

Welding Procedure and Qualification Documentation Review Process for Code Compliance

STD.8007

Scope

The following standard establishes the process by which a third party Welding Procedure Specification (WPS) and its associated Procedure Qualification Record (PQR) documentation is collected and reviewed for code compliance for use in Company new pipeline construction, equipment fabrication, out-of-service welding, and/or in-service welding.

Company WPSs, identified through the execution of STD.8001, have been previously verified for compliance and are not required to be reviewed again through the execution of this standard.

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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)

ASME B31.3-2020	Process Piping
ASME B31.4-2019	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
ASME B31.8-2020	Gas Transmission and Distribution Piping Systems
ASME Section IX-2021	Boiler and Pressure Vessel Code

1.3. American Welding Society (AWS)

AWS D1.1-2020	Structural Welding Code-Steel
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1.4. Company Specifications

STD.0250	Project Records Management
STD.4000	Piping Specification Index
STD.8001	Enterprise API 1104 Welding Procedures

2.0 TERMS AND DEFINITIONS

AFE – Authorization for Expenditure

AML – Approved Manufactures List

API – American Petroleum Institute

ASME – American Society of Mechanical Engineers

ASME AI – American Society of Mechanical Engineers Authorized Inspector

ASME AIA – American Society of Mechanical Engineers Authorized Inspection Agency

AWS – American Welding Society

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).

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Company Project Manager - An employee of Enterprise 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).

PHMSA – Pipeline and Hazardous Materials Safety Administration

PQR – Procedure Qualification Record

SOW – Scope of Work

Weld Documentation – All documents for completing the identified Scope of Work within applicable regulatory requirements, which may include:

- Weld maps or matrices
- Prevailing code information
- Weld procedure specifications
- Supporting procedure qualification records
- Other documentation as applicable

WPS – Welding Procedure Specification

3.0 ENGINEERING METHODOLOGY

- (1) The following outline establishes the process by which a third party WPS and its associated PQR documentation is collected and reviewed for code compliance for use in Company new pipeline construction, equipment fabrication, and out-of-service welding, and/or in-service welding.
 - (a) The WPS / PQR weld document review process performed by the Company Welding Department will determine if a submitted WPS is compliant with the identified prevailing construction code by comparing the submitted project details to the essential variables required by the prevailing construction code.
 - (i) Note: The Company Welding Department's review process will consider only the minimum basic requirements of the indicated prevailing construction code (i.e. ASME B31.3, ASME B31.4, ASME B31.8, API 650, etc.) including:
 - basic preheat requirements
 - basic PWHT requirements (if applicable)
 - basic filler material limitations
 - basic base material limitations
 - (b) The WPS / PQR weld document review process performed by the Company Welding Department will not determine if an appropriate WPS is being proposed for each weld within a project (e.g. consideration of diameter, wall thickness, grade of material, weld joint design, corrosive service, cold service, etc.).
 - (i) It is the Company Project Manager's responsibility to determine if an appropriate WPS is being applied to each weld by considering project design requirements and project specific application which include but are not limited to:
 - Identify if the procedure is fit for use on any particular weld joint design per the prevailing construction code
 - Cyclic loading
 - Static loading
 - Overmatching test requirements

