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MATCOR SPL™ Mini-Deep™ **Corrosion Protection Engineering** Pre-Installation Testing & Diagnostic Pre
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Corrosion News

MATCOR

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DEEP WELL ANODE SYSTEMS IDEAL FOR WELL CASING APPLICATIONS

External corrosion of well casings is a significant problem for oil and gas producers and storage facilities for whom maintaining the integrity of the well casing is critical to the operation of their business. Steel well casings in soil are susceptible to the same electrochemical corrosion mechanism that attacks buried pipelines and other structures in soil. Unlike buried pipelines, which can be excavated, examined, and if necessary repaired, well casing corrosion generally occurs at depths that render failure catastrophic for continued operation.

The Sprayberry Field in West Texas, for example, has been well documented to have a high incidence of external casing failures in the San Andres formation. This formation is found nominally between 3,500 feet and 6,000 feet of depth and is a saltwater bearing and salt water disposal zone. With active oil and gas

MATCOR's Mini-Deep™-Anodes are installed to 250 feet at the Sprayberry Field in West Texas and protect well casings down to a depth of 8,000+ feet.

production dating back to the 1950s, there are in excess of 4,000 well bores in the area with additional wells being installed on a regular basis.

Published data details significant and increasing casing failure rates, with 75% of the failures having occurred in the San Andres formation between 3,500 feet and 6,000 feet while 15% of the failures occurred deeper and only 10% having occurred shallower. Faced with this data, one large operator in the region installed test CP systems on several wells to evaluate the effectiveness of cathodic protection at these depths.

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DEEP WELL ANODE SYSTEMS IDEAL FOR WELL CASING APPLICATIONS... *Continued from cover*

Again, with buried pipelines, testing the effectiveness of cathodic protection is a relatively simple task involving a half cell and a crew of healthy individuals walking the right of way taking regular potential measurements while interrupting the supply of current to test on/off polarization. Testing potentials at depths of 6,000+ feet is not such a simple task. This next test requires downhole logging tools to take accurate potential measurements up and down the length of the well casing.

The logging tool is specifically designed to identify and quantify on-going corrosion on the external side of the well casing and can evaluate axial current (current flowing up and down the casing) and radial current density (current leaving and current collecting on the casing). Current flowing up the well casing is defined as positive axial current flow, while negative axial current flow is defined as current flowing down the well casing. In unprotected well casings, axial current can flow up at times and can flow down at times when shifting from a cathodic to anodic state. Where current leaves the casing (negative radial current density) corrosion is occurring. With proper application of cathodic protection, testing will show that all current collects on the casing and travels up the casing (positive axial current).

For the Sprayberry Field well casings, exhaustive testing validated that the use of CP shifted all axial current readings to positive (up casing) with the application of 8 amps of current from deep well anode systems located at the extremity of the well site pad and installed at a depth of 150 feet. Deep well


anodes are preferred over shallow ground beds for well casing applications because deep well anodes:

- have typically lower resistance than shallow ground beds,
- avoid high resistivity surface soil zones,
- provide better current distribution,
- use a small foot print,
- are less affected by seasonal moisture variations, and
- pass along reduced anodic potential gradients to other structures.



The Sprayberry Field has more than 4,000 bores; at least a quarter of them are protected by MATCOR Mini-Deep™-Anode Systems.

To date, more than 1,000 MATCOR Mini-Deep™ Anode Systems have been successfully installed in the Sprayberry Field to protect well casings.

For more information on the design, installation and testing of cathodic protection systems please feel free to contact MATCOR at matcorsales@matcor.com, or by calling 800.523.6692. 



Safety on the road, at a job site, and in the office: MATCOR's Houston office reached 1000 days of no lost time incidents in July 2008 and is still adding safe days!

MATCOR CELEBRATES ANOTHER MILESTONE IN ITS COMMITMENT TO SAFETY

On July 17, 2008, MATCOR's Houston office achieved 1,000 days of no lost time incidents. The Houston staff now proudly displays banners throughout their new office highlighting "1,000 Days of No Lost Time Incidents". The Houston staff joins their colleagues at MATCOR's Pennsylvania headquarters and manufacturing plant, who also met their 1,000 days without a lost time incident in February 2008.

Safety isn't our goal. It's our priority!