

# Welder Qualification

## STD.8006

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### Scope

This standard establishes the requirements for the qualification, renewal (continuity), re-qualification (when applicable) of contract or sub-contract welders, and mandatory Welder Performance Qualification (WPQ) forms (when applicable) are included in the appendices of this standard. This standard covers construction, fabrication, maintenance, and in-service welding for mainline piping systems, plant piping, station piping systems, tanks, vessels, and structural components for Enterprise (Company).

This standard shall be used in the qualification of contract or sub-contract welders for any welding performed for the Company. It is to be used in conjunction with all applicable regulatory codes and standards. In the event any part of this standard is found to be contradictory to regulatory codes or standards, the contradiction is to be brought forth to the Company's Welding Department for clarification before any project welding commences.

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## 1.0 REFERENCES

### 1.1. American Petroleum Institute (API)

API 1104	Welding of Pipelines and Related Facilities, 20th Edition, October 2005, errata/addendum (July 2007), and errata 2 December 2008)
API 650	Welded Tanks for Oil Storage, 11th edition, June 2007, includes addendum 1 (November 2008), addendum 2 (November 2009), addendum 3 (August 2011), and errata (October 2011)
API 653	Tank Inspection, Repair, Alteration, and Reconstruction, 3rd Edition, December 2001, includes addendum 1 (September 2003), addendum 2 (November 2005), addendum 3 (February 2008), and errata (April 2008)

### 1.2. American Society of Mechanical Engineers (ASME)

B31.3-2018	Process Piping
B31.4-2019	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
B31.8-2018	Gas Transmission and Distribution Piping Systems
ASME Section IX	2019 Boiler and Pressure Vessel Code

### 1.3. American Welding Society (AWS)

AWS D1.1	Structural Welding Code-Steel
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### 1.4. Company Standards

STD.0250	Project Records Management
STD.8001	Enterprise API 1104 Welding Procedures Specifications Selection Tool

## 2.0 TERMS AND DEFINITIONS

**AFE** – Authorization for Expenditure

**API** – American Petroleum Institute

**ASME** – American Society of Mechanical Engineers

**ASME AI** – ASME authorized inspector

**AUT** – Automated Ultrasonic Testing

**AWS** – American Welding Society

**Capital Projects** – Projects that are directed by the Company's Capital Project - Project Management Group.

**Company** – Enterprise (if used in connection with a contract or other agreement, the actual Enterprise entity will be the specific Enterprise entity referenced in the contract).

**Company Project Manager** - An employee of Enterprise Products who has the overall responsibility for the project or a defined scope of work. For example, this can be someone in Capital Projects, Field Engineering, Asset Integrity, Maintenance or Operations.

**Company Authorized Representative** – Representative for Company to visually inspect welds (i.e. inspector).

**Contract Welders** – Welders who are contracted out to perform welding for the Company.

**Continuity** – A term used in reference to any welder documentation used to prove current qualification of a welder. This includes original qualification, renewal records, and/ or re-qualification.

**DOT** – Department of Transportation.

**In-Service Welding** – A term used for specialized welding on a piping system that is flowing and/or under pressure.

**ISN** – ISNetwork

**Maintenance Work / Projects** – Work or projects that are being completed on an asset that is in-service or has been commissioned as in-service that can be completed by various Company groups (i.e. Field Engineering, Asset Integrity, Well-Ties, etc.).

**MT** – Magnetic Particle Testing

**MUT** – Manual Ultrasonic Testing

**NDE** – Non-Destructive Evaluation

**OD** – Outer Diameter

**OQ** – Operator Qualification

**PHMSA** – U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

**PQR** – Procedure Qualification Record

**Proficiency Weld** – A weld completed to maintain a welder's original qualifications; such welds are associated with welder continuity / renewal documentation.

**Renewal** – Documentation of a welder's use of a weld process within at least each 6-month period from original qualification or latest renewal for keeping a welder's qualification current. This is typically in the form of welder information accompanied by an NDE report traceable to the welder and the process used on a proficiency weld.

**Re-Qualification** – The qualification process (as outlined per prevailing code) required when a welder's continuity lapses.

