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# [CompanyName]

[CompanyAddress1]

[CompanyPhone]

## Piping and Metals Fabrication and Installation Quality Manual

### Operating Policies of the [CompanyName] Quality System

Management acceptance

This Quality Manual has been reviewed and accepted

Endorsed By: (Name / Title)	[PresidentName], President		
Signature:	<i>[PresidentName]</i>	Date:	[Date]

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# QUALITY MANUAL

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## 2. PERSONNEL QUALIFICATIONS

### 2.1. OVERVIEW

The Quality Manager qualifies employee capabilities to ensure that they are capable of completely carrying out their assigned quality responsibilities including the following capabilities:

- Knowledge of Company quality standards
- Knowledge of job responsibilities and authority
- Demonstrated skills and knowledge
- Demonstrated ability
- Demonstrated results
- Required training
- Required experience

The Quality Manager also evaluates independent contractor personnel on the same standards that apply to employees.

### 2.2. QUALIFICATION OF [COMPANYNAME] VISUAL, MT, OR PT PERSONNEL

QC Inspectors who perform VT, MT, or PT examinations on [CompanyName] welds are qualified and certified for each method in accordance with the following minimum requirements:

- Instruction by the Level III or Quality Manager in the fundamentals of the NDE method.
- On the job training to familiarize the candidate with the appearance and interpretation of indications of weld defects. The length of such training shall be sufficient to assure adequate assimilation of the knowledge required.
- Candidates already qualified in one method may, at the discretion of the Quality Manager, be exempt from this training for other methods.
- A visual acuity examination performed at least annually to determine the optical capability of the candidate to read Jaeger 1 letters at a distance of not less than 12", and to distinguish the contrast between colors.

Upon completion of the above, the candidate is given an oral or written examination and a performance examination by the Quality Manager to determine if he is qualified to perform the examination and interpret the results.

Certification records of each QC Inspector who performs NDE examination shall be signed and dated by the Quality Manager and placed in the examiner's file.

Certified NDE Personnel who have not performed a specific examination method for a period of one year or more are recertified only after successfully completing the examinations described above.

Substantial changes in procedures or equipment used require recertification of NDE personnel as determined by the Quality Manager.

The following criteria may be used as an alternative to the above requirements, as applicable for the method:

- Qualification to AWS QC1, Standard for Qualification and Certification of Welding Inspectors, with the addition of the requirements above.
- Recommended Practice ASNT SNT-TC-1A - Current Code accepted edition, qualification of Nondestructive Testing Personnel

## 2.3. QUALIFICATION OF WELDERS AND WELDING OPERATORS

For pipe fabrication, all welders and welding operators are qualified to the ASME code Section used for construction & ASME Section IX, under the full supervision of the QC inspector with test results reviewed and approved by the Quality Manager. The Quality Manager prepares and certifies the Welder Performance Qualification Record or Welding Operator Performance Qualification Test form (WPQ/WOPQ), which documents the performance essential variables actually used for test welds, and the ranges qualified for production welding by these variables. The WPQ/WOPQ will also include results of visual inspection.

For structural metals fabrication, only certified welders may perform welding activities. Welders must be certified and maintain a valid certification in accordance with the AWS Welder Certification Program and have completed the necessary tests in accordance with QC7, *Standard for AWS Certified Welders*.

The Quality Manager or a Certified Welding Inspector (CWI) will review and approve the welder and welding operator's qualification record for compliance with the necessary code(s) before they begin welding on a specific project.

A WPQ/WOPQ is also required for the welder who welded the test welds used to qualify a WPS or to re-qualify, based on the performance essential variables used. The original WPQ/WOPQ's are retained in the Quality Manager's files.

The Quality Manager approves the qualification of all welders before they begin welding on a specific project.

## 2.4. QUALIFICATION OF WELDERS FOR SPECIFIC WELDING CODES

When indicated on the welding procedure, the Quality Manager approves qualification of welders to the specific welding procedure.

## 2.5. QUALIFICATION OF WELDERS FOR SPECIFIC WELDING PROCEDURES

When indicated on the welding procedure, the Quality Manager approves qualification of welders to the specific welding procedure.

## 2.6. MAINTENANCE OF WELDER AND WELDING OPERATOR QUALIFICATIONS

## 2.7. MAINTENANCE OF WELDER AND WELDING OPERATOR QUALIFICATIONS

Each qualified welder is listed on the Welding Personnel Certifications and Licenses form in the Forms section of this Quality Manual. The Quality Manager determines from the Welding Personnel Certifications and Licenses form when a welder's qualification will expire.

