

PCS PHOSPHATE – SUWANNEE RIVER

CATHODIC PROTECTION SURVEY

MAY 2011

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May, 2011

PCS Phosphate
Post Office Box 300
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ATTN: Mr. Ron Spells / Jeff Hackney
Project Representatives

<p>Suwannee River Chemical Plant Effectiveness of Cathodic Protection Survey Underground Natural Gas System</p>

INTRODUCTION

A follow-up cathodic protection survey was conducted for PCS Phosphate – Suwannee River Chemical Plant during the month of May, 2011. This survey was conducted to determine the effectiveness of remedial action and repairs conducted during the month of May, 2011. During this survey, PCS Phosphate – Suwannee River Chemical Plant natural gas system was inspected for the effectiveness of cathodic protection, as applied. The cathodic protection system for PCS Phosphate – Suwannee River Chemical Plant consists essentially of Galvomag Magnesium anodes placed in various locations throughout the natural gas distribution system.

RESULTS AND ANALYSIS

A combined total of Five [5] main line and service riser readings were taken during this survey. As can be seen by the structure-to-soil potential measurements and the enclosed data sheet, 100% of the readings obtained were indicative of cathodic protection. A structure-to-soil potential of 850 millivolts or more negative is the basis used in this report to confirm cathodic protection.

SURVEY TEST INSTRUMENTATION

The Cathodic Protection Analyzer, developed by Universal Rectifiers, Inc, (Hereinafter referred to as CPA), is a handheld instrument used with a reference electrode to measure the uninterrupted characteristics of the signal generated from a transformer/rectifier. It can be used to evaluate the coating of a pipeline to ensure that the pipe is fully protected from corrosion. The CPA is designed for use with any pipeline system or structure at risk to corrosion factors. Aging pipes and changing conditions can cause significant problems, such as an increase in applied CP levels and enlarged holidays in coating. In addition, increased environmental concerns also emphasize the need to minimize leaks as much as possible.

The CPA has computer capabilities of filtering interfering signals. The instrument is also capable of measuring several facets of the protection waveform. The software-driven instrument reads the minimum, average, and maximum voltage levels emanating from the pipe, thereby allowing an overview of the entire CPv signature. Digital signal processing makes the accuracy and precision of the CPA possible. It utilizes software to provide the extra speed and flexibility that is becoming increasingly important in the field. Upgrades are made available as they are developed.

The CPA can be operated in conjunction with a shielded reference electrode know by its model number SPI, which allows the user to make a measurement of the cathodic protection without interrupting the rectifiers.

RECOMMENDATIONS
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The sacrificial anode arrangement designed to protect the coated and wrapped steel natural gas system is providing adequate current to afford complete cathodic protection to the steel distribution system. Structure-to-soil readings obtained from Cathodic Test Points and gas risers on the steel distribution system indicate approximately 100% cathodic protection. One [1] Railroad casing was inspected during this survey and found to have a sacrificial anode installed on the casing pipe.

The six inch steel gas pipe from the metering station to the limestone unloading area is cathodically protected at this time. Structure-to-soil readings at the limestone unloading area are above the minimum criteria established for cathodic protection and now provide complete protection to 100% of the steel gas system. The lowest reading obtained [-0.968 VDC] is at cathodic test point #1 gas pipeline.

At this time, the Natural Gas Distribution System for PCS Phosphate - Suwannee River Chemical Plant complex exhibits complete cathodic protection with all IR drop free readings above the minimum acceptable level. I trust the above information to be satisfactory and in sufficient detail, however, should you require additional information, please contact me.

Sincerely,

J. Scott Roberts, C.P. Tester
City Services, Inc.

CATHODIC TEST POINTS

CATHODIC TEST POINTS
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CTP - #1

[1] Red Anode Wire	-1.537 MV
[1] Black Gas Pipeline Wire	-0.968 MV
Anode and Gas Line Wires Together	-1.084 MV

CTP - #2

[1] Red Anode Wire	-1.761 MV
[1] Black [Tape] Casing Pipeline Wire	-0.988 MV
[1] Black [No Tape] Gas Pipeline Wire	-1.100 MV
Anode and Gas Line Wires Together	-1.261 MV

CTP - #3

[1] Red Anode Wire	-1.723 MV
[1] Black [Tape] Casing Pipeline Wire	-0.970 MV
[1] Black [No Tape] Gas Pipeline Wire	-1.231 MV
Anode and Gas Line Wires Together	-1.312 MV

STRUCTURE-TO-SOIL POTENTIALS
GAS PIPE CASINGS

STRUCTURE-TO-SOIL POTENTIAL - GAS PIPE CASINGS
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*Railroad Casing @ CTP #3 -0.970

Scale House Drive Casing @ CTP #2 -0.988

*Casing Anode Installed

STRUCTURE - TO - SOIL POTENTIAL DATA

STRUCTURE – TO – SOIL POTENTIAL DATA

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Test Location	Energized Potentials Volts
Metering Station [6" Steel Line Outlet]	-1.066
Limestone Loading [6" Riser Inlet]	-1.063