**RT** – Radiographic Testing

**SOW** – Scope of Work

**Tack Welders** – Welders whose scope of welding is to perform a weld made to hold parts of a weldment in proper alignment until the final welds are completed. Tack welders shall be qualified based on welder qualifications as outlined for each prevailing construction code.

**UT** – Ultrasonic Testing

**VT** – Visual Testing

**Welder Documentation** – All welder documents necessary for completing an identified scope of work within applicable regulatory and supplemental requirements, including:

- (1) Welder performance qualification records
- (2) Welder renewal and/or continuity logs
- (3) NDE report for each renewal/continuity weld indicated on a renewal/continuity log
- (4) Certifications of NDE operator for each renewal record when applicable

**WPQ** – Welder Performance Qualification

**WPS** – Weld Procedure Specification

**WT** – Wall Thickness

## 3.0 WPQ - GENERAL

### 3.1. WPQ Intent

Welder Performance Qualification (WPQ) tests determine the ability of the welder to make sound welds using a qualified welding procedure specification. WPQ test requirements differ in accordance with the various regulatory codes and standards and this standard will outline the Company requirements for each regulatory code / standard.

### 3.2. Testing and Inspection

- (1) Original welder performance qualification shall be by both non-destructive and destructive testing as outlined in section 5.0 of this standard.
- (2) Qualification by radiography is not permitted except in special cases within a facility and approved by the Director of the Company Quality Assurance Department in writing or by email.
- (3) Original qualification of welders and/or welding operators on a production weld is not permitted unless approved by the Director of the Company Quality Assurance Department in writing or by email in special cases within a facility.
- (4) Testing shall be carried out at a test facility, shop, or on-site location. Test facilities shall be approved by either the Company's Welding Department or Quality Assurance Department. It is the Company's preference that testing be conducted at an accredited test facility by a national/ industry agency whenever possible.
- (5) Testing for API 1104 qualifications shall be witnessed by a Company Authorized Representative determined by the Company's Quality Assurance Department unless prior approval to waive witnessing is given by the Company Quality Assurance Department in writing (by means of email satisfies this requirement) and this approval is to be retained in the project records.
- (6) In-service welder testing for API 1104 qualifications shall be witnessed by a Company Authorized Representative determined by the Company's Welding Department and / or the Company Welding Department's designee.
- (7) Testing for ASME Sec. IX qualifications need not be witnessed by the Company, as ASME Sec. IX requires the organization that employs the welders to qualify the welders for each welding process to be used in production welding per QW-301.2. The Company does reserve the right to witness such testing at any time and/or require re-qualification of a welder.
- (8) Destructive testing shall be in accordance with the methodology and criteria set forth in the applicable regulatory code or standard along with any supplemental requirements given by the Company, either within this standard or when designated as a specific requirement within a project.

### 3.3. Documentation Management

Welder documentation records and their maintenance are the sole responsibility of the contractor supplying the welding personnel. It is the contractor's responsibility to keep their welder's WPQ documentation in a chronological and orderly fashion. If the WPQ documentation is not maintained in such an order then the WPQ documentation will be rejected and the welder will be required to complete a new qualification accordingly. Additionally, any WPQ records that are brought into question by the Company or Company Authorized Representative shall be rejected until clarification is made by contractor to the satisfaction of the Company. See Section 3.6 and Section 3.7 of this standard for Company requirements of Submittal, Review, and Approval Process of WPQ documentation.

### 3.4. ISNetwork – Maintenance / In-Service Welding

When welders are required to achieve a maintenance welding OQ to conduct welding tasks contractors shall:

- a) Initially register welders into ISNetwork,
- b) Issue an ISNetwork ID for each welder,
- c) Provide the required documentation outlined in Section 3.6 and Section 3.7 of this standard to the Company Authorized Representative or Company Quality Assurance Department for review/approval, before a welder will achieve the required OQ task to perform such welding activities on Company assets.

Note: Typically, this process is for maintenance and/or in-service welding on existing regulated lines and/or assets, and typically is not required for Company new construction projects. A contractor is not required to register welders and/or issue an ISNetwork ID for welders when OQ tasks do not apply to the project scope-of-work.

### 3.5. Code Compliance

Welder performance qualification shall be in accordance with the requirements set forth in the prevailing regulatory codes, standards governing a particular scope of work and supplemental requirements set forth by the Company in this standard. Specific information covering codes and standards that typically govern over Company work is given in section 4.0 of this standard.