### 2.7.1. RETESTING BASED ON QUALITY OF WORK

In addition to welder certification, welding personnel may be required to be retested based on the following criteria:

- An interview of the welder
- Increased visual inspection for a limited time period
- Observation of the welding, or a simplified weld test developed to evaluate the issue of concern
- Requalification in compliance with Clause 6 or Clause 10 for tubulars of the D1.1/D1.1 M code

### 2.7.2. RETESTING BASED ON QUALIFICATION EXPIRATION

If evidence cannot be supplied that shows a welder, welding operator, or tack welder has used the welding process within the last six months, he or she is not considered qualified to weld using that process without new qualification testing.

### 2.8. CERTIFIED WELDING INSPECTOR REQUIREMENTS

For pipe fabrication, certified welding inspectors must be certified by the American Society of Mechanical Engineers to ASME Standards for ASME Certification of Welding Inspectors to the applicable code that applies to the inspections they perform.

For structural metals fabrication, [CompanyName] uses only qualified weld inspectors. If an AWS Certified Welding Inspector is not used, the Quality Manager will ensure that the weld inspector is qualified and certified in accordance with [CompanyName]'s written practice based on current ASNT (American Society for Nondestructive Testing) SNT-TC-1A (VT). The certification process will include the educational, training, experience and testing provisions described in SNT-TC-1A (VT).

The Quality Manager will ensure that inspectors are knowledgeable with the code(s) which applies to the fabrication work being performed.

The Quality Manager approves the qualification of all certified welding inspectors.

### 2.9. NDE WELDING INSPECTOR REQUIREMENTS

For pipe fabrication, radiographic Interpreters shall be certified in accordance with ASME, Specification for the Qualification of Radiographic Interpreters.

Non-Radiographic NDE welding inspectors must be certified by the American Society of Mechanical Engineers Standard for ASME Certification of Welding Inspectors to the applicable code that applies to the inspections they perform.

For structural metals fabrication, the Quality Manager will ensure that Radiographic Interpreters are certified in accordance with AWS B5.15, *Specification for the Qualification of Radiographic Interpreters*. Alternatively, Radiographic Interpreters may be qualified and certified in accordance with [CompanyName]'s written practice based on ASNT SNT-TC-1A. The certification process will include the educational, training, experience, and testing provisions described in SNT-TC-1A. These requirements will also apply to personnel performing other NDE methods, (e.g., MT, PT, and UT).



## 9. WELDING CONTROL

### 9.1. OVERVIEW

All welding on code work is performed using Welding Procedure Specifications (WPS) and welders/welding operators qualified in accordance with the applicable construction code section and ASME Section IX.

### 9.2. WELDING PROCEDURE SPECIFICATIONS (WPS)

Welding procedure specifications shall be qualified and approved in accordance with the applicable ASME B&PV codes Section IX, AWS Welding code(s) or Specification(s) (i.e., D1.1., D1.5) or AWS B2.1, *Specification for Welding Procedure and Performance Qualification*.

When the governing Welding code(s) mandates that welding procedures be qualified by test, the [CompanyName] shall have PQRs that support the applicable WPSs. When prequalified WPSs or Standard Welding Procedure Specifications (SWPSs) published by the AWS are permitted, PQRs are not required.

The Quality Manager or a Certified Welding Inspector (CWI) reviews and approves the welding procedure before being used in production welding operations.

Revisions to the WPSs and PQRs are controlled by the Quality Manager according by the document and record control procedures specified in the relevant section of this Quality Manual.

The applicable WPSs shall be available to welders or welding operators during testing and production welding.

The Quality Manager is responsible for selecting and assigning welding procedures. The Quality Manager or qualified designee shall ensure that welding procedures are listed on applicable shop fabrication drawings.

### 9.3. STANDARD WELDING PROCEDURE SPECIFICATIONS (SWPS)

Standard Weld Procedure Specifications which have been qualified by AWS and accepted for use by ASME can be used for fabrication and installation of ASME pressure vessels. Prior to use, these procedures shall be demonstrated in accordance with ASME, Section IX, Article V and accepted (signed) by the Quality Manager.

