External Corrosion Direct Assessment And Pipeline Integrity

EXTERNAL CORROSION DIRECT ASSESSMENT (ECDA) and PIPELINE INTE

As part of our full-service corrosion control capabilities, Allied Corrosion Industries, Inc. (ACI) offers the ability to manage your entire pipeline integrity program, or to provide any of the processes associated with ECDA.

Allied Corrosion has assembled a group of field-proven pipeline assessment specialists to provide cost effective solutions and compliance with regulatory requirements associated with DOT/OPS Title 49 CFR Part 195.452 (Liquid Pipelines) and CFR Part 192 (Natural Gas Transmission Pipelines). ACI maintains a qualified and experienced staff of registered professional engineers, NACE-certified Corrosion Specialists, Cathodic Protection Specialists, Senior Corrosion Technologists, and Corrosion Technicians. Our staff has more than two centuries combined experience in the corrosion control field.

What is ECDA?

As defined in the ANSI/NACE Standard RPO502-2002, External Corrosion Direct Assessment (ECDA) is "a structured process that is intended to improve safety by assessing and reducing the impact of external corrosion on pipeline integrity". The ECDA process consists of four major steps:

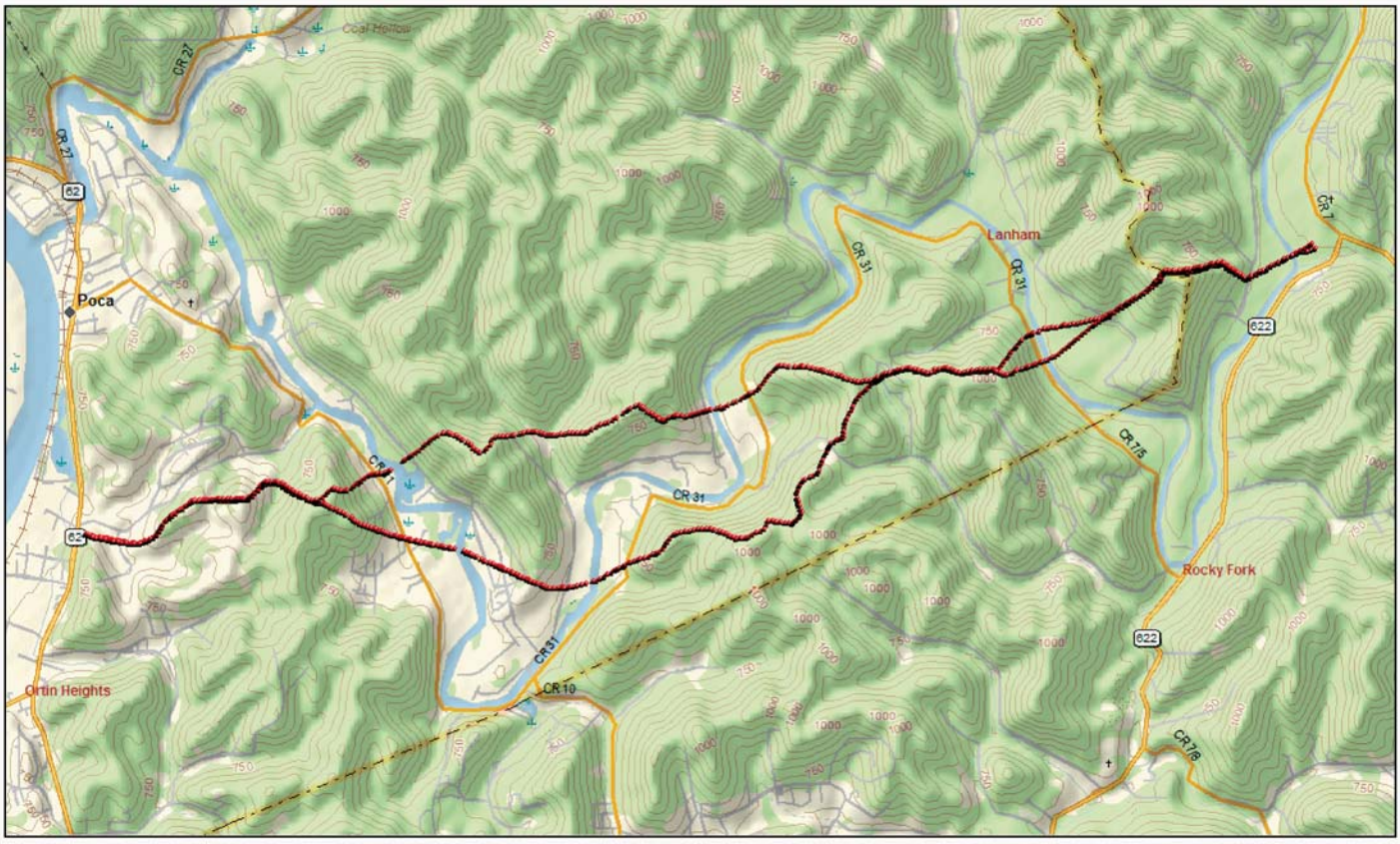
- **Pre-Assessment**
- **Indirect Inspection**
- **Direct Examination**
- **Post Assessment**

PRE-ASSESSMENT

ACI's professionals are well suited to the task of collecting historic and current data to determine if ECDA is feasible and to select the appropriate indirect inspection methods for each individual pipeline integrity program.