### 3.6. Welder Documentation

- (1) WPQ documentation shall include all welder information, essential variables, the type of tests carried out, test results (pass or fail), and the ranges qualified for each welder or welding operator.
  - (2) Forms shall be used that are similar to the sample forms given in the standard or code governing a scope of work (e.g., sample form in Annex N for AWS D1.1 welding, sample form QW-484A or B for ASME BPVC Section IX welding, etc.).
  - (3) Company forms (see section 6.0 of this standard) shall be used when applicable for API 1104 WPQs.
  - (4) API 1104 WPQ documentation shall include the following:
    - (a) Original welder performance qualification records (WPQs)
    - (b) Welder renewal records (continuity)
    - (c) NDE reports for each renewal record, typically a RT reader sheet (or other acceptable form of NDE), one for each renewal record, fully traceable to the weld made and the welder performing the weld.
    - (d) Certifications of NDE technicians for each renewal record
    - (e) NDE personnel's current eye examination certificate at the time of renewal.
- NOTE: Parts 3.6.4(c) through 3.6.4(e) above are required to accompany each welder renewal record in order for continuity to be valid. Missing, illegible, untraceable, or questionable documentation shall be rejected by the Company Authorized Representative. It is the contractor's responsibility to keep their welder's WPQ documentation in a chronological and orderly fashion. If the WPQ documentation is not maintained in such an order then the WPQ documentation will be rejected and the welder will be required to re-qualify accordingly. Additionally, any WPQ records that are brought into question by the Company shall be rejected until clarification is made by contractor to the satisfaction of the Company.
- (5) ASME BPVC Section IX WPQ documentation shall include the following:
    - (a) Original welder performance qualification records (WPQs)



- (b) Welder renewal records (continuity)
  - (c) NDE reports for each renewal record, typically a RT reader sheet (or other acceptable form of NDE), one for each renewal record, fully traceable to the weld made and the welder performing the weld.
  - (d) Certifications of NDE technicians for each renewal record
  - (e) NDE personnel's current eye examination certificate at the time of renewal.
- (6) The above requirements of 3.6.4(c) through 3.6.4(e) for WPQ documentation for ASME BPVC Section IX welding is not required and may be waived when the contractor has implemented into their quality control/quality assurance program one of the following methods:
- (a) (preferred method) A computer-based weld tracking system, that tracks continuity of their welders, shall:
    - (i) At a minimum, shall alert if a welder is out of continuity for a particular process
    - (ii) At a minimum, shall alert when a welder has not utilized a previously qualified process in the previous five months,
    - (iii) Shall indicate the percentage basis on which the welder has been non-destructively evaluated from original qualification to present,
    - (iv) Store records for each project welder from this tracking system shall be made available to the Company and/or Company Authorized Representative upon request,
    - (v) Store records as far back as original qualifications
  - (b) A weld tracking system that tracks each welder's continuity per process, certified by the contractor that each renewal weld per process was conducted under the control and supervision of the contractor. Additionally, the following conditions shall be met:
    - (i) Each first production weld for a Company project for each welder on the project shall be NDE and shall pass the project NDE acceptance criteria
    - (ii) If the first production weld is found to be rejected by NDE the welder is required to re-qualify by destructive testing before being permitted to continue with any welding activities
- (7) AWS D1.1 WPQ documentation shall include the following:
- (a) Original welder performance qualification records (WPQs)
  - (b) Welder renewal record(s) (continuity) certified by the contractor

### 3.7. Submittal, Review, and Approval

- (1) For any Company scope of work where welding is to be performed, a list of welders along with their documentation (section 3.6 above) shall be submitted to the Company for review and approval.
- (2) It is the contractor's responsibility to keep their welder's WPQ documentation in a chronological and orderly fashion. If the WPQ documentation is not maintained in such an order then the WPQ documentation will be rejected and the welder will be required to re-qualify accordingly. Additionally, any WPQ records that are brought into question by the Company shall be rejected until clarification is made by contractor to the satisfaction of the Company.
- (3) Each submitted renewal record for continuity (item 3.6.4(b) above) shall be accompanied by an RT inspection report or other acceptable form of NDE that is fully traceable to the production and/or test weld made and the welder performing the weld, unless otherwise stipulated in this standard. Acceptable alternative NDE methods are UT and/or VT/MT combination.
- (4) The Company Authorized Representative shall review the submitted welder documentation to ensure the following:



- (a) Welder(s) are qualified in accordance with the prevailing code;
  - (b) Welders have maintained continuity from original qualification date; and,
  - (c) The Company WPQ Review Form has been completed (see section 6 and Appendix D) listing each welder and status of approval (when applicable).
- (5) When documentation for each welder has been approved by the Company Authorized Representative, the submitted documentation and Company WPQ Review Form shall be submitted to the Company Project Manager for document retention in accordance with Company STD.0250. These records shall also be submitted by the Company Authorized Representative, Company Quality Assurance Department and/or Company Project Manager to [WPQ@eprod.com](mailto:WPQ@eprod.com) to update applicable OQ tasks in ISNetwork. Submission by the contractor or other entity will not be accepted.
- (6) No production welding shall occur prior to approval of welder documentation for each welder by the Company Authorized Representative or Company Quality Assurance Department. The Company reserves the right to request re-qualification of any welder when the welder's documentation or competency is in question at any time.

### 3.8. Company Forms

A list of Company forms used for welder documentation is found in section 6.0 of this standard accompanied by a brief description for each form. The listed forms are attached in subsequent appendices. When applicable, these forms are mandatory.

## 4.0 WPQ – PREVAILING CONSTRUCTION CODES

### 4.1. ASME B31.3

#### 4.1.1. New Construction / Fabrication

- a. WPQs shall be in accordance with section 5.2.1 (ASME BPVC Section IX) of this standard.

#### 4.1.2. In-Service Welding

- a. In-service welder qualification shall be in accordance with section 5.2.2 (ASME BPVC Section IX) of this standard.

#### 4.1.3. Re-tests, Renewal and Re-qualification

- a. See sections 5.2.3 and 5.2.4 respectively of this standard for welders qualified to ASME BPVC Section IX.

### 4.2. ASME B31.4 / CFR 195

#### 4.2.1. New Construction / Fabrication

- a. WPQs shall be in accordance with section 5.1.1 (API 1104) of this standard for cross-country pipelines.
- b. WPQs shall be in accordance with either section 5.1.1 (API 1104) of this standard or section 5.2.1 (ASME BPVC Section IX) of this standard for alloy steel, shop fabricated piping assemblies, and welding at stations and terminals.

#### 4.2.2. In-Service Welding

- a. In-service welder qualification shall be in accordance with section 5.1.4 (API 1104) or section 5.2.2 (ASME BPVC Section IX).

**4.2.3. Re-tests, Renewal and Re-qualification**

- a. See Sections 5.1.5 and 5.1.6 respectively of this standard for welders qualified to API 1104.
- b. See Sections 5.2.3 and 5.2.4 respectively of this standard for welders qualified to ASME BPVC Section IX.

**4.3. ASME B31.8 / CFR 192****4.3.1. New Construction / Fabrication**

- a. Either API 1104 (see section 5.1 of this standard) or ASME BPVC Section IX (see section 5.2 of this standard) WPQs shall be submitted for pipeline, compressor station pipe and components welding.
  - a. ASME BPVC Section IX (see section 5.2 of this standard) WPQs are preferred for compressor station pipe and components.
- b. For DOT regulated pipeline the submitted WPQs shall be in accordance with API 1104 (see section 5.1 of this standard) only.

**4.3.2. In-Service Welding**

- a. In-service welder qualification shall be in accordance with section 5.1.4 (API 1104) only.

**4.3.3. Re-tests, Renewal and Re-qualification**

- a. See Sections 5.1.5 and 5.1.6 respectively of this standard for welders qualified to API 1104.
- b. See Sections 5.2.3 and 5.2.4 respectively of this standard for welders qualified to ASME BPVC Section IX.

