Description

This procedure is used in conjunction with written welding procedures that have been destructively tested to ensure DOT pipelines are welded per DOT regulations.

Regulatory Applicability

☒ Regulated Transmission Pipelines
☒ Regulated Gathering Pipelines (Type A)
☒ Regulated Gathering Pipelines (Type B)[1]
☒ Regulated Distribution Pipelines

Frequency

As needed

Reference

49 CFR 192.221	*Scope*
49 CFR 192.225	*Welding – General*
49 CFR 192.227	*Qualifications of welders*
49 CFR 192.229	*Limitations on welders*
49 CFR 192.231	*Protection from Weather*
49 CFR 192.233	*Miter Joints*
49 CFR 192.235	*Preparation for Welding*
49 CFR 192.241	*Inspection and Test of Welds*
49 CFR 192.243	*Nondestructive Testing*
49 CFR 192.245	*Repair or Removal of Defects*
49 CFR 192 Appendix C	*Qualification of Welders for Low Stress Level Pipe*

Reference (Cont'd)

49 CFR 192 Appendix C	*Qualification of Welders for Low Stress Level Pipe*

Forms / Record Retention

Construction Records	*Pipeline Construction Records*
F-192.225	*Pipeline Welding Packet / Written Procedures and Records of qualified testing for the Life of the Pipeline*

[1] If the line is new, replaced, relocated or changed.

		System (form not required if equivalent data is documented in construction records)
Related Specifications	API 1104	*Welding of Pipelines and Related Facilities 20th Edition (Including Errata/addendum (July 2007), and Errata 2 (2008) (API STD 1104, IB*
OQ Covered Task	0801	*Welding*

(In order to perform the tasks listed above, personnel must be qualified in accordance with West Texas Gas's Operator Qualification program or directly supervised by a qualified individual.)

Procedure Steps

1. Welding Procedures (192.225)
   a) All welding will be performed using qualified procedures or the new procedure will be qualified. All welding procedures will be qualified under section 5 of API 1104 as incorporated by reference in 49 CFR 192.7. The quality of the test welds used to qualify welding procedures shall be determined through destructive testing in accordance with the applicable welding standard(s) In addition, design drawings and specifications for the particular job must be met. The written procedure and all records of qualified testing will be retained for the life of the pipeline.
   b) If the procedure needs to be qualified refer to the Construction Manual: Joining of Pipes by Welding.
   c) No automatic welding equipment is used at this time. Procedure will be created if machine or automatic welding equipment utilized.
2. Welder Qualifications (192.227)
   a) If the pipeline operates at >20% SMYS, annually Welders must be initially qualified in accordance with section 6 of API Standard 1104 20th edition and recognized by PHMSA utilizing WTG specific welding procedures and documenting the qualifications on WTG's Weld Test Report. The second annual test the welder must successfully qualify in accordance with section 6 or section 9 of API Standard 1104 20th edition. These qualification tests cannot exceed 7 ½ months in a calendar year.
   b) If the pipeline will operate at a pressure <20% SMYS, welders may be qualified under Section I of Appendix C of 49 CFR 192.
   c) A welder qualified under an earlier edition than that listed in 49 CFR 192.7 may weld but not re-qualify under that earlier edition.
   d) These records must be maintained for five years following construction.
3. Limitations On Welders (192.229)
   a) If a welder's qualifications were based upon nondestructive testing, he may not weld on compressor station pipe and components.
   b) In order to weld with a welding process, the welder must have within the proceeding 6 months welded using that process.
   c) Welders Qualified under API Standard 1104:
      i) Will not weld on pipe operated at a pressure that produces a hoop stress of 20% or more of SMYS unless within the preceding 6 calendar months that welder has had one weld tested and found acceptable under Sections 6, 9, or Appendix A of API Standard 1104 (See 49 CRF 192.7 for correct edition.)

         NOTE: Welders may maintain an ongoing qualification status by performing welds tested and found acceptable under the above acceptance criteria at least twice each calendar year at intervals not exceeding 7 ½ months.

ii) May not weld on pipe that will be operated at a pressure producing a hoop stress of less than 20% of SMYS unless the welder is tested according to "i" above or re-qualifies according to d(i) or d(ii) below.

d) A welder qualified under 49 CFR Appendix C may not weld unless –

i) Within the preceding 15 months, but at least once each calendar year, he is requalified under Appendix C; or

ii) Within the preceding 7 ½ months, but at least twice each calendar year, he has had:

(1) A production weld cut out, tested and found acceptable in accordance with the qualifying test; or

(2) If he will weld only on service lines 2 inches or smaller in diameter, has had two sample welds tested and found acceptable in accordance with the test in section III of 49 CFR 192 Appendix C.

4. Protection From Weather (192.231)

a) Welding must be protected from weather conditions that would impair the quality of the completed weld.

5. Miter Joints (192.233)

a) A mitered joint on steel pipe that will be operated at a pressure that produces a hoop stress of 30% or more of SMYS may not deflect the pipe more than 3 degrees.

b) A miter joint on steel pipe that will be operated at a pressure that produces a hoop stress of less than 30%, but more than 10%, of SMYS may not deflect the pipe more than 12½ degrees and must be a distance equal to one pipe diameter or more away from any other miter joint, as measured from the crotch of each joint.

c) A miter joint on steel pipe that will be operated at a pressure that produces a hoop stress of 10% or less of SMYS may not deflect the pipe more than 90 degrees.

6. Preparation For Welding (192.235)

a) Before beginning to weld, ensure the weld surface is clean and free of any material that may be detrimental to the weld, and the pipe or component is aligned in a way that provides the most favorable condition for depositing the root bead.

b) Ensure that the alignment is preserved while the root bead is being deposited.

7. Inspection Of Welds(192.241)

a) Refer to procedure P-192.241 for details on performing visual inspection of welds.

b) Visual inspection is to be conducted by an individual qualified by appropriate training and experience. The inspection is to ensure that the weld is performed according to the written procedure and that the weld is acceptable under d below.

c) If the pipeline is to be operated at a pressure that produces a hoop stress of 20% or more of SMYS the weld must be nondestructively tested in accordance with procedure P-192.243. However, welds on pipe with a nominal diameter of less than 6 inches do not have to be nondestructively tested if they have been inspected and approved by a qualified

welding inspector. In addition, if the pipe is to be operated at a pressure that produces a hoop stress of less than 40% of SMYS and the welds are so limited that nondestructive testing is impractical, it is not required as long as they are visually inspected and accepted.

d) The acceptability of a weld shall be determined in accordance with section 9 of API 1104 as incorporated by reference in 49 CFR 192.7 and recognized by PHMSA, However, if a girth weld is unacceptable under these standards for a reason other than a crack, and if Appendix A to API 1104 applies to the weld, the acceptability of the weld may be further determined under that appendix.

e) Welds that are found unacceptable according to d above, must be removed or repaired according to procedure P-192.245.

8. Maintenance Welding

NOTE: Prior to welding on the pipe surface, adequate pipe wall thickness must be determined (by nondestructive methods) to prevent burn-through. See procedure P-192.243

a) Prior to welding, the bevel of a joint of pipe shall be inspected for proper dimension, cleanliness and angle and the pipe shall be free of dirt and foreign materials.

b) For in-service pipeline welding, the pipeline pressure at the location that welding is being done shall be limited to either:

   i) 30% of the specified minimum yield strength for the pipe wall thickness and grade, or

   ii) 50% of MAOP for those pipelines that have an established MAOP.

c) If excessive scale or hydrocarbon build-up, or pipe wall lamination is found, notify Supervisor or Project Inspector immediately.

d) The ends of a repair sleeve must be positioned a minimum of 6 inches beyond a damaged area (including internal corrosion).

e) Supports or braces may only be welded directly to jurisdictional pipelines in accordance with 49 CFR 192.161.

f) Electrodes used in maintenance welding of patches and sleeves shall be low hydrogen Type E7010, E8010, or E6010.

g) Maintenance welding procedures are located in the Construction Manual.

h) Each bead must be grinded and cleaned prior to depositing subsequent filler passes.

i) Consideration must be given to ensure the carbon equivalent of the pipe being sleeved is less than 0.45%.

9. Records

a) WTG will maintain records demonstrating compliance with this procedure. When construction data is not available from daily logs or other records, F-192.225 must be completed. All records must be retained for the life of the pipeline. Ensure all records are traceable, verifiable, and complete.