### 9.4. WELDER ID

Each qualified welder is issued a unique stamp (stencil) by the Quality Manager with which to identify each weld made. When conditions prevent the stamping of welds, the QC Inspector enters the stencil on the Supplemental Traveler for each joint welded, or the QC Inspector will record all stencils for each weld joint on an as-built drawing.

### 9.5. TACK WELDS

Tack welds, whether left in place or completely removed, are made by qualified welders using a qualified procedure.

If left in place, the ends of each tack weld are ground to ensure complete fusion into the final weld, and the welder's symbol is recorded on the Supplemental Traveler or as-built drawing.

## 12. WELD EXAMINATION AND INSPECTION PROGRAM

### 12.1. FABRICATION

Fabrication of code items is controlled using a Traveler prepared by the QC Inspector from the drawings, which lists the sequence of Fabrication, examination, inspection and test operations for each item in the space provided.

The QC Inspector reviews the Traveler with the Welding Inspector and establishes the required Hold Points. The QC Inspector and the Welding Inspector initial and date the Traveler in the space provided to document the review and release the Traveler to start Fabrication. Fabrication cannot proceed past a Welding Inspector's Hold Point without Welding Inspector's concurrence. This will be documented on the Traveler by the Welding Inspector during his next visit.

The Traveler contains columns for the initials and date of the QC Inspector on the applicable line for those operations accepted, and for the Welding Inspector to initial and date in the column provided to signify acceptance of those operations. The Supplementary Traveler can be used to establish hold points for fit up and final inspection of welding.

### 12.2. FINAL INSPECTIONS

When Fabrication or assembly is completed, the QC Inspector performs a final inspection and initials and dates the Traveler when the item meets all dimensional and code requirements.

The Welding Inspector will make a final inspection immediately following the hydrostatic test if required. For parts not tested until field assembly is completed, final inspection is done after Fabrication of the part is completed.

When a shell is not provided with an opening or other means of access to inspect internal surfaces, an inspection point for the QC Inspector and Welding Inspector will be shown on the Traveler to permit internal inspection before starting the final closure weld or bolted joint..

### 12.3. WELDING INSPECTION AND TESTING STANDARDS

Weld Inspections and tests assess conformance to welding industry standards including:

Welding Inspection and Testing Standards		
Reference Standard Title	Reference Standard No.	Description
Material verification of high-strength bolts, nuts and washers	AISC 360 Section A3.3 and applicable ASTM material Standards	Identification markings to conform to ASTM standards specified in the approved construction documents
Material verification of weld filler materials	AISC 360, Section A3.5 and applicable AWS A5 documents	Identification markings to conform to AWS specification in the approved construction documents
Inspection of high-strength bolting	AISC 360, Section M2.5	Inspection of high-strength bolting
Material verification of structural steel and cold-formed steel deck	AISC 360, Section M5.5 and applicable ASTM material standards	For structural steel, identification markings to conform to AISC 360

Ultrasonic Testing Method	ASNT SNT-TC-1A Q&A Bk C	Ultrasonic weld inspecting techniques
Standard Practice for Contact Ultrasonic Testing of Weldments	ASTM E 164	Ultrasonic Inspection
Standard Practice for Liquid Penetrant Examination for General Industry	ASTM E 165	Liquid Penetrant Inspection
Standard Guide for Magnetic Particle Testing	ASTM E 709	Magnetic Particle Inspection
Standard Guide for Radiographic Examination	ASTM E 94. D	Radiographic Inspection

#### **12.4. HYDROSTATIC TESTS**

code required hydrostatic tests are performed and are witnessed by the QC Inspector and Welding Inspector following a preliminary test to determine and repair any leakage.

The QC Inspector will verify that the Welding Inspector has been notified sufficiently in advance of each test so that the test is witnessed, and inspections are completed.

Pressure Vessels designed to ASME, Section VIII, Div. 1 shall:

- be tested at 1.3 times the MAWP times Stress cold/Stress hot
- use dial indicating or digital reading pressure gages shall meet the requirements of ASME Section VIII, Div. 1, paragraph UG-99.
- be subjected to pressure tests using water at not less than ambient temperature, but in no case less than 30 degree above MDMT.

Boilers and Power Piping designed to ASME Section I and ASME B31.1 shall:

- be tested at 1-1/2 times MAWP stamped on the boiler.
- use of dial indicating, or digital reading pressure gages shall meet the requirements of ASME Section I, paragraph PG-99.
- be subjected to pressure tests using water at not less than ambient
- temperature, but in no case less than 70°F.