**4.4. API 650****4.4.1. Tank Welding**

- a. WPQs shall be in accordance with ASME BPVC Section IX (see section 5.2 of this standard, and the supplemental requirements within section 9.3 of API 650).
- b. API 650 allows for the welding of ladder and platform assemblies, handrails, stairways, and other miscellaneous assemblies (but not for their attachment to the tank) to be in accordance with either ASME BPVC Section IX or AWS D1.1. In this case, when an AWS D1.1 procedure is used, the welder shall be qualified in accordance with AWS D1.1 (see section 5.3 of this standard).
- c. For welding to ASME BPVC Section IX procedures, welder qualification is limited by the essential variables given per process in QW 350 (manual welders) and QW 360 (welding operators).
- d. For welding to AWS D1.1 procedures, welder qualification is limited by the essential variables given in Section 4.7 and Table 4.12 of AWS D1.1.

**4.4.2. Re-tests, Renewal and Re-qualification**

- a. See Sections 5.2.3 and 5.2.4 respectively of this standard for welders qualified to ASME BPVC Section IX.
- b. See section 5.3.2 and section 5.3.3 of this standard for welders qualified to AWS D1.1.

## 4.5. API 653

### 4.5.1. Tank Repair

- a. WPQs shall be in accordance with Article III of the ASME BPVC Section IX (see section 5.2 of this standard), and the supplemental requirements within section 9.3 of API 650 and section 11.2 of API 653.
- b. API 653 allows the use of weld procedures qualified in accordance with AWS D1.1 for the welding of ladder and platform assemblies, handrails, stairways, and other miscellaneous assemblies (but not for their attachment to the tank). In this case, when an AWS D1.1 procedure is used, the welder shall be qualified in accordance with AWS D1.1 (see section 5.3 of this standard).
- c. For welding to ASME BPVC Section IX procedures, welder qualification is limited by the essential variables given per process in QW 350 (manual welders) and QW 360 (welding operators).
- d. For welding to AWS D1.1 procedures, welder qualification is limited by the essential variables given in section 4.7 and Table 4.12 of AWS D1.1.

### 4.5.2. Re-tests, Renewal and Re-qualification

- a. See sections 5.2.3 and 5.2.4 respectively of this standard for welders qualified to ASME BPVC Section IX.
- b. See section 5.3.2 and section 5.3.3 of this standard for welders qualified to AWS D1.1.

## 4.6. AWS D1.1

### 4.6.1. New Construction - Structural

- a. WPQs shall be in accordance with Part C of AWS D1.1 section 4.
- b. The type and number of tests (visual and destructive testing) shall be in accordance with AWS D1.1 sections 4.19 through 4.32 and shall conform to Table 4.11. NDE and mechanical tests shall meet the requirements given per sub clauses shown in sections 4.19 through 4.32.
- c. Welder qualification is limited by the essential variables given in AWS D1.1 section 4.7 and Table 4.12.

### 4.6.2. Re-tests, Renewal and Re-qualification

- a. Re-tests shall be in accordance with section 4.33 of Part C.
- b. Renewal or re-qualification shall be in accordance with sections 5.3.3 of this standard.

## 5.0 WPQ – PREVAILING QUALIFICATION CODES / STANDARDS

### 5.1. WPQ to API 1104

#### 5.1.1. New Construction / Fabrication - Manual Welding

- a. Welder and tack welder qualification shall be in accordance with section 6.2 of API 1104 for Single Qualification and/or section 6.3 of API 1104 for Multiple Qualification.
- b. Multiple Qualification to section 6.3 of API 1104 is required by the Company, as this is often a requirement for the various scopes of work being carried out, unless waiver to this requirement is granted by the Company Quality Assurance Department on a per project basis in writing.

- c. When conducting WPQ testing of the branch connection test the welder shall weld the entire length of the joint from root to final cap pass. Welding of only the toe and throat locations will not be permitted.
- d. Welder performance qualification testing shall utilize welding procedure specifications that cover the essential variables associated with welder qualifications and the project scope of work.
- e. When conducting WPQ testing the material grade to be utilized shall comply with the allowed range indicated on the welding procedure specification (WPS). (ex. WPQ test material is X52, thus the WPS utilized for testing shall cover the X52 material)
- f. Visual (VT) and destructive testing shall be in accordance with sections 6.4 and 6.5 of API 1104, respectively.
- g. Qualification of butt welds by NDE (RT) per API 1104 section 6.6 is not permitted.
- h. The type and number of destructive tests shall be as shown in API 1104 Table 3 for each welder. Nick break tests may be substituted for designated tensile tests with prior approval from the Company Quality Assurance Department.
- i. Essential variables limiting manual welders are shown in section 6.2.2.a-g of API 1104 for Single Qualification and section 6.3.2.a-c of API 1104 for Multiple Qualification.
- j. Records shall be kept in accordance with section 6.8 of API 1104. A record shall be made of the tests given with detailed results for each welder, pass or fail. Company forms shown in Section 6.0 of this standard shall be filled out for each welder qualification or renewal, as applicable.