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- Sour service hardness test requirements
 - Corrosion test requirements
 - Low temperature impact test requirements
 - Other(s) as defined by the responsible design engineer
- (c) The Company Welding Department can be contacted for technical guidance regarding determination of an appropriate WPS for each weld within a project.
- (2) Company WPSs, identified through the execution of STD.8001, have been previously verified for compliance and are not required to be reviewed again through the execution of this standard.
- (3) When the Company Welding Department has verified a third party WPS and its associated PQR for one project ("Project A"), that specific third party WPS and its associated PQR is not required to be verified through the execution of this standard for a different project ("Project B") provided;
- All of the information and documentation as specified in Section 4.0 for Project B is exactly the same as Project A's Section 4.0 information and documentation.
 - There have been no revisions to the specified prevailing construction code between the date of Project A's WPS/PQR verification and when Project B is to be executed.
- (4) For the following situations outlined below in 3.4.a through 3.4.d, the review and verification process of third-party WPS/PQR by the Company Welding Department is not required unless otherwise noted or requested by the Company Project Manager:
- (a) Any ASME Code fabrication that will receive an ASME Code stamp by a valid holder.
- (i) The stamp certifies that an ASME AI (Authorized Inspector) insured through the ASME AIA has reviewed the required welding documentation associated with the construction or fabrication.
 - (ii) A review and verification by the Company Welding Department is not required for the following ASME Code stamped fabrication:
 - "S" Power Boilers ASME Section I
 - "A" Assembly of Power Boilers ASME Section I
 - "M" Miniature Boiler ASME Section I
 - "PP" Pressure Piping ASME Section I
 - "H" Wrought Steel Heating Boilers ASME Section IV
 - "U" Pressure Vessels ASME Section VIII, Division 1
 - "U2" Pressure Vessels (Alternative Rules for Pressure Vessels) ASME Section VIII, Division 2
 - "U3" High Pressure Vessels ASME Section VIII, Division 3
 - "T" Transport Tanks ASME Section XII
- (b) Any ASME Code repairs or alterations that will receive an ASME Code stamp by a valid holder of an ASME "R" stamp.
- (i) The "R" stamp certifies that an ASME AI (Authorized Inspector) insured through the ASME AIA has reviewed the required welding documentation associated with the repair or alteration of a stamped component (See 3.4.a Above).
 - (ii) A review and verification by the Company Welding Department is not required.

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- (c) Any API specification fabrication that will receive an API Monogram stamp by a valid manufacturer.
 - (i) API Monogram is a voluntary licensing program that facilitates the consistent manufacturing of products that conform to applicable API Specifications specifically for the Oil and Gas Industry.
 - (ii) Licensed manufacturers are given the authority to apply the API Monogram registered mark to equipment that meets the requirements to which has been audited by API.
 - (iii) A review and verification by the Company Welding Department is not required.
- (d) New unmodified oil and gas commodity machinery or equipment (e.g., pumps, compressors, valves, instrumentation devices, pressure relief devices, meter skids, etc.) that are exclusively procured, manufactured / fabricated, and certified by the single entity (i.e., original manufacturer) which carries a warranty from said manufacturer of such commodity machinery or equipment does not require a review and verification by the Company Welding Department.
 - (i) Examples of unmodified oil and gas commodity machinery or equipment that do not require WPS and PQR review and verification by the Company Welding Department include but are not limited to:
 - A new unmodified pump obtained from an AML vendor such as Goulds Pumps
 - A new unmodified valve obtained from an AML vendor such as Cameron
 - A new unmodified meter skid from an AML vendor such as ReadyFlo or Sagebrush
 - (ii) Examples that do require WPS and PQR review and verification by the Company Welding Department include but are not limited to:
 - Pump repairs or modifications regardless of the entity executing the work.
 - Valve repairs or modifications regardless of the entity executing the work.
 - Fabrication or modifications of any meter skid by a general contractor or subcontractor that is not the original manufacturer (See 3.4.d.i Above).
- (5) Prior to finalizing the selection of a WPS(s) for a project, unless otherwise verified as specified in Sections 3.2 through 3.4, the Company Project Manager shall collect and submit all necessary information and documentation as specified in Section 4.0.
 - The WPS and PQR weld document review process is completed on a project by project basis to minimize confusion as to which contractor WPSs have been verified for code compliancy for each specific project and to ensure all verified WPSs have been identified for each project's field personnel.
 - Additionally, this process should be completed during the bid phase of a project to identify any potential procedure concerns and/or qualifications requirements early in a project's life cycle.

4.0 REQUIRED MINIMUM INFORMATION, WELDING PROCEDURE AND QUALIFICATION DOCUMENTATION

- (1) For any Company SOW being carried out where welding is involved, it is the ultimate responsibility of the Company Project Manager to have all welding documentation reviewed and verified by the Company Welding Department before any welding begins.
- (2) All welding documentation shall be available during the execution of the project and retained for records after the project is completed, as required per Company STD.0250.

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- (3) The Company Project Manager or their designee shall perform the following tasks:
- Provide project descriptor (project name or description) that can be used to identify the scope of work being carried out.
 - Provide charge code.
 - This may be an AFE, non-AFE charge code, or work order number associated with the SOW.
 - Determine the prevailing construction code/governing code that applies for the SOW (e.g. ASME B31.3, ASME B31.4, ASME B31.8, API 650, API 653, etc.)
 - Provide the identified Company Piping Specifications or established reference number (e.g., 03CS235), See Company STD.4000.
 - Provide generic engineering consideration (if applicable) (e.g., sour service testing requirements, impact toughness testing requirements, etc.)
 - Collect all third-party WPS that are to be used to execute the SOW.
 - See Section 5.0 for guidance regarding weld documentation that is to be submitted for each prevailing construction code.
 - Collect PQRs associated with each third party WPS collected in Section 4.3(d).
 - See Section 5.0 for additional guidance regarding weld documentation that is to be submitted for each prevailing construction code.
 - Compile all material/information as specified in Section 4.3(a) through 4.3(g) (also shown in Table 4.1 (below))
 - Submit compiled material/information above to the Company Welding Department (WPS@eprod.com) to be used for review for compliance with the specified prevailing construction code.
 - A Weld Documentation Review Instructions Form (Appendix B) or similar form may be utilized for submission of the required minimum information.
- (4) Only information and documentation as specified in Section 4.0 that pertain to the defined scope of work shall be sent to the Company Welding Department.
- (a) Information and documentation submitted that is not specified in Section 4.0 and/or is not pertinent to the scope of work dramatically slows down the review and verification process.

Table 4.1: Required Minimum Information and Mandatory Welding Documentation

Item	Information/Documentation	Description
A	Project Descriptor	Project name or some description that can be used to identify the scope of work being carried out.
B	Charge Code	AFE, Non-AFE charge code or work order number associated with the scope of work.
C	Prevailing Construction Code	The governing code that applies for the scope of work (e.g. ASME B31.3, ASME B31.4, ASME B31.8, API 650, API 653, or AWS D1.1)
D	WPS	Welding procedure specification. All third party WPSs that are to be used to execute the scope of work shall be submitted. See Section 5.0 for additional guidance.

Item	Information/Documentation	Description
E	PQR	Procedure Qualification Record. For each third party WPS submitted, the supporting PQR (or PQRs) shall be submitted. See Section 5.0 for additional guidance.

5.0 REQUIRED WELD DOCUMENTATION FOR EACH PREVAILING CODE

Table 5.1 shows the weld documentation that is to be submitted for each prevailing construction code.

Table 5.1: Prevailing Construction Code and Welding Procedure Documentation

Prevailing Code	Weld Documentation
API 650 or API 653	ASME Section IX WPSs, and PQRs.
ASME B31.3	ASME Section IX WPSs, and PQRs.
ASME B31.4	API 1104 WPSs, and PQRs shall be submitted for cross country pipeline welding. Either API 1104 or ASME Section IX WPSs, and PQRs, can be submitted for the welding of alloy steel, shop fabricated piping assemblies, or welding at stations and terminals. Company API 1104 procedures shall be the preferred standard for qualification of field WPSs.
ASME B31.8	Either API 1104 or ASME Section IX WPSs, and PQRs shall be submitted for all new construction and out-of-service pipeline welding. For PHMSA regulated pipeline welding, the submitted WPSs, and PQRs shall be in accordance with API 1104 only. Company API 1104 procedures shall be the preferred standard for qualification of field WPSs.
AWS D1.1	AWS D1.1 WPSs, and PQRs.

6.0 WELDING PROCEDURE DOCUMENTATION - REVIEW PROCESS FOR CODE COMPLIANCE

- (1) The Company Welding Department (WPS@eprod.com) receives a request for third party welding procedure review and verification in accordance with Section 4.0.
- (2) The Company Welding Department shall review the submitted information and documentation for prevailing construction code minimum qualification compliance.
- (3) If the Company Welding Department determines the third party WPS and its associated PQR meet the specified prevailing construction code's minimum qualification requirements, it will send an email communication to the Company Project Manager indicating the WPS is verified.
 - (a) A WPS / PQR Documentation Review sheet (Appendix A) or similar form may be attached to the email.
 - (b) Where comments or limits regarding the application of the verified WPS are provided within the email response, the Company Project Manager is responsible to ensure the project SOW does not exceed the comments / limits provided.