When the pressure test meets code requirements and is accepted by the QC Inspector and the Welding Inspector, they will initial and date the Traveler in the space designating the test as their mandatory inspection/hold point and complete the Pressure Test Report.

Upon completion of test and final inspection, the Traveler and supporting documents are returned to the Quality Manager for review and filing as described in Section 22 of this Manual.

#### **12.5. PNEUMATIC TESTS**

When code required hydrostatic tests are unable to be performed because the equipment is not designed or supported for weight of water, or when testing liquid would not be tolerated) a pneumatic test may be performed with customer, Welding Inspector, and jurisdictional approval.

Pneumatic tests are completed after required NDE examination per ASME Section VIII, Div. 1. Pneumatic testing will not be conducted on ASME Section I items or B31.1 piping.

Pneumatic pressure tests will be conducted:

- Per ASME Section VIII, Div. 1, paragraph UG-101.
- Where the pneumatic test pressure at every point in the shell or system shall be equal to 1.1 times the MAWP multiplied by Stress cold/Stress hot.
- With metal temperature maintained at least 30 degrees above MDMT, and about 60°F.

## **12.6. TEST GAUGES**

At least one directly connected calibrated indicating test gauge, visible to the operator controlling the pressure located at the highest available connection, and having a dial range of at least double the intended maximum test pressure but not less than:

- 1 ½ nor more than 2 times that pressure, shall be used for pressure testing items from ASME B31.1 and ASME Section I.
- 1 ½ nor more than 4 times that pressure, shall be used for pressure testing items from ASME Section VIII Div. 1.

An additional indicating gauge may be necessary to allow the pressure to be visible to the operator at all times during the test, and to prevent excessive pressure being applied.

Digital reading gauges having a wider range of pressure may be used, provided the readings give the same or greater degree of accuracy as with dial indicating type pressure gauges.

## **12.7. WELD INSPECTION AND TEST STATUS**

The inspector identifies final acceptance or rejection of the work either by marking on the work or with other recording methods.

Final product acceptance inspection shall be indicated by permanent stamping or marking adjacent to the weld or must be unambiguously identified in the inspection report.

## **12.8. WELD INSPECTION RECORDS**

The inspector shall make a record of the inspection which shall include the following information:

- Unique part identifier (serial number, shop order, or batch number)
- Drawing number and revision
- Procedure and applicable acceptance criteria
- Inspector identity and date of inspection
- Record of defect findings
- Nominal
- Actual
- Tolerance

The Inspector will record inspection results on the Visual Weld Inspection Report or other form if approved by the contract Engineer.

## 21. FORMS

[CompanyName] Controlled Materials Form .....	59
[CompanyName] Metals Material Receiving Inspection Report .....	60
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<b>[CompanyName]</b> <b>Welding Personnel Qualification Form</b>			
<b>Name:</b>		<b>Job Position:</b>	
Project ID	Project Name	Approval	Approved By
[ProjectNumber]	[ProjectName]	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Review Topics</b>	<b>Project-Related Job Credentials</b>		
	Certification required:	Certifications and expiration dates:	
	Training required:	Training completed and expiration date:	
	Licenses required:	License and expiration dates:	
	Type and length of experience required:	Certifications and expiration dates:	
	<b>Qualifications</b>		
<input type="checkbox"/> Knowledge of Company quality standards <input type="checkbox"/> Knowledge of Company job responsibilities and authority <input type="checkbox"/> Demonstrated skills and knowledge <input type="checkbox"/> Demonstrated ability <input type="checkbox"/> Demonstrated results			
<b>Qualification Notes:</b>			
<b>Provisional Approval: Action plan for improvement</b>			
<b>Follow-up results and date</b>			







Form QW-484A Welding Operator Qualification

**QW-484A SUGGESTED FORMAT A FOR WELDER PERFORMANCE QUALIFICATIONS (WPO)**  
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)

---

Welder's name \_\_\_\_\_ Identification no. \_\_\_\_\_

**Test Description**

Identification of WPS followed \_\_\_\_\_  Test coupon  Production weld  
Specification and type/grade or UNS Number of base metal(s) \_\_\_\_\_ Thickness \_\_\_\_\_

