THERMO-WRAP™

FLARE LINE PIPING REHABILITATION




Problem

Scattered corrosion and pitting was found on this 24" OD flare line over a 300' section. UT readings were taken on the API Class 2 piping in conjunction with pit gauge measurements to determine remaining wall thickness. In several locations, the remaining wall thickness exceeded the corrosion allowance requiring immediate reinforcement. Over thirty eight areas of localized corrosion were identified over a 300' section of flare pipe. The size of the corrosion clusters ranged from 3/4" to 6" in diameter at a depth of 40% to 80% of the original wall thickness.

Conditions

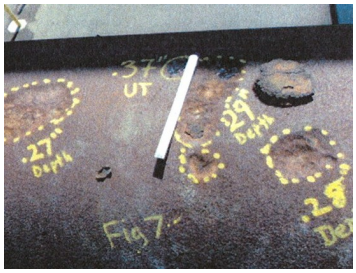
There was a concern that if aggressive surface preparation methods on the top 1/3 of the pipe it would open thru wall holes in the flare line causing unsafe working conditions or resulting in a facility shutdown. Due to this concern, surface preparation techniques were specified, based on the condition of the top and the bottom of the pipe. Electric powered tools could not be used as they may have presented an ignition source and a fire hazard.

Solution

The surface preparation was applied in 20 to 40' sections since the repair would encompass several hundred feet of repair. The bottom 2/3 of the pipe was prepared in accordance with SP10 using high-pressure 3,000 to 7,000 psi (206.84 to 482.63 bar) water blasting while the top 1/3 of pipe was prepared in accordance with SP1, SP2 (hand tools) around pits using sandpaper. All pits were filled and the original pipe geometry was reformed using Syntho-Poxy™HC, a high compression strength (18,000 psi), load transferring filler epoxy. Five to ten mils of a2-part epoxy, Thermo-Poxy™, was then applied to the surface to promote bond and prevent corrosion. The sections of pipe were then wrapped with 4-layers of the Thermo-Wrap™ system, a 100,000 psi (6,895 bar) tensile strength fiberglass wrap system, which provides structural integrity to the thinned pipe.

Result

NRI was able to fix the thinned and pitted flare line and restore it to higher than its original design pressure. By utilizing the Thermo-Wrap composite repair system, the pipe could remain in full working operation without the need to reduce the temperature or pressure, thereby fully repairing and reinforcing the section, while maintaining the current production schedules.





NRI®
Innovative Composite Solutions

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