

POTASH CORPORATION
SUWANNEE RIVER

CATHODIC PROTECTION SURVEY
JUNE 2013

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June, 2013

Potash Corporation
Post Office Box 300
White Springs, Florida 32096-0300
ATTN: Mr. Jeff Hackney
Project Representatives

Suwannee River Chemical Plant Effectiveness of Cathodic Protection Survey Underground Natural Gas System
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INTRODUCTION

The annual cathodic protection survey was conducted for Potash Corporation during the month of June, 2013. During this survey, Potash Corporation's natural gas system was inspected for the effectiveness of cathodic protection, as applied. The cathodic protection system for Potash Corporation consists essentially of Galvomag Magnesium anodes placed in various locations throughout the natural gas distribution system.

RESULTS AND ANALYSIS

A total of Five [5] structure readings, Three [3] anode readings and One [1] casing reading were taken during this survey. As can be seen by the structure-to-soil potential measurements and the enclosed data sheet, 100% of the structure readings obtained are 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
Potash Corporation – Suwannee River
Underground Natural Gas System
June, 2013

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, with all CP reading being above State and Federal minimum standards. One [1] Railroad casing was inspected during this survey and found to have a sacrificial anode installed on the casing pipe, however, the Cathodic Test Point is damaged and does not allow for reading the casing pipe. The black casing wire [with tape] on CTP #3 requires remedial action.

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 have adequate cathodic protection levels and remedial action is not required to bring these piping areas into compliance with State and Federal minimum guidelines for applied cathodic protection.

At this time, the Natural Gas Distribution System for Potash Corporation's Suwannee River Chemical Plant complex is Cathodically Protected. Currently, no remedial action is required to meet the minimum standard State and Federal code. I trust the above information to be satisfactory and in sufficient detail, however, should you require additional information, please contact me.

Sincerely,



Mitchell L. Whitfield
C.P. Tester

CATHODIC TEST POINTS

CATHODIC TEST POINTS
Potash Corporation – Suwannee River
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CTP - #1

[1] Red Anode Wire	-1.810 MV
[1] Black Gas Pipeline Wire	-0.993 MV
Anode and Gas Line Wires Together	-1.359 MV

CTP - #2

[1] Red Anode Wire	-1.209 MV
[1] Black [Tape] Casing Pipeline Wire	-0.960 MV
[1] Black Gas Pipeline Wire	-0.864 MV
Anode and Gas Line Wires Together	-1.317 MV

CTP - #3

[1] Red Anode Wire	-1.572 MV
[1] Black [Tape] Casing Pipeline Wire	Could Not Locate
[1] Black [No Tape] Gas Pipeline Wire	-1.088 MV
Anode and Gas Line Wires Together	-1.177 MV

STRUCTURE-TO-SOIL POTENTIALS
GAS PIPE CASINGS

STRUCTURE-TO-SOIL POTENTIAL - GAS PIPE CASINGS

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***Railroad Casing @ CTP #3** **-0.000**

Scale House Drive Casing @ CTP #2 -0.960

*Casing Anode Installed

*Cathodic Test Point Missing Casing Wire

*Requires Replacement or Re-attach

STRUCTURE - TO - SOIL POTENTIAL DATA

STRUCTURE – TO – SOIL POTENTIAL DATA

Potash Corporation – Suwannee River

Underground Natural Gas System

June, 2013

Test Location	Energized Potentials Volts
Metering Station [6" Steel Line Outlet]	-1.036
Limestone Loading [6" Riser Inlet]	-1.025