce Development and Purchasing Department.
- 1.3 Review and approve all AWS Certified Welder applications, Exhibit #1, with the applicant, then review the testing procedures and all ATF and Office of Risk Management (ORM) safety requirements.
- 1.4 Verify the applicant's photo identification (state issued driver's license or ID card, Military ID, etc.) and determine if the applicant requires eye correction in accordance with Supplement C and/or F.
- 1.5 Verify the proper fit up and position of test assemblies per the WPS.
- 1.6 Visually inspect test assemblies to ensure they meet the required code, standard or specifications, and document the same on the required Welder Performance Qualification Checklist, Exhibit #4.
- 1.7 Suspend the test at any time he or she feels that the applicant will not pass.
- 1.8 Personally conduct or verify that all required tests of the welded coupon are completed in conformance with the appropriate supplement, code, standard or specification requirements.
- 1.9 Verify that all safety equipment is available and that procedures are explained and reviewed with the applicant. The applicant may utilize his or her own equipment if it is found to be acceptable to the Test Supervisor. Review and or provide a copy of the current AWS QC7 to the applicant and explain the requirements of the Maintenance of Certification Form Exhibit #7.
- 1.10 Ensure that, if they are used, Contract Test Supervisors are required to review and understand the QA/QC Manual Procedures and, in addition, closely observe the administration of at least one complete AWS test. Ensure that Contract Test Supervisors are required to follow the same policies and procedures as the full-time employee Test Supervisor.
- 1.11 Conduct off-site testing while ensuring that strict compliance with this manual is maintained. Verify supporting documentation PRIOR to the test being administered to include documentation for the base metal, CMTR's, consumables, COC's, welding machine accuracy, inspection tools and safety equipment to be used. Properly mark the weld test coupons with a low stress

stencil or equivalent, and return them to the facility for final NDT or destructive tests as required.

- 1.12 Ensure that all required documentation is complete and that the originals or copies, whichever is required, are stored in the applicants file. Where required, ensure documents are properly submitted to the AWS Certification Department. Exhibit #4 should be completed with initials, signature and CWI number and/or CWI stamp and placed in the AWS Certified Welder applicant's file with the original AWS Certified Welder Application, a copy of the welder's I.D., and the AWS Welder Performance Qualification Test Record, Exhibit 8, at a minimum. The files shall be maintained securely locked and with access limited to ATF management personnel for a minimum period of five years.

2.0 Duties of the Accredited Test Facility Representative are as follows:

- 2.1 Supervise the ATF Test Supervisor and QA/QC Manager and ensure that ATF operations are conducted in a safe and effective manner.
- 2.2 Confirm that all required documentation is submitted to the AWS Certification Department in a timely manner.
- 2.3 Have overall responsibility for the technical operation of the Accredited Test Facility and its policies, programs and procedures, including an effective LDCC and ORM safety and loss prevention program.
- 2.4 Represent the Accredited Test Facility in public meetings of interest and during publicity events.
- 2.5 Have no less than five years of technical related experience in inspection and testing of metals or welding per AWS QC4 section 3.3(1), and be capable of verifying the implementation and the effectiveness of the approved Quality Control & Assurance System in place.

3.0 Duties of the QA/QC Manager are as follows:

- 3.1 Prepare and implement each aspect of the Quality Assurance & Control Procedures Manual.
- 3.2 Maintain a master copy of the Quality Assurance & Control Procedures Manual and distribute controlled and uncontrolled copies as determined by the QCM and Accredited Test Facility Representative. **Controlled copies shall be sequentially numbered and a record of their distribution maintained.** Uncontrolled copies may be distributed by approval of the QCM only.
- 3.3 Develop and/or suggest new or additional quality control procedures and/or revisions. Additions and/or revisions shall be clear and concise and documented within each manual by indicating the effective date of change and the revision number, and by highlighting the changed material in the manual.
- 3.4 Review the Quality Assurance & Control Procedures Manual on at least an annual basis.
- 3.5 Serve as the liaison for any and all technical complaints by investigating and documenting incident complaints using Exhibit #5.

