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SPECIFICATION: G-8227-0

TITLE: QUALIFICATION OF PLUMBER WELDERS

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TARGET AUDIENCE: Plumber Gas Welders, Gas Conversion and Energy Services



Gas Operations Standards

TITLE: QUALIFICATION OF PLUMBER WELDERS

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C. McCollum	Anthony Mancino Chief Engineer Gas Transmission Engineering	11/19/19	Construction Standards and O&M Manual	8 PAGES	



TITLE: QUALIFICATION OF PLUMBER WELDERS

1.0. SCOPE

- 1.1 This specification outlines the requirements for qualifying welders and welding procedures, when plumbers are welding on jurisdictional service line pipe.
- 1.2 All welders must qualify in accordance with this specification before welding on gas service line piping up to the outlet of the meter (for inside meters) and up to the building wall (for outside meters).

2.0. LEGAL REQUIREMENTS

Federal: 49 CFR Part 192, Sections 225, 227, and 229.

State: 16 NYCRR Part 255, Sections 3, 225, 227, 229, and 230.

3.0. DEFINITIONS

Plumber: For the purposes of this specification, plumber is intended to mean any licensed master plumber or any individual working under the direction of a licensed master plumber.

4.0. REFERENCE

ASME BPVC	-	ASME Boiler and Pressure Vessel Code, Sections IX
ASME B31.1	-	Power Piping Code
G-8212	-	Operator Qualification (OQ) Compliance Program
CE-MS-3307	-	WPS 8311 - Weld Procedure Specification
ASNT	-	SNT-TC-1A, Personnel Qualification and Certification in Non-Destructive Testing

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5.0. INITIAL QUALIFICATION OF WELDERS

5.1 General

- a) All welders shall be qualified for MULTIPLE qualification, as per Section 5.2.
- b) Each welder upon receipt of operator qualifications shall be required to carry an ITS On Board eWallet card. If the welder does not have an ITS card, a card with their ITS ID number and a QR code of their qualifications is sufficient.
- c) All qualification welds shall be subject to visual inspection prior to destructive testing.
- d) The qualification of welders shall be conducted in the presence of an inspector or individual who is qualified at minimum as an ASNT VT Level II or AWS Certified Welding Inspector.
- e) All persons that perform destructive testing of qualification welds shall be qualified at minimum as an ASNT VT Level II or AWS Certified Welding Inspector, and all equipment used to perform qualification testing shall be operated and maintained per manufacturer's requirements.
- f) Paperwork for welder performance qualification shall at a minimum be signed by the contracted radiographic service.
- g) In addition to the described qualifications of welders, Gas Operator Qualifications (OQ) are required, as per Con Edison's OQ Written Plan. The following covered tasks are required:
 - 1. *CT44 & 54-Welding on a Pipeline*
 - 2. *CT70-Properties of Natural Gas and Abnormal Operating Conditions*

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5.0 INITIAL QUALIFICATION OF WELDERS (Continued)

5.2 Type of Qualifications

a) Multiple Qualification

For Multiple Qualification, the welder shall weld 2 pipes together using the appropriate qualified welding procedures for the butt weld.

A welder who has successfully completed the multiple qualification test using pipe with an O.D. of 1" or more shall be qualified to weld in all positions, fittings, and on all pipe diameters.

<u>Test Welds</u>	<u>Welder Qualified For</u>
Butt-welding 2" OD x 3/8" (0.375") wall thickness pipe sections in a fixed position at 45°.	Welding on all diameters, fittings, positions and wall thicknesses 1/16" - .644" (butt welds), and 3/4" max (fillet welds).

b) Welders Qualified Other Than by Con Edison

A welder who is qualified by a company other than Con Edison, shall be **CONSIDERED** for acceptance for production welding on Company pipelines, only when all of the following conditions are met:

- 1) The welder has qualified under a specification that is equivalent to Con Edison's WPS 8311.
- 2) A copy of the current test results from the independent testing agency is delivered to Energy Services/Gas Conversion.
- 3) The welder has been issued an operator qualification card.

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5.0 INITIAL QUALIFICATION OF WELDERS (Continued)

5.3 Welder Qualification Tests to Be Performed

- A) Welds shall be subjected to the following prescribed tests, each as stipulated in ASME B31.1:
 - 1) Visual Examination
 - 2) Radiographic Examination
 - 3) Destructive Tests
- B) Test results shall be recorded by the inspection agency on forms similar to those indicated in ASME BPVC.IX.
- C) Each welder must be qualified in accordance with Section IX of the ASME Boiler and Pressure Vessel Code.

6.0. RETESTS

If a welder fails the qualification test, Con Edison may require further training prior to any retests.

7.0. TENURE OF QUALIFICATION

- 7.1 A welder qualified under this specification shall continue to be qualified providing:
 - A) Radiographic inspection has indicated consistently satisfactory welds, as per ASME B31.1.
 - B) The welder has complied with the six month periodic requalification test. See Section 6.2.
 - C) No change in essential variables used to qualify the original welding procedure.

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7.0 TENURE OF QUALIFICATION (Continued)

7.2 The six-month periodic requalification test shall consist of butt welding pipe samples and verification of quality by visual inspection and radiographic examination (RT). The size of the pipe to be used is listed in Table 1.

TABLE 1

Present Qualification

Multiple Qualification

Periodic Requalification Test

Butt-weld 1" and larger x 3/16" to 3/4" wall thickness

It shall be the responsibility of the welder or welder's employer to update requalification testing.

The Energy Services Representative shall forward to Energy Services the report certifying compliance with Section 6.1 (A) to 6.1 (C).

7.3 The RT of a production butt weld performed within the two month period prior to expiration date of the welder's Identification Card may be substituted for the test as outlined in Paragraph 6.2. The size of the pipe used to requalify using a production weld is listed in Table 1.

7.4 It shall be the responsibility of the radiographic inspector to make the proper notations on the RT reports. The report shall contain:

- 1) Weld number (not applicable on welding qualification or requalification reports)
- 2) Weld procedure WPS 8311 or Shielded Metal Arc Welding (SMAW)
- 3) Welder's name or Identification Number
- 4) Location and date
- 5) Size of pipe
- 6) Name and/or Signature of Radiographer/Interpreter

A copy of the RT report shall be given to the welder's employer and one copy of the report to Energy Services.

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8.0. RECORD OF QUALIFIED WELDERS

A record of the tests on the qualification and requalification weld shall be maintained by the Contractor and Energy Services/Gas Conversion.

9.0. RECORDS RETENTION

Any records generated in the course of performing work in accordance with this specification shall be maintained as required by Corporate Instruction [CI-870-1](#) "Records Management". Guidance on the retention of Company Gas Operations records can also be found on the [Records Management](#) intranet site

10.0 APPENDICES

A. Welding Procedure Specification 8311

B. Figures 1 – Joint Designs And 2 – Unacceptable Butt Weld Profiles

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Appendix A

 <p style="text-align: center; font-weight: bold; font-size: 1.2em;">EXHIBIT B</p>	WPS No. <u>8311</u> Rev. No. <u>4</u> Date: <u>06/07/07</u> Prepared by <u>R. Pietrowski</u> Approved: <u>B Manzano</u> Supporting PQR No(s) <u>8311</u> Process(es) <u>SMAW</u> Type(s) <u>Manual</u>																																			
JOINTS (QW-402) Joint Design <u>Groove & Fillet</u> (See Note 1) Backing (Yes) _____ (No) <u>No</u> Backing Material (Type) <u>N/A</u> Retainers <u>Not used</u>	NOTES: 1 - Joint design not per Para 5 shall require engineering approval. 2 - All welds shall be visually examined per Para 12. Additional examinations may be specified by Engineering or required by the Code. 3 - Applicable Codes: ASME Section I, VIII, IX, B31.1, NBIC. 4 - For Tube to Header welds, consult with Engineering for appropriate PWHT instructions.																																			
BASE METALS (QW-403) P-No. <u>1</u> Grp. No. <u>1</u> to P-No. <u>1</u> Grp. No. <u>1</u> Specification type _____ to Specification type _____ and grade <u>N/A</u> and grade <u>N/A</u> Thickness Range: Groove <u>1/16" - 0.644"</u> Fillet <u>3/4" max.</u> Pipe Dia. Range: Groove <u>All</u> Fillet <u>All</u> Other <u>Max. Base metal strength of 62 ksi, max. carbon of 0.30%.</u>	PREHEAT (QW-406) Preheat Temp. Min. <u>50°F</u> Interpass Temp. Max. <u>600°F</u> Preheat Maintenance <u>Same as preheat</u> Continuous or Special Heating (if Any) <u>None</u>																																			
FILLER METALS (QW-404) Process <u>SMAW</u> _____ <u>N/A</u> Spec. No. (SFA) <u>5.1</u> _____ <u>N/A</u> AWS No. (Class) <u>E6010</u> _____ <u>N/A</u> F-No. <u>3</u> _____ <u>N/A</u> A-No. <u>1</u> _____ <u>N/A</u> Size <u>1/8", 5/32", 3/16"</u> _____ <u>N/A</u> Other <u>N/A</u> _____ <u>N/A</u> Electrode-Flux (Class) <u>N/A</u> _____ <u>N/A</u> Flux Trade Name <u>N/A</u> _____ <u>N/A</u> Consumable Insert <u>N/A</u> _____ <u>N/A</u> Deposited Weld Metal Thickness Range: Groove <u>All</u> _____ <u>N/A</u> Fillet <u>All</u> _____ <u>N/A</u>	POSTWELD HEAT TREATMENT (QW-407) Temperature Range (°F) <u>None</u> See Note 4 Time Range <u>N/A</u> GAS (QW-408) <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Gas(es)</th> <th>Percent Composition</th> <th>Flow Rate</th> </tr> </thead> <tbody> <tr> <td>Shielding</td> <td><u>None</u></td> <td><u>N/A</u></td> <td><u>N/A</u></td> </tr> <tr> <td>Trailing</td> <td><u>None</u></td> <td><u>N/A</u></td> <td><u>N/A</u></td> </tr> <tr> <td>Backing</td> <td><u>None</u></td> <td><u>N/A</u></td> <td><u>N/A</u></td> </tr> <tr> <td>Other</td> <td><u>N/A</u></td> <td></td> <td></td> </tr> </tbody> </table>		Gas(es)	Percent Composition	Flow Rate	Shielding	<u>None</u>	<u>N/A</u>	<u>N/A</u>	Trailing	<u>None</u>	<u>N/A</u>	<u>N/A</u>	Backing	<u>None</u>	<u>N/A</u>	<u>N/A</u>	Other	<u>N/A</u>																	
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Other	<u>N/A</u>																																			
POSITIONS (QW-405) Groove <u>All</u> _____ Fillet <u>All</u> Welding Progression: Uphill <u>N/A</u> _____ Downhill <u>Downhill</u>	ELECTRICAL CHARACTERISTICS (QW-409) <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Weld Layer(s)</th> <th rowspan="2">Process</th> <th colspan="2">Filler Metal</th> <th colspan="2">Current</th> <th rowspan="2">Volt Range</th> <th rowspan="2">Travel Speed Range</th> <th rowspan="2">Other</th> </tr> <tr> <th>Class</th> <th>Diameter</th> <th>Type Polarity</th> <th>Amp Range</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1, 2</td> <td rowspan="2">SMAW</td> <td rowspan="2">E6010</td> <td>1/8"</td> <td rowspan="2">DCRP</td> <td rowspan="2">70-120</td> <td>18-25</td> <td rowspan="2">Manual</td> <td rowspan="2">N/A</td> </tr> <tr> <td>5/32"</td> <td>22-26</td> </tr> <tr> <td rowspan="2">Remainder</td> <td rowspan="2">SMAW</td> <td rowspan="2">E6010</td> <td>5/32"</td> <td rowspan="2">DCRP</td> <td rowspan="2">110-160</td> <td>22-26</td> <td rowspan="2">Manual</td> <td rowspan="2">N/A</td> </tr> <tr> <td>3/16"</td> <td>24-28</td> </tr> </tbody> </table>	Weld Layer(s)	Process	Filler Metal		Current		Volt Range	Travel Speed Range	Other	Class	Diameter	Type Polarity	Amp Range	1, 2	SMAW	E6010	1/8"	DCRP	70-120	18-25	Manual	N/A	5/32"	22-26	Remainder	SMAW	E6010	5/32"	DCRP	110-160	22-26	Manual	N/A	3/16"	24-28
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Tungsten Electrode Size and Type (GTAW) <u>N/A</u> Metal Transfer Mode (GMAW) <u>N/A</u> Wire Feed Speed Range <u>N/A</u>																																				
TECHNIQUE (QW-410) String or Weave Bead _____ Maximum Weave 3X Core Diameter _____ Contact Tube to Work Distance <u>N/A</u> Orifice or Gas Cup Size _____ <u>N/A</u> Multiple or Single Pass (Per Side) <u>Either</u> Oscillation _____ <u>N/A</u> Multiple or Single Electrodes <u>Single</u> Method of Back Gouging <u>None</u> Peening <u>Refer to Engineering Specification</u> Initial and Interpass Cleaning <u>Brushing, grinding, and suitable solvent as required</u> Other <u>1/2" maximum weld pass thickness. See Note 2 for examination requirements.</u>																																				

Figure 1 – Joint Designs

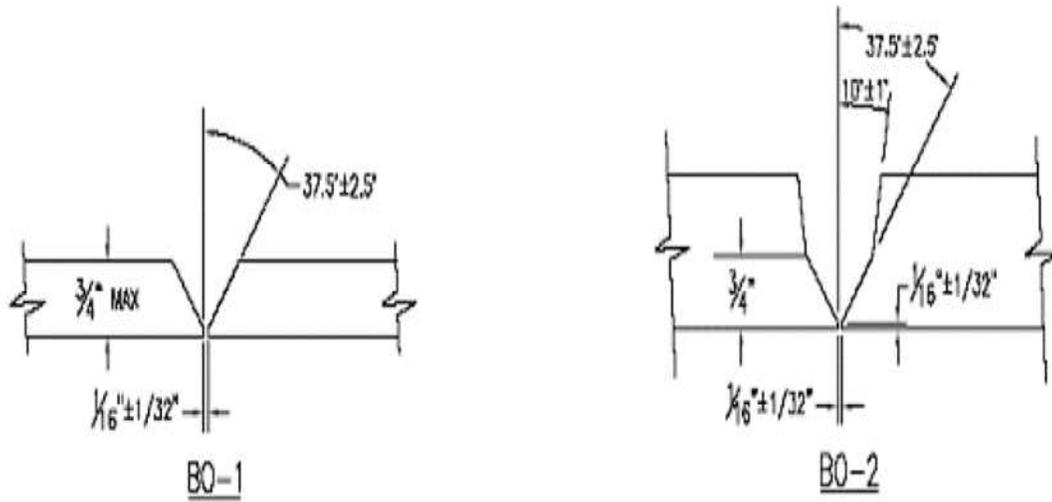


Figure 2 – Unacceptable Butt Weld Profiles