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- (4) If the Company Welding Department determines the third party WPS and its associated PQR do not meet the specified prevailing construction code's minimum qualification requirements, it will send an email communication to the Company Project Manager indicating the WPS is not verified.
 - (a) A WPS / PQR Documentation Review sheet (Appendix A) or similar form may be attached to the email.
 - (b) The email will provide comments indicating why the WPS/PQR was determined not to meet minimum qualification requirements.
 - (c) The Company Project Manager shall be responsible for returning the not verified WPS/PQR documentation to the third party contractor for amendments, revision, or re-qualification (if applicable) as well as re-submittal to the Company Welding Department.
 - (d) This process shall be repeated until all WPS / PQR documentation associated with executing the SOW for the project is verified of compliancy in writing by the Company Welding Department as described in Section 6.3.
- (5) The Company Project Manager is responsible in ensuring the verified third party WPS and PQR and the Welding Department's verification documentation is retained as defined in STD.0250.

Appendix A WPS / PQR Documentation Review Form



Appendix A.pdf

Appendix B Instructions For Filling Out Review Form



Appendix B.xlsx

Attachment Revision Log

Revision 0.0			Publish Date: 09 Nov 10
Location of Change	Type of Change	Reason for Change	
N/A	N/A	Initial Publish	
Revision 1.0			Publish Date: 22 Nov 10
Location of Change	Type of Change	Reason for Change	
Appendix B	Revised form	Created a column in the review form where the contractor can respond to the Enterprise comments.	
Revision 2.0			Publish Date: 03 Feb 11
Location of Change	Type of Change	Reason for Change	
Appendix A	Revised form	Added instructions on filling out the “e-mail date” row and the “prevailing code” column	
Appendix B	Revised form	Added “email date” row and “prevailing code” column	
Revision 3.0			Publish Date: 10 Aug 11
Location of Change	Type of Change	Reason for Change	
Title	Text	Changed title for clarification	
Section 1	Text	API 650 and 653 added.	
Scope	Text	Scope re-written to clarify documentation review for code compliance.	
Section 2	Text	Weld documentation redefined to “may include”	
Section 2	Text	Redefined Project Manager Definition	
Section 3	Text	“R” and “U” stamp exemption added.	
Section 4	Header Text	Title in Header changed for clarification.	
Section 5	Text	Process rewritten and numbered for clarification. Steps 6-8 were removed as they dealt with actions carried out separately by inspector.	
App B	Text	App B removed- inspector’s role cut from this document. App C moved to become new App B.	
App C	Text	Moved to App B.	

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Revision 3.1		Publish Date: 02 Apr 12
Location of Change	Type of Change	Reason for Change
Scope	Clarification	Clarification and inclusion of STD.8006.
Section 1.1–1.2	Addition	Added references to PHMSA-approved editions of industry standard publications
Section 1.4	Addition	STD.8006 added as reference.
Section 2.0	Addition	Definition of Company Authorized Inspector added.
Table 4.1	Clarification	Clarification on procedures to be used per ASME B31.8.
Sections 3.0, 4.0, and 5.0	Clarification	“Enterprise” replace with “Company”, “inspector” replaced with “Company Authorized Inspector”.
Table 3.1 F	Addition	WPQ added and defined.
Section 5.0	Clarification	“Welding Engineer” replaced with “Supervisor of Welding”.
Revision 3.2		Publish Date: 06 Mar 15
Location of Change	Type of Change	Reason for Change
Section 1.1	Update	Updated references to API standards
Section 1.2	Update	Updated reference to ASME B31.3
Revision 4.0		Publish Date: 16 Apr 20
Location of Change	Type of Change	Reason for Change
Entire Document	Addition / Deletion / Revision	The document was a complete re-write to clarify and make the process more efficient for the Project Managers when gathering welding documentation to be reviewed by the Welding Department.
Revision 5.0		Publish Date: 18 Aug 22
Location of Change	Type of Change	Reason for Change
Entire	Revision	Insertion of page breaks throughout document.
Section 1.0	Revision	Updated reference editions.
Section 1.4	Addition	Incorporated Company STD.4000 reference.
Section 2.0	Addition	Added definition of AML and ASME AIA
Section 3.4	Clarification	Section was expanded to provide further clarification of what exemptions are valid from the review process.
Section 4.3	Addition	Added “or their designee” following Company Project Manager.
Section 4.3.d	Addition	New sub-section for identifying Company piping specification.

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Section 4.3.e	Addition	New sub-section for identifying generic engineering consideration.
Section 4.3.h	Revision	Revision to incorporate reference to new sub-sections (d) and (e).
Section 4.3.i	Clarification	Clarified Appendix B can be utilized for section requirements.
Appendix A	Revision	Document modernized for efficiency.
Appendix B	Revision	Document modernized for efficiency.