INDIRECT INSPECTION

A combination of two or more of the following indirect inspection techniques are used to identify coating faults, anomalies, and/or corrosion activity:



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GRITY MANAGEMENT

- **Close Interval Surveys (CIS):** Provides a profile of electrical potential difference between the pipe and soil (with reference to a copper/copper sulfate reference electrode). The survey is typically conducted at 10 ft. intervals with impressed current sources interrupted to provide "on" and "off" profiles to assist in evaluation of compliance with minimum criteria of cathodic protection.

- **Direct Current Voltage Gradient (DCVG):** Measures changes in electrical voltage gradients along the pipeline to locate coating holidays and characterize corrosion activity.

- **Alternating Current Voltage Gradient (ACVG):** Similar to DCVG surveys except an AC signal is applied to the pipline.

- **Soil & Water Analysis:** Soil resistivity measurements and water pH data are collected at regular intervals along the pipeline to determine corrosivity of the environment.

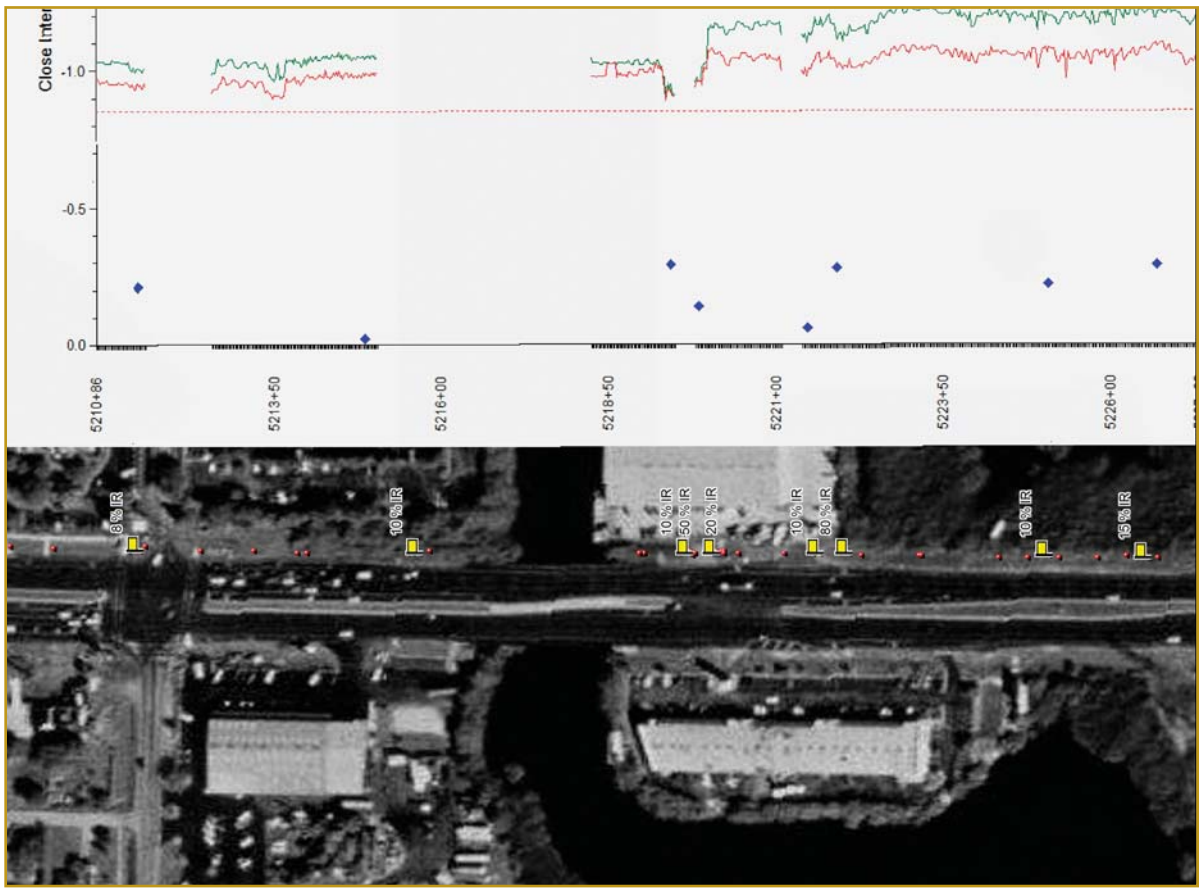
- **Electromagnetic Surveys:** A method of locating coating defects by measuring changes in the magnetic field that are caused by the defects. Also referred to as AC Current Attenuation Survey.

- **Pearson Surveys:** An aboveground survey technique used to locate coating holidays in buried pipelines.

- **Global Positioning Surveys (GPS):** Typically performed in conjunction with CIS or DCVG. Allied Corrosion utilizes state-of-the-art GPS technology for location mapping and GPS synchronized current interruption.

ALLIED CORROSION INDUSTRIES INC.

- **Depth of Cover Surveys (DOC):** Usually performed in conjunction with CIS and GPS surveys.



DIRECT EXAMINATIