Description

This procedure provides guidelines to use when performing taps on pressurized pipelines.

Regulatory Applicability

☒ Regulated Transmission Pipelines
☒ Regulated Gathering Pipelines (Type A)
☒ Regulated Gathering Pipelines (Type B)
☒ Regulated Distribution Pipelines

Frequency

As needed

Reference

49 CFR 192.627 *Tapping Pipelines Under Pressure*
LA Title 43 Part XIII 2727 *Tapping Pipeline Under Pressure*

Forms / Record Retention

NDT Reports, OQ Records, and Project related documents for the Life of the Pipeline System

Related Specifications

API RP 2201 *Safe Hot Tapping Practices in the Petroleum & Petrochemical Industries*

OQ Covered Task

1081	*Tapping a Pipeline (Tap Diameter 2 Inch and Less)*
1091	*Tapping a Pipeline (Tap Diameter Greater Than 2 Inch)*
1101	*Tapping a Pipeline With a Built-In Cutter*
1111	*Tapping Cast and Ductile Iron Pipe, and Low Pressure Steel*

(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

Prerequisites

1. Determine and have engineering review the exact procedure and equipment that will be used for the hot tap.
2. Project Manager, prior to installing the tap assembly, should ensure that appropriate pipeline pressures and flow rates are established for safe welding, tapping operations.
3. Equipment
   a) The hot tap branch connection shall comply with DOT Part 192. The installed piping base metal thickness and auxiliary support must provide support for the new connection and the hot tapping machine. The hot tap connection shall be designed for the pressure and grade of the pipe being tapped.
   b) The hot tap fitting must be designed to match or exceed the line's MAOP. Acceptable area of replacement calculation is required for all taps equal to and greater than 2 inches and must be included in the project file. The fitting sleeve shall have a carbon equivalent (CE) of less than 0.45 based upon the manufacturers design.
   c) Fittings must be supported to remove any induced moment caused by the piping system according to the manufacturers' recommendation.
   d) Seals and materials of construction must be compatible with the contents in the piping.
   e) Hot tapping machine must be able to retain and remove the blank or coupon.
4. Location
   a) Before choosing the hot tap location, the Project Manager shall assess the site to determine its suitability, including but not limited to depth of cover, access and environmental considerations and subsurface water removal requirements, as well as above and below ground obstructions. Once a potential site is determined, calculate to insure that the existing pipeline design and proposed fitting have adequate metal area available for reinforcement in conformance to ASME B31.8, Appendix F.
   b) The tapping operation produces steel cuttings that fall directly into the pipeline. The possibility of damaging or impairing downstream equipment operation should be considered.
   c) Install the hot tap fitting in a straight section of pipe. Do not install the hot tap fitting on another fitting. Do not install the hot tap fitting over a circumferential pipeline weld or the weld heat affected zone. Maintain a minimum distance of 1.5 times the nominal pipe diameter or 36 inches, whichever is less, between an end fillet weld on the hot tap fitting and the nearest pipeline girth weld.
   d) In the area of the proposed hot tap installation, buff the exposed pipe with a wire wheel to bare metal. A hot tap is not allowed on a pipeline if the minimum wall thickness is less than 90% of the nominal specified thickness.
5. Pre-Installation Checklist

Before proceeding with the hot tap, the project manager shall ensure that:

a) A qualified person must conduct hot tapping or utilize span of control.

b) The area where the connection is to be made has been identified and physically marked.

c) The pipe wall thickness has been verified, and any metal imperfections that might prevent a proper weld have been identified and evaluated. An ultrasonic thickness gauge should be used on steel pipe.

d) A plan has been prepared to monitor and control pressure in the pipeline within the required limits during welding.

e) All necessary testing for flammable vapors, oxygen and hazardous air contaminants has been conducted using an approved and calibrated CGI to ensure a safe environment.

f) Potential safety and health hazards have been assessed, personal protective equipment provided and fire retardant clothing used as necessary.

g) Hot Work Permit has been issued if required.

h) A fire watch has been established and equipped with a suitable dry chemical fire extinguisher or pressurized fire hose.

i) Signs and barriers have been provided when warranted.

j) Procedures have been prepared and are in place to isolate the work area in the event of an emergency.

Hot Tap Operation

1. The Project Supervisor shall conduct a project orientation and safety meeting before work starts. Only qualified personnel shall mount, assemble and operate the hot tapping machines.
2. Perform a dry run before cutting. This dry run includes assuring the vent (bleed valve) is in place. Also, ensure the cutter will clear the hot-tap block valve and the block valve will close.
3. Verify all distance measurements, such as:
   a) the distance between the retracted pilot drill and the bottom edge of the hot-tap machine adaptor flange face
   b) the distance between this flange face and the pipeline
   c) the distance the pilot drill extends beyond the shell cutter
   d) the shell cutter lowering-in distance (top of pipe where the pilot drill contacts the pipe and the bottom of the coupon formed by the shell cutter)
4. Monitor the hot-tap progress. Monitoring includes:
   a) watching the travel measurement rod
   b) noting running time
   c) noting number of hand cranks
   d) listening to the drill motor sound

5. Monitor drill motor sound changes: as the cutter starts cutting; when the cutter penetrates the pipe wall; and when it finishes cutting.
6. After completing the tap and before removing the tapping machine, the project supervisor shall ensure that:
   a) The cutter and pilot bit are fully retracted.
   b) The hot tap valve is closed.
   c) The bleeder valve is open and all pressure has been bled off the hot tap machine.
   d) The hot tap coupon has been retrieved and given to the Company representative for corrosion analysis
7. Repair all damaged coating and coat all added fittings, components and piping in accordance with the Paint, Coatings, and Inhibitors Inspection and Maintenance Manual.

Documentation

Maintain NDT reports, operator qualification records and other project-related documents in the project file for the life of the pipeline.