CORROSION NEWS MATCOR

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MATCOR made 1,550 holes in the road during the course of the ECDA.

Magnesium anodes were installed along the buried piping as a preventive measure and to supplement the existing CP system.

ECDA of Buried Pipelines – The Challenges Facing Today's Pipeline Operators & Engineers

Conducting an External Corrosion Direct Assessment (ECDA) on buried natural gas transmission pipelines is tough enough when facing rough terrain and ever-changing weather conditions; imagine conducting an ECDA in a suburban area where the pipeline may run under several highly trafficked roadways and intersections. That's exactly what MATCOR engineers and corrosion technicians faced when they traveled to a Maryland suburb to conduct an ECDA survey on a buried natural gas transmission pipeline with a cathodic protection (CP) system.

ECDA is a process that integrates knowledge of the physical characteristics and operating history of a pipeline with the results of diagnostic testing performed on the pipeline system to determine its integrity. The process is then validated by the physical examination of the pipeline.

MATCOR conducted a month-long study on a section of pipeline approximately three miles long and located along a divided boulevard. MATCOR Corrosion Technician Ed Goldberg detailed the challenges MATCOR faced while conducting the indirect examination portion of the assessment in the March 2009 edition of *Pipeline & Gas Journal*. Entitled, "Challenges of Pipeline Testing in Suburbia", a link to the article can be found on MATCOR's Web site: www.matcor.com/article_reprints.asp.

Direct Examination

This newsletter feature is a follow-up to the *Pipeline & Gas Journal* article and presents the results of the direct examination phase of the ECDA. A direct examination is conducted to determine the severity of the indications found during an indirect examination survey. During this process, excavations are done to expose the pipe surface and measurements are made on the pipeline and in the immediate surrounding vicinity.

Digs were scheduled to excavate around the pipe for a thorough in-ditch examination of the suspect pipeline area. A location with no corrosion indicators was selected as the "control dig" for the purpose of comparison; three additional locations were excavated to test against the control dig.

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AC MITIGATION: THE BENEFITS OF USING MATCOR'S MITIGATOR™ OVER CONVENTIONAL ZINC RIBBON

The MITIGATOR™

One conventional method for mitigating AC current is to use zinc ribbon; however, this solution poses numerous concerns to pipeline operators that are eliminated with the use of the MITIGATOR™. Featured in MATCOR's spring newsletter, the MITIGATOR™ is the pipeline industry's first engineered AC Mitigation grounding system. The following outlines the benefits of utilizing the MITIGATOR™ over conventional zinc ribbon:

• Zinc consumption rates are significantly higher than copper in the presence of AC current. The MITIGATOR™ utilizes a special backfill to further extend the life of the copper conductor.

• The use of zinc anodes directly connected to the pipeline for AC Mitigation can interfere with existing impressed current cathodic protection (CP) systems in a way that is both difficult to model and to predict. The MITIGATOR™ is installed with decouplers to isolate the AC grounding system from the DC CP system.

• Zinc, in many soil environments, is subject to oxidization and shifts in electro-potential that can adversely affect the pipeline and its CP system. It is recommended that a gypsum backfill be utilized with zinc ribbon installations – but this increases the cost and difficulty of installation. The MITIGATOR™ is prepackaged in a specially formulated grounding backfill with corrosion inhibitors to protect the copper and to enhance system performance.

• When directly connected to the pipeline, the effect of zinc ribbon on potential surveys can be erratic and difficult to interpret, rendering Close Interval Potential Surveys (CIPS) inconclusive or invalid. The MITIGATOR™, when decoupled from the CP system, does not impact potential measurements.

• Zinc is difficult to handle and install. The MITIGATOR™ is a flexible assembly that can easily be cable-plowed or trenched into place without the difficulties associated with zinc ribbon.

To learn more about the risks associated with using zinc ribbon, please visit MATCOR's Web site to access a technical bulletin on the topic, entitled "Concerns with Zinc Ribbon for AC Mitigation": **www.matcor.com/article_reprints.asp**.

SPL™-FBR LINEAR ANODE NOW FEATURES EXTERNAL BRAIDING

MATCOR's proprietary flexible linear anode, which has always been manufactured by the company itself, has been enhanced to include external braiding for increased strength and compression. The external braiding is a PVC coated, high strength yarn. The mixed metal oxide linear anode is packaged with coke backfill in a porous, cloth housing. This anode is primarily designed for use along pipelines, beneath aboveground storage tanks (ASTs) and in congested areas where interference may be a concern.

For more information on the design, installation and testing of cathodic protection systems, please contact MATCOR at **matcorsales@matcor.com**, or call **800.523.6692**.

MATCOR'S SPL™-FBR Anode with external braiding.

MATCOR'S DOYLESTOWN, PA OPERATIONS REACH SAFETY MILESTONE

March 8, 2009 marked a significant milestone for MATCOR's Doylestown, Pa. operations – four years without incurring a Lost Time Incident. The operation includes manufacturing, engineering and office personnel. This represents 1,460 calendar days of the entire team using safe practices and behaviors.

MATCOR Plant Foreman David You.

MATCOR Plant Manager Carlos Fuentes.

MATCOR'S GULF COAST ENGINEERING AND SALES OPERATIONS CONTINUE GROWTH

Matt Matlas has joined the company as a senior managing corrosion engineer. Matlas will oversee engineering operations in MATCOR's Gulf Coast office in Houston, Texas. He brings more than 15 years of engineering and cathodic protection design experience to MATCOR. A NACE certified Cathodic Protection Specialist and Level 1 Coating Inspector, Matlas joins MATCOR after serving as a senior corrosion engineer and corrosion/field services manager for Sunoco Logistics. Matlas graduated with a bachelor's degree in engineering technology with a major in electrical engineering from Central Michigan University.

Ronnie Little is the newest member of MATCOR's technical sales team in Houston, Texas. Building upon MATCOR's growth throughout the Gulf Coast and Midwest, Little's extensive background in the oil and gas industries will help to bolster sales opportunities throughout the region. Little spent nearly 10 years managing sales throughout the U.S., North America and Latin America. Most recently, Little was a product line services manager for a pipeline integrity and corrosion services company.

ECDA OF BURIED PIPELINES – THE CHALLENGES FACING TODAY'S PIPELINE OPERATORS & ENGINEERS

Continued from cover

"What MATCOR found was exactly what the indirect data had predicted," says MATCOR Senior Managing Corrosion Engineer Matt Matlas. "Considering the pipeline itself was installed in 1951, none of the direct examinations showed corrosion activity any worse than indicated by the indirect inspection data."

The root cause of corrosion activity observed appeared to be due to mechanical damage from construction activity around the pipeline. The first excavation showed that the pipeline was in good condition; however, the CP level was recorded at below the -850 mV criteria level and signs of stray current were found. The CP was improved with the installation of sacrificial anodes at the excavation site. Corrosion was only limited to the surface area of the second excavated pipeline. The area was cleaned and coating repairs were made to prevent the corrosion from becoming a future problem. The last excavation showed more serious pipe damage, requiring installation of split sleeves to act as reinforcements to the pipeline. Instead of simply re-coating the excavated pipe, the client took proper precautionary measures to maintain the integrity of the line, although they were not required to do so. Magnesium anodes were installed for additional protection at all three locations of excavated pipe.

Due to the client's vigilance in maintaining its pipelines, the results of the ECDA were not severe and were typical of most properly maintained buried pipelines. Proper maintenance and repairs in conjunction with scheduled reassessments assure the longevity of buried pipelines and prevent costly breakdowns in service to surrounding communities and cities.