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QualityScan

Track Your Pipes—From the Cradle to the Grave

Across the US, miles of piping are being placed and replaced due to new fracking projects. If structural integrity of pipes is compromised during manufacture, storage, delivery or installation, it may result in coating damage, which in turn will lead to pipe corrosion, causing gas leaks. This can increase project costs down the road and even endanger safety and health of personnel, the public and environment.

Proper quality control of piping systems, tanks, pressure vessels and other equipment in the oil and gas industry helps assure safety and excellence of materials and processes. Certified Weld Inspectors (CWI) are one part of the quality control process: They watch the piping from manufacture (“cradle”) to installation (“grave”), including all the processes in between. With the increase of regulations from the welding governing bodies, the CWI work has become more prominent in the field.

The CWI certification is widely recognized nationally and internationally in the welding industry. A welding inspection determines if a weldment meets the acceptance criteria of a specific code, standard, or other regulations. An inspector is thoroughly familiar with welding processes, procedures, qualifications, materials and limitations of weld testing. For welding inspections to be effective, a CWI's activities must be consistent with the standard requirements as well as with technical and ethical principles.

When engaged on a fracking or similar project, a CWI verifies that the pipe is shipped, handled and stored according to the code until it is put into place. It is also a CWI's responsibility to ensure that welders meet the code requirements for performing welding on the pipe.

During manufacture, the integrity of the pipe may be compromised in several ways. In a seamed pipe, quality issues are primarily found in the weld of a seam. Roundness of the pipe may also present a challenge affecting the fit-up of pipes for welding in the field. This is caused by chains or strapping being cinched down too hard on the truck, pipes being stacked too high, or a lack of protection for pipes during transport. A qualified CWI can ensure that pipes are shipped properly.

Yet another problem occurs when coating is missing from a portion of the pipe due to a sprayer malfunction during manufacture or if the pipe is improperly handled. Fork trucks, hi-lows, and excavators grabbing the pipe might damage the pipe coating. If coating is chipped or gouged, or

improperly applied, exposing the base metal of the pipe, elements can easily infiltrate the pipe and result in corrosion. Typically, proper pipe transport is done with vacuum and magnetic lifts, and some strapping is done to alleviate metal-on-metal contact of pipes.

During installation, a CWI will carefully inspect the welds for integrity; otherwise, welds can cause leaking of the product, be it gas or oil. Coating holidays, or Jeeping, should be done as well, during which a high-voltage coil is placed around and rolled down the pipe to check for any coating problems. Equipment should be properly calibrated and the correct voltage used to find the indication sizes and coating thickness allowed by the manufacturer. The main point of the inspection is to identify damage by weld bands because this area is welded and then covered after the weld has been inspected. If a weld is not up to code or a procedure is not followed, a CWI must stop the work onsite and address the issues.

The role of a Certified Weld Inspector is critical to proper quality control of oil and gas transport equipment.

While costs vary, a company should budget approximately \$800–\$1,000 per day, per CWI working onsite. When construction is extensive, services of several CWIs are needed to cover the large site and keep the project on track.

When looking for the CWI services, a company can first check with non-destructive testing and certification providers because they specialize in this type of work and offer complementary services needed to comply with the code, such as X-rays and Ultrasonics. Some building companies also offer CWI services. American Welding Society offers a certification database where an individual CWI's certification can be verified.

High quality of materials, processes and personnel training must be the main ingredient in any construction project, lest a catastrophe should occur—from a natural disaster to a human mistake and equipment malfunctioning. The oil and gas industry can minimize risks, in part, by employing CWI services to ensure the project is built to code and held to a high standard—from the cradle to the grave. **ME**