- 3.6 Investigate and prepare findings for any and all non-conformances.
- 3.7 Conduct the required annual on-site audit checklist and submit the results to the AWS Certification Department promptly.
- 3.8 Assure that any Contractor Test Supervisors are properly trained, that all relevant certifications are filed and that his or her professional experience is documented. Assure also that any Contract NDT Company (if used) submits their NDT written practice(s) and that appropriate NDT personnel certifications per SNT-TC-1A or equivalent are on file. Ensure that copies of the company's operating procedures are current and also on file with the AWS ATF. This requirement may not be applicable if there is only bend testing being conducted.
- 3.9 Report directly to the Accredited Test Facility Representative and have overall responsibility for implementation of the QA/QC Manual. The QCM should have five (5) years of relevant Quality Systems and/or Quality Control experience.

4.0 General Policies and Procedures

- 4.1 This manual is intended to document the LDCC QA/QC system, which is established for the purpose of maintaining Quality Control at the West Monroe AWS Accredited Test Facility and for associated off-site testing.
- 4.2 All applicants for testing are to register with the Accredited Test Facility Representative, or his designee, prior to testing. The applicant will coordinate with the Test Supervisor to schedule a location, date and time for testing.
- 4.3 All Accredited Test Facility employees and contractors shall become completely familiar with the QA/QC manual and sections applicable to his or her specific duties prior to administering any welder performance testing.
- 4.4 This QA/QC Manual and referenced supplements include specific and detailed instructions, practices, and/or procedures for administering the welder qualification tests.
- 4.5 It shall be the policy of the LDCC to conduct an internal audit/assessment of the program on at least an annual basis and to comply with the AWS QC4, Section 9, Accreditation Renewal Requirements, accordingly. The QCM, who shall have five (5) year's related experience and knowledge of quality systems, shall conduct the internal assessment or renewal questionnaire. If this individual is also acting as the Test Supervisor, the assessment checklist shall be reviewed and approved by the Accredited Test Facility Representative or the assessment conducted by an individual who is independent of the ATF.
- 4.6 The entire management team shall meet annually to review and assess the continued effectiveness of the quality program, organization, and procedures and will act to ensure that any necessary corrective actions are carried out. To comply with AWS QC4 3.2.2., minutes of the annual meeting shall be taken and maintained at the ATF.
- 4.7 A library containing all relevant ATF material, and available for use by faculty, staff and students, is maintained in the AWS spaces.

5.0 Purchasing of Materials and Services

- 5.1 The QCM or the Test Supervisor will prepare a Banner Requisition Request, Exhibit #2, for base metals, filler metals, and any contract testing or NDT services required for the ATF. The Banner Requisition Request will be submitted to the Site Coordinator for entry into the Banner System and subsequently approval by the Executive Director of Economic and Workforce Development and the Purchasing Department.
- 5.2 Required documentation of purchased materials must be maintained; i.e. certificate of conformance for filler metals (current within one year) in accordance with AWS A5.01. Certified Mill Test Reports, (CMTR's) shall be required for all test plates, pipe and materials upon delivery and must be traceable to the actual test coupons used. This requirement shall be specified on the original purchase order. See Exhibit #2.
- 5.3 Once materials are received, the delivery ticket shall be matched to the original purchase order for accuracy, and the heat number from the CMTR, or the PO number on the material itself, is to be applied for ease of verification of the materials. All test materials shall be stored in a secure location where they cannot be mixed with non-ATF welder test materials. Either marking or knowledge of the plate material roll direction is essential when coupons will be bend tested.
- 5.4 All final testing documentation, i.e. QA checklist, WPQR, NDT reports and or WPS's shall be reviewed for compliance and filed with the applicant's file accordingly.
- 5.5 Welding consumables shall be stored as per the manufactures recommendations and the Certificate of Compliance shall be kept on file for each type/class/brand name of electrode or filler metal utilized for testing - current within one year.