#### **5.1.2. New Construction / Fabrication - Mechanized Welding with Filler Metal Additions**

- a. Welding operators shall be qualified in accordance with section 12.6 of API 1104. Destructive testing shall meet the requirements of sections 6.4 and 6.5 of API 1104, except nick break tests are not required. Records shall be kept in accordance with section 12.7 of API 1104. Contact Company Welding Department for specific project forms.
- b. Essential variables limiting welding operators are shown in section 12.6.1.a-j of API 1104.

#### **5.1.3. Engineering Critical Assessment (ECA) - Appendix A**

- a. When production welding employs the use of an alternative acceptance criteria through development of an ECA as outlined in Appendix A, welder and welding operator qualification shall be in accordance with Appendix A, section A.4 of API 1104.
- b. Qualification by NDE methods only in accordance with 12.6 of API 1104 for welding operator qualification must be approved by the Company Welding Department.

#### **5.1.4. In-Service Welding**

- a. The Company requires welders to be multi-qualified using "group 3" electrodes as defined per API 1104 in accordance with section 6.3 of API 1104 before being eligible to attempt in-service welder qualification.
- b. After multi-qualification to section 6.3 of API 1104 using group 3 electrodes, a welder shall qualify for in-service welding in accordance with Appendix B, section B.3 of API 1104 and per the additional requirements of this standard.
- c. The procedure requirements to be used for qualification are as follows:

**Table 1: In-service welder qualification**

Order	Description	Section of API 1104	Electrodes	Travel	Diameter	Wall Thickness
1	Multiple Qualification	6.3	Group 3	Uphill	$X \geq 12.750"$	0.375" (Preferred)
2	In-service Welding Branch	Appendix B	Group 3	Uphill	$X \geq 12.750"$	0.250" (Preferred)
3	In-service Welding Sleeve Jacket Test	Appendix B	Group 3	Uphill	$X \geq 12.750"$	0.250" (Preferred)
Notes	<ol style="list-style-type: none"> <li>No backing strips allowed (Multiple Qualification Test)</li> <li>Full size branch (In-service Welding Branch) Flowing water medium Run-pipe axis at 45° incline Branch-pipe axis extending vertically downward at 45° incline from run pipe No hole shall be cut into the run pipe</li> <li>Sleeve jacket test (In-service Welding Sleeve Jacket Test) Flowing water medium Run-pipe axis at 45° incline Backing strip required for long seam</li> </ol>					

- Multiple qualification per section 6.3 of API 1104 with group 3 electrodes with an outside diameter greater than or equal to 12.750 in. and with a wall thickness of at least 0.250 in. without a backing strip for both butt and branch connection welds. The Company prefers a wall thickness of 0.375 in. whenever possible.
  - In-service welding, group 3 electrodes, uphill welding, full-sized branch-on-pipe connection with an outside diameter greater than or equal to 12.75 in. and a wall thickness of at least 0.250 in., with flowing water medium. The weld shall be made with the run-pipe axis in the 45° incline position from horizontal and the branch-pipe axis extending vertically downward at the 45° incline from the run. No hole shall be cut into the run pipe.
  - In-service welding, group 3 electrodes, uphill welding, with the run-pipe axis in the 45° incline position from horizontal, sleeve jacket test with an outside diameter greater than or equal to 12.75 in and a wall thickness of at least 0.250 in. with flowing water medium  
The weld shall be made with the run-pipe axis in the 45° incline from horizontal.
- d. In-service destructive tests shall be as given in API 1104, Appendix B, section B.3.2.
- e. Upon successful completion of multi-qualification to Section 6.3 of API 1104 with group 3 electrodes and in-service qualification to Appendix B, section B.3 and the additional requirements of this standard, a welder is qualified for in-service welding within the limits of the essential variables given in Section 6.3.2.a-c.

#### 5.1.5. Re-tests

- a. All re-tests shall be in accordance with Section 6.7 of API 1104.

- b. For Capital Project work re-tests are not permitted without approval from Company Quality Assurance Department.
- c. Welders who fail to qualify for a project on a re-test (if permitted) shall not be allowed to test again for a period of six months and must submit proof of subsequent welder training / experience that is acceptable to the Company Authorized Representative prior to further testing. If a welder fails to qualify after subsequent training / experience and re-testing after a period of six months shall not be permitted to re-test for the Company again.

#### 5.1.6. Renewal and Re-qualification

- a. Renewal (continuity) shall comply with the below and Section 3.6 of this standard.
- b. Renewal (continuity) shall be maintained within each six-month period from the date of the original qualification, for a maximum of 36 months or five renewals, whichever comes first. Following the five renewal after original qualifications, the welder shall re-qualify in accordance with this standard. The Company reserves the right to require welders, tack welders and welding operators to requalify for each Capital Project unless previously waived by the Company Quality Assurance Department.
- c. The proficiency (i.e. renewal/continuity) weld may be either a production weld, fabrication weld, in-service weld, and/or test weld.
- d. Proficiency welds for pipe welder performance qualifications shall be a butt weld unless the welder is only specifically qualified to complete fillet welds.
- e. Proficiency welds for in-service welder performance qualifications may be either 1) an in-service weld (e.g. sleeve, TOR, etc.), and/or 2) must meet the requirements of 5.1.6(d) (above), with the use of low hydrogen electrodes.
- f. Proficiency (i.e. renewal/continuity) welds shall be made on at least 6 in nominal diameter pipe, except when the proficiency weld is conducted as an in-service weld, in which case the nominal pipe diameter of the weld being physically welded (e.g. sleeve, TOR, etc.) shall be at least 2 in nominal diameter.
- g. For the shielded metal arc welding (SMAW) process, welders shall use low hydrogen electrodes if qualified to do so.
- h. If the time period of six months from the date of original qualification and/or the date of the last renewal for the welder's continuity expires, the welder shall be re-qualified. Re-qualification is the same as original qualification in that continuity starts over from the date of re-qualification for the welder, and all previous documentation shall be archived.

## 5.2. WPQ to ASME BPVC Section IX

### 5.2.1. New Construction

- a. ASME BPVC Section IX WPSs and WPQs are the sole ownership of the organization or entity that develops the procedures and employs the welders. This weld documentation is non-transferable between companies.
- b. Welders and operators shall be tested under the full control and supervision of the manufacturer, contractor, assembler, or installer where employed, using qualified WPS owned by that employer.
- c. Welder qualification is limited by the essential variables given per process in QW-350 (manual welders) and QW-360 (welding operators) in Article III of the ASME BPVC Section IX.



- d. The type and number of tests (visual and destructive testing) are given in QW-452. All mechanical tests shall meet the requirements prescribed in QW-160 or 180, whichever is applicable.
- e. Records shall be kept in accordance with QW-301.4. A record shall be made of the tests given with detailed results for each welder, pass or fail. For all third party contracted welders, forms used shall be similar to those suggested in ASME BPV Code Section IX Appendix B, QW-484A or B.
- f. If tack welders are qualified per QW-306 utilizing multiple welders, the welder shall deposit the full root pass on the test coupon, and is limited to tack welding within the limits of WPQ essential variables given in ASME BPVC Section IX.

### 5.2.2. In-Service Welding

- a. Welders shall be qualified to the Company approved ASME BPVC Section IX procedure submitted by contractor that is being used to make the in-service weld, or shall be qualified to a procedure which covers the welder for all essential variables on the WPQ necessary to weld using the Company approved in-service WPS submitted by contractor.

### 5.2.3. Re-tests

- a. Re-tests shall be in accordance with QW-320.

### 5.2.4. Renewal and Re-qualification

- a. Renewal shall be in accordance with QW-322 and section 3.6 of this standard.
- b. Re-qualification for a process requires the welder to re-qualify as outlined in section 5.2.1 of this standard.