**Testing Variables and Qualification Limits**

Welding Variables (QW-350)	Actual Values	Range Qualified
Welding process(es)	_____	_____
Type (i.e.; manual, semi-automatic) used	_____	_____
Backing (with/without)	_____	_____
<input type="checkbox"/> Plate <input type="checkbox"/> Pipe (enter diameter if pipe or tube)	_____	_____
Base metal P-Number to P-Number	_____	_____
Filler metal or electrode specification(s) (SFA) (info. only)	_____	_____
Filler metal or electrode classification(s) (info. only)	_____	_____
Filler metal F-Number(s)	_____	_____
Consumable insert (GTAW or PAW)	_____	_____
Filler Metal Product Form (solid/metal or flux cored/powder) (GTAW or PAW)	_____	_____
Deposit thickness for each process	_____	_____
Process 1 _____ 3 layers minimum <input type="checkbox"/> Yes <input type="checkbox"/> No	_____	_____
Process 2 _____ 3 layers minimum <input type="checkbox"/> Yes <input type="checkbox"/> No	_____	_____
Position qualified (2G, 6G, 3F, etc.)	_____	_____
Vertical progression (uphill or downhill)	_____	_____
Type of fuel gas (OFW)	_____	_____
Inert gas backing (GTAW, PAW, GMAW)	_____	_____
Transfer mode (spray/globular or pulse to short circuit-GMAW)	_____	_____
GTAW current type/polarity (AC, DCEP, DCEN)	_____	_____

---

**RESULTS**

Visual examination of completed weld (QW-302.4) \_\_\_\_\_

Transverse face and root bends [QW-462.3(a)]  Longitudinal bends [QW-462.3(b)]  Side bends [QW-462.2]

Pipe bend specimen, corrosion-resistant weld metal overlay [QW-462.5(c)]  
 Plate bend specimen, corrosion-resistant weld metal overlay [QW-462.5(d)]

Pipe specimen, macro test for fusion [QW-462.5(b)]  Plate specimen, macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

Alternative Volumetric Examination Results (QW-191): \_\_\_\_\_ RT  or UT  (check one)

Fillet weld — fracture test (QW-181.2) \_\_\_\_\_ Length and percent of defects \_\_\_\_\_

Fillet welds in plate [QW-462.4(b)]  Fillet welds in pipe [QW-462.4(c)]

Macro examination (QW-184) \_\_\_\_\_ Fillet size (in.) \_\_\_\_\_ x \_\_\_\_\_ Concavity/convexity (in.) \_\_\_\_\_

Other tests \_\_\_\_\_

Film or specimens evaluated by \_\_\_\_\_ Company \_\_\_\_\_

Mechanical tests conducted by \_\_\_\_\_ Laboratory test no. \_\_\_\_\_

Welding supervised by \_\_\_\_\_

We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME BOILER AND PRESSURE VESSEL CODE.

Manufacturer or Contractor \_\_\_\_\_

Date \_\_\_\_\_ Certified by \_\_\_\_\_

(07/10)

<http://files.asme.org/asmearg/Codes/Publications/BPVC/16605.pdf>

Form QW-483 Welding Procedure Qualification Record

**QW-483 SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORDS (PQR)**  
 (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code)  
 Record Actual Variables Used to Weld Test Coupon

---

Company Name \_\_\_\_\_  
 Procedure Qualification Record No. \_\_\_\_\_ Date \_\_\_\_\_  
 WPS No. \_\_\_\_\_  
 Welding Process(es) \_\_\_\_\_  
 Types (Manual, Automatic, Semi-Automatic) \_\_\_\_\_

**JOINTS (QW-402)**

Groove Design of Test Coupon  
 (For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal and process used.)

<p><b>BASE METALS (QW-403)</b>                  Material Spec. _____                  Type/Grade, or UNS Number _____                  P-No. _____ Group No. _____ to P-No. _____ Group No. _____                  Thickness of Test Coupon _____                  Diameter of Test Coupon _____                  Maximum Pass Thickness _____                  Other _____</p>	<p><b>POSTWELD HEAT TREATMENT (QW-407)</b>                  Temperature _____                  Time _____                  Other _____</p>																																																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"><b>FILLER METALS (QW-404)</b></td> <td style="width: 35%; text-align: center;">1</td> <td style="width: 35%; text-align: center;">2</td> </tr> <tr> <td>SFA Specification _____</td> <td></td> <td></td> </tr> <tr> <td>AWS Classification _____</td> <td></td> <td></td> </tr> <tr> <td>Filler Metal F-No. _____</td> <td></td> <td></td> </tr> <tr> <td>Weld Metal Analysis A-No. _____</td> <td></td> <td></td> </tr> <tr> <td>Size of Filler Metal _____</td> <td></td> <td></td> </tr> <tr> <td>Filler Metal Product Form _____</td> <td></td> <td></td> </tr> <tr> <td>Supplemental Filler Metal _____</td> <td></td> <td></td> </tr> <tr> <td>Electrode Flux Classification _____</td> <td></td> <td></td> </tr> <tr> <td>Flux Type _____</td> <td></td> <td></td> </tr> <tr> <td>Flux Trade Name _____</td> <td></td> <td></td> </tr> <tr> <td>Weld Metal Thickness _____</td> <td></td> <td></td> </tr> <tr> <td>Other _____</td> <td></td> <td></td> </tr> </table>	<b>FILLER METALS (QW-404)</b>	1	2	SFA Specification _____			AWS Classification _____			Filler Metal F-No. _____			Weld Metal Analysis A-No. _____			Size of Filler Metal _____			Filler Metal Product Form _____			Supplemental Filler Metal _____			Electrode Flux Classification _____			Flux Type _____			Flux Trade Name _____			Weld Metal Thickness _____			Other _____			<p><b>GAS (QW-408)</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2" style="text-align: center;">Percent Composition</th> <th rowspan="2" style="text-align: center;">Flow Rate</th> </tr> <tr> <th style="text-align: center;">Gas(es)</th> <th style="text-align: center;">(Mixture)</th> </tr> </thead> <tbody> <tr> <td>Shielding _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Trailing _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Backing _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Other _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><b>ELECTRICAL CHARACTERISTICS (QW-409)</b>                  Current _____                  Polarity _____                  Amps. _____ Volts _____                  Tungsten Electrode Size _____                  Mode of Metal Transfer for GMAW (FCAW) _____                  Heat Input _____                  Other _____</p>		Percent Composition		Flow Rate	Gas(es)	(Mixture)	Shielding _____				Trailing _____				Backing _____				Other _____			
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<p><b>POSITION (QW-405)</b>                  Position of Groove _____                  Weld Progression (Uphill, Downhill) _____                  Other _____</p>	<p><b>TECHNIQUE (QW-410)</b>                  Travel Speed _____                  String or Weave Bead _____                  Oscillation _____                  Multipass or Single Pass (Per Side) _____                  Single or Multiple Electrodes _____                  Other _____</p>																																																													
<p><b>PREHEAT (QW-406)</b>                  Preheat Temperature _____                  Interpass Temperature _____                  Other _____</p>																																																														

07/10

### Form P-4A Welded Piping Inspection

**FORM P-4A MANUFACTURER'S DATA REPORT FOR FABRICATED PIPING**  
**As Required by the Provisions of the ASME Code Rules, Section I**

---

1. Manufactured by \_\_\_\_\_ Order No. \_\_\_\_\_ P-4A ID No. \_\_\_\_\_  
(Name and address of manufacturer)

2. Manufactured for \_\_\_\_\_ Order No. \_\_\_\_\_  
(Name and address of purchaser)

3. Location of installation \_\_\_\_\_ Boiler Registration No. \_\_\_\_\_

4. Identification \_\_\_\_\_ Piping Registration No. \_\_\_\_\_  
(Main steam, boiler feed, blow-off, or other service piping — state which)

5. Design Conditions of Piping \_\_\_\_\_ Specified by \_\_\_\_\_  
(Pressure) (Temperature) (Name of Co.)

Code Design by \_\_\_\_\_

6. The chemical and physical properties of all piping meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction and workmanship conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE \_\_\_\_\_  
(Year)

Addenda to \_\_\_\_\_ (if applicable), and Code Cases \_\_\_\_\_  
(Date) (Numbers)

7. Description of Piping (include material identifications by ASME specification or other recognized Code designation)

8. Shop Hydrostatic Test \_\_\_\_\_

9. Remarks \_\_\_\_\_

---

**CERTIFICATE OF SHOP COMPLIANCE**

We certify the statement in this data report to be correct and that all details of design, material, construction, and workmanship of the described piping conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE.

Our Certificate of Authorization No. \_\_\_\_\_ to use the (S) or (PP) Designator \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Signed \_\_\_\_\_ by \_\_\_\_\_  
(mm/dd/yyyy) (Manufacturer or Fabricator) (Authorized Representative)

---

**CERTIFICATE OF SHOP INSPECTION**

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by \_\_\_\_\_

\_\_\_\_\_ have inspected the piping described in this Manufacturer's Data Report and state that, to the best of my knowledge and belief, the manufacturer has constructed this piping in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date \_\_\_\_\_  
(mm/dd/yyyy)

\_\_\_\_\_ Commission \_\_\_\_\_  
(Authorized Inspector) (National Board Commission Number and Endorsement)

(07/11)

### Form P-4B Assembled Piping Inspection

**FORM P-4B MANUFACTURER'S DATA REPORT FOR FIELD INSTALLED MECHANICALLY ASSEMBLED PIPING**  
**As Required by the Provisions of the ASME Code Rules, Section I**

---

1. Manufactured by \_\_\_\_\_ Order No. \_\_\_\_\_ P-4B ID No. \_\_\_\_\_  
(Name and address of manufacturer)

2. Manufactured for \_\_\_\_\_ Order No. \_\_\_\_\_  
(Name and address of purchaser)

3. Location of Installation \_\_\_\_\_ Boiler Registration No. \_\_\_\_\_

4. Identification \_\_\_\_\_ Piping Registration No. \_\_\_\_\_  
(Main steam, boiler feed, blow-off, or other service piping — state which)

5. Design Conditions of Piping \_\_\_\_\_ Specified by \_\_\_\_\_  
(Pressure) (Temperature) (Name of Co.)

Code Design by \_\_\_\_\_

6. The chemical and physical properties of all piping meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction and workmanship conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE. Addenda to \_\_\_\_\_ (if applicable), and Code Cases \_\_\_\_\_ (Year)  
(Date) (Numbers)

7. Description of Piping (include material identifications by ASME specification or other recognized Code designation)

8. Field Hydrostatic Test \_\_\_\_\_

9. Remarks \_\_\_\_\_

---

**CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE**

We certify that the field assembly of the described piping conforms with the requirements of Section I of the ASME BOILER AND PRESSURE VESSEL CODE. Our Certificate of Authorization No. \_\_\_\_\_ to use the (A), (S), or (PP) Designator expires \_\_\_\_\_.

Date \_\_\_\_\_ Signed \_\_\_\_\_ Name \_\_\_\_\_  
(mm/dd/yyyy) (Authorized Representative) (Assembler)

---

**CERTIFICATE OF FIELD ASSEMBLY INSPECTION**

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by \_\_\_\_\_ have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as Data Items \_\_\_\_\_ have been inspected by me and that, to the best of my knowledge and belief, the manufacturer and/or assembler has assembled this piping in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE. The described piping was inspected and subjected to a test of \_\_\_\_\_.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date \_\_\_\_\_  
(mm/dd/yyyy)

\_\_\_\_\_  
(Authorized Inspector) Commission \_\_\_\_\_  
[National Board Commission Number and Endorsement]

(07/11)

<http://files.asme.org/asmearg/Codes/Publications/BPVC/10717.pdf>

Form N-1 Welding Procedure Specification Prequalification

ANNEX N

AWS D1.1/D1.1M:2010

WELDING PROCEDURE SPECIFICATION (WPS) Yes   
 PREQUALIFIED \_\_\_\_\_ QUALIFIED BY TESTING \_\_\_\_\_  
 or PROCEDURE QUALIFICATION RECORDS (PQR) Yes

Company Name \_\_\_\_\_  
 Welding Process(es) \_\_\_\_\_  
 Supporting PQR No.(s) \_\_\_\_\_

JOINT DESIGN USED  
 Type: Single  Double Weld   
 Backing: Yes  No   
 Backing Material: \_\_\_\_\_  
 Root Opening \_\_\_\_\_ Root Face Dimension \_\_\_\_\_  
 Groove Angle: \_\_\_\_\_ Radius (J-U) \_\_\_\_\_  
 Back Gouging: Yes  No  Method \_\_\_\_\_

BASE METALS  
 Material Spec. \_\_\_\_\_  
 Type or Grade \_\_\_\_\_  
 Thickness: Groove \_\_\_\_\_ Fillet \_\_\_\_\_  
 Diameter (Pipe) \_\_\_\_\_

FILLER METALS  
 AWS Specification \_\_\_\_\_  
 AWS Classification \_\_\_\_\_

SHIELDING  
 Flux \_\_\_\_\_ Gas \_\_\_\_\_  
 Composition \_\_\_\_\_  
 Electrode-Flux (Class) \_\_\_\_\_ Flow Rate \_\_\_\_\_  
 Gas Cup Size \_\_\_\_\_

PREHEAT  
 Preheat Temp., Min. \_\_\_\_\_  
 Interpass Temp., Min. \_\_\_\_\_ Max. \_\_\_\_\_

Identification # \_\_\_\_\_  
 Revision \_\_\_\_\_ Date \_\_\_\_\_ By \_\_\_\_\_  
 Authorized by \_\_\_\_\_ Date \_\_\_\_\_  
 Type—Manual  Semiautomatic   
 Mechanized  Automatic

POSITION  
 Position of Groove: \_\_\_\_\_ Fillet: \_\_\_\_\_  
 Vertical Progression: Up  Down

ELECTRICAL CHARACTERISTICS  
 Transfer Mode (GMAW) Short-Circuiting   
 Globular  Spray   
 Current: AC  DCEP  DCEN  Pulsed   
 Power Source: CC  CV   
 Other \_\_\_\_\_  
 Tungsten Electrode (GTAW)  
 Size: \_\_\_\_\_  
 Type: \_\_\_\_\_

TECHNIQUE  
 Stringer or Weave Bead: \_\_\_\_\_  
 Multi-pass or Single Pass (per side) \_\_\_\_\_  
 Number of Electrodes \_\_\_\_\_  
 Electrode Spacing Longitudinal \_\_\_\_\_  
 Lateral \_\_\_\_\_  
 Angle \_\_\_\_\_  
 Contact Tube to Work Distance \_\_\_\_\_  
 Peening \_\_\_\_\_  
 Interpass Cleaning: \_\_\_\_\_

POSTWELD HEAT TREATMENT  
 Temp. \_\_\_\_\_  
 Time \_\_\_\_\_

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals		Current		Volts	Travel Speed	Joint Details
		Class	Diam.	Type & Polarity	Amps or Wire Feed Speed			

Form N-1 (Front)

ANNEX N

AWS D1.1/D1.1M:2010

Procedure Qualification Record (PQR) # \_\_\_\_\_  
**Test Results**

TENSILE TEST

Specimen No.	Width	Thickness	Area	Ultimate Tensile Load, lb	Ultimate Unit Stress, psi	Character of Failure and Location

GUIDED BEND TEST

Specimen No.	Type of Bend	Result	Remarks

VISUAL INSPECTION

Appearance \_\_\_\_\_  
 Undercut \_\_\_\_\_  
 Piping porosity \_\_\_\_\_  
 Convexity \_\_\_\_\_  
 Test date \_\_\_\_\_  
 Witnessed by \_\_\_\_\_

Radiographic-ultrasonic examination  
 RT report no.: \_\_\_\_\_ Result \_\_\_\_\_  
 UT report no.: \_\_\_\_\_ Result \_\_\_\_\_

FILLET WELD TEST RESULTS

Minimum size multiple pass    Maximum size single pass  
 Macroetch                                  Macroetch  
 1. \_\_\_\_\_ 3. \_\_\_\_\_                  1. \_\_\_\_\_ 3. \_\_\_\_\_  
 2. \_\_\_\_\_    2. \_\_\_\_\_

Other Tests

\_\_\_\_\_

All-weld-metal tension test  
 Tensile strength, psi \_\_\_\_\_  
 Yield point/strength, psi \_\_\_\_\_  
 Elongation in 2 in, % \_\_\_\_\_  
 Laboratory test no. \_\_\_\_\_

Welder's name \_\_\_\_\_

Clock no. \_\_\_\_\_ Stamp no. \_\_\_\_\_

Tests conducted by \_\_\_\_\_

Laboratory \_\_\_\_\_

Test number \_\_\_\_\_

Per \_\_\_\_\_

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M, (\_\_\_\_\_) *Structural Welding Code—Steel*.  
 (year)

Signed \_\_\_\_\_

Manufacturer or Contractor

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

Form N-1 (Back)



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**or**

**Contact: First Time Quality**

**410-451-8006**

**[edc@firsttimequality.com](mailto:edc@firsttimequality.com)**