6.0 Testing Procedures

- 6.1 Once the AWS Certified Welder application is complete and approved and safety and welding procedure requirements have been discussed and are understood by the applicant, a cutting ticket, Exhibit #3, will be prepared.
- 6.2 The applicant will be assigned a test/lab number. The last (4) digits of the applicants' social security number, supplemented with the test number, may be used. EXAMPLE: 3198-01-13. This will be the last 4 digits of the social security number, followed by the actual test number, followed by the year. This numerical sequence is to be used on all forms, test weld coupons, bend specimens, checklists, any film or radiographic reports and on all related documentation.
- 6.3 The Test Supervisor will review the Welding Procedure Specification to be used with the applicant. Company supplied WPS's or AWS Standard WPS's may be used. Welding Code figures or similar may be used to illustrate to the applicant the set-up to be used for the actual performance tests.

- 6.4 Once the Test Supervisor has witnessed the testing procedures, ensuring that the test plates are not repositioned without approval, and completed the Welder Performance Qualification Checklist, Exhibit #4, and has verified that the test results are acceptable, and if the coupon will not be non-destructively tested, the weld test coupon shall be laid out for saw or plasma/oxy fuel cutting to the required dimensions as illustrated in AWS B4.0, AWS D1.1 and/or ASME IX, or other recognized codes/standards for the face, root and/or side bend specimens. Test Supervisors shall have the figures for these coupons readily available and he, or his supervised designee, will conduct the bend tests operation to ensure that the specimens are prepared and tested properly. The basis for all SWPS's come from B2.1.
- 6.5 Once the Test Supervisor verifies the preparation accuracy of the bend test specimens, the radius of the guided bend test unit shall be verified as accurate for the material to be destructively tested. Exhibit #4 shall be utilized to document the bend test/destructive test activities. Exhibit #4 may be modified to accommodate fillet weld break/macro etch tests if required.
- 6.6 The Test Supervisor shall refer to the acceptance criteria, code, standard or supplement used on Exhibit #4.
- 6.7 Once the test is complete and the results reviewed, The AWS Welder Performance Qualification Record is completed, (WPQR) a final quality verification for assuring accuracy of all required tests, documentations and submittals as outlined, should be completed. Photographs of all completed test coupons will be taken and securely stored for future reference. Exhibit #4 should be initialed, dated and signed by the QCM or his designated Test Supervisor.
- 6.8 Test specimens may be discarded once the Test Supervisor has ensured that the requirements stated herein have all been met. Disposal shall be accomplished either by the test facility cutting the plate up for scrap or by the contract NDT Company discarding the item. Optionally, at the Test Supervisor's discretion, the specimens may be tack welded together and placed in a secure/locked location for future verification or retrieval, or for any other anticipated need. If kept, test specimens will be clearly identified

7.0 Documentation

- 7.1 At a minimum, the final AWS Certified Welder applicant file shall contain the documents described below. However, the provisions of QC4 section 3.11 shall always be complied with. Retention shall be for five a minimum of (5) years.

To be kept in welders file (min.):

- a) The original application for becoming an AWS Certified Welder with a copy of the applicant's photo I.D.
- b) The Welder Performance Qualification Checklist, Exhibit #4.
- c) The AWS Welder Performance Qualification Test Record with reference to the applicable WPS and that matches the AWS Certified Welder application.
- d) The original signed signature page, documenting acknowledgement of testing safety rules.

- e) A copy of NDT certificate if non-destructive weld testing is used.
 - f) WPS if not SWPS (see 7.2)
- 7.2 When using Supplement C the form QC-WF1C may be used with the included WPS's from the supplement. When qualification testing is conducted using Supplement F standards, the similar forms are also to be included. Test supervisors shall be familiar with the applicable supplements, i.e. G for generic testing to any recognized code or standard (AWS D1.1, D1.1, B2.1, ASME IX, etc.), Supplement C for Sheet Metal (AWS D9.1 [not sheet steel, i.e. D1.3]) and Supplement F for B31.3 qualification/ASME IX.
- 7.3 To be sent to AWS:
- a) The original signed, CWI stamped AWS Welder Performance Qualification testing record
 - b) Original AWS Certified Welder Application
 - c) Appropriate fees shall be submitted to the AWS Certification Department for final approval and processing.
 - d) If the WPS, welding procedure specification is not a standard AWS B2.1-SWPS or if the WPS has not been previously submitted to AWS, then the actual WPS shall be submitted as well.
- 7.4 The applicant/AWS Certified Welder is responsible for maintenance of his or her certification with the AWS Certification Department per the requirements of the current QC7.

8.0 Control of Non-Conformances and/or Technical Complaints

- 8.1 All non-conformances and/or technical complaints shall be reported to the Test Supervisor, Accredited Test Facility Representative and QCM. Exhibit #5 shall be used to investigate the non-conformance or complaint and closed out by the QCM.
- 8.2 The QCM shall investigate and document, in writing, the cause of the conflict or complaint and determine the proper disposition.
- 8.3 If materials are determined or suspected to be non-conforming, they shall be documented and segregated so as to avoid their potential use until properly disposed of.
- 8.4 The QCM shall:
- 8.4.1 Prepare and or confirm the written disposition of all non-conformances or technical complaints.
 - 8.4.2 Develop and implement appropriate revisions to procedures and/or practices with a view to avoiding reoccurrences of similar non-conformances or technical complaints.
 - 8.4.3 Any technical complaints filed against the ATF shall be reviewed with the Facility Representative, Test Supervisor and with the QA/QC Manager for resolution/conclusion.

9.0 Calibration and Maintenance of Equipment

- 9.1 Welding equipment to be used for administering weld test, shall be in good operating condition and the welding parameters, i.e. voltage and amperage shall be verified or checked with a calibrated volt/amp (Fluke or similar) test

meter to assure that the voltage is within $\pm 7\%$ of the required WPS settings and that amperage is within $\pm 10\%$ of the WPS required settings prior to each weld test. The calibration certificate for the meter shall be on file. The meter should be calibrated per manufactures recommendations.

- 9.2 A calibration tag shall be placed on the meter used to verify the welding power sources.
- 9.3 Mechanical equipment shall be in good operating condition. Mechanical equipment includes saws, bend jigs, grinders, stencils, hammers, brushes, etc.
- 9.4 The electrode oven for low hydrogen electrodes may be checked with a temp stick 250F or similar device to assure rod oven accuracy.
- 9.5 For major equipment, hard-copy or electronic operating manuals shall be on file. A documentation system designed to ensure that relevant repairs and required preventive maintenance are being conducted on major equipment shall be put into place. The documentation must include the equipment's description (location, manufacturer, model number, serial number, etc.), date and type of repair or preventative maintenance and other pertinent information.
- 9.6 Inspection equipment, such as tapes, magnifiers, rules, fillet weld gauges and butt weld gauges do not normally require calibration but must be taken out of service and replaced if damaged. Calipers, micrometers, NDT equipment and destructive test equipment (tensile, Charpy V notch, etc.), other than the bend jigs, shall be calibrated to the manufacture's recommendations, be traceable and have a tag indicating last date of calibration and next calibration due date when applicable and when the equipment is used in ATF operations.
- 9.7 Exhibit #6 should be used to document all required calibrations of equipment or equivalent records maintained in another form.

10.0 Nondestructive Examinations

- 10.1 In lieu of conducting destructive bend tests, Radiography testing may be utilized if certified subcontractor is available. Backing bars shall be a minimum of 3" in width when RT is used in lieu of the bend test for plate per AWS D1.1 & D1.5. The welder identification code will be placed on the x-ray film when radiography is used.
- 10.2 The requirements and acceptance criteria shall be clearly stated in the purchase order to the contract NDT provider, and shall describe the type and extent of NDT tests to be conducted. The inspection report shall include documentation of the specification requirements.
- 10.3 All personnel conducting testing shall have current SNT-TC-1A, or equivalent certification to Level I or Level II status, as required by the NDT provider's written practice for the qualification and certification of NDT personnel. Interpretation of NDT results (other than visual) shall be by a Level II or Level III certified professional. At the LDCC ATF, all radiography will be conducted by contract professionals.
- 10.4 The NDT written practice and individual NDT technician certifications shall be on file at the AWS ATF.
- 10.5 The NDT- Level III approved operating procedures used by the certified NDT individuals shall also be on file at the AWS ATF.