## 5.3. AWS D1.1

### 5.3.1. New Construction - Structural

- a. WPQs shall be in accordance with Part C of AWS D1.1 Section 4 for welders, tack welders and welding operators.
- b. The type and number of tests (visual and destructive testing) shall be in accordance with AWS D1.1 sections 4.19 through 4.33 and shall conform to Table 4.11. NDE and mechanical tests shall meet the requirements given per sub clauses shown in sections 4.20 through 4.32.
- c. Welder qualification is limited by the essential variables given in AWS D1.1 section 4.23 and Table 4.12.

### 5.3.2. Re-tests

- a. Re-tests shall be in accordance with section 4.33 of Part C of AWS D1.1.

### 5.3.3. Renewal and Re-qualification

- a. Renewal shall be in accordance with section 4.2.3 of AWS D1.1 and section 3.6 of this standard.
- b. Re-qualification is the same as original qualification for each essential variable as per Table 4.12 of AWS D1.1 in that continuity starts over from the date of re-qualification for the welder, and all previous documentation shall be archived.

## 6.0 COMPANY FORMS FOR WELDER DOCUMENTATION

The following list of appendices contains Company forms for welder documentation with a brief description of each. When applicable, their use is mandatory.



**6.1.1. Appendix A - API 1104 WPQ Standard Form- New Construction (Single or Multiple Qualification)**

- (1) This form shall be used for all original new construction welder performance qualifications to API 1104 Section 6.
- (2) Test results from the lab when applicable should accompany this form.
- (3) The weld procedure requirements to be used for the qualification (or re-qualification) of new construction welders are given in section 5.1.1 of this standard.

**6.1.2. Appendix B - API 1104 WPQ Form- In-Service Testing**

- (1) This form shall be used for all original in-service welder performance qualifications to API 1104 Appendix B. It shall also be used when in-service re-qualification is required.
- (2) Test results from the lab when applicable should accompany the WPQ In-Service Record.
- (3) Weld procedures to be used for the qualification of in-service welders are given in section 5.1.4 of this standard.

**6.1.3. Appendix C - Welder Renewal Record**

This form shall be used to show continuity of a welder's qualification(s) for API 1104 WPQ. This is required within each six-month period from the date shown on the original qualification or last renewal record. Each submitted renewal record shall be accompanied by the required supporting documentation as outlined in section 3.6.4.

**6.1.4. Appendix D - Company WPQ Review Form**

This form shall be used by the Company Authorized Representative when third party WPQ documentation is submitted for review. For each Company scope of work in which third party welders are utilized, the Company Authorized Representative shall review submitted documentation, fill out and submit this form to the Company Project Manager and when required for obtaining an welding OQ task submit to [WPQ@eprod.com](mailto:WPQ@eprod.com), as outlined in section 3.7 of this standard.

## Appendix A API 1104 WPQ Form Standard Testing



Appendix A - API  
1104 WPQ Form Star

## Appendix B API 1104 WPQ Form- In-Service Testing



Appendix B - API  
1104 WPQ Form In-S

## Appendix C Welder Renewal Record



Appendix C - API  
1104 WPQ Renewal

## Appendix D Company WPQ Review Form



Appendix D - API  
1104 WPQ Review Form

## Attachment    Revision Log

<b>Revision 5.0</b>		<b>Publish Date: 28 Jan 21</b>
Section 3.2.6	Update	Corrected clerical clarification error of "Company Welding Department" to "Company Welding Department's designee"
Section 3.6.4(e)	Update	Provided additional clarification to the requirements.
Section 3.6.5(d)	Update	Provided additional clarification to the requirements.
Section 5.1.4 Table 1	Deletion	Removed third test requirement of in-service qualification as this is no longer a requirement for the Company.
Section 5.1.4.c.2	Update	Provided additional clarification to the requirements to match language from 5.1.4.c.1
Section 5.1.6(b)	Update	Corrected clerical clarification error of missing "shall" as part of the requirements.
Section 5.2.1(a)	Update	Corrected clerical clarification error of "Company" to "organization" as this is to define a contractor and not the company.
Section 5.3.3	Deletion	Removed line item number "7" as no requirement was indicated.
Section 6.1.1	Update	Corrected clerical error of incorrect note numerical identification
Appendix A – D	Revised	Forms were revised to be more User friendly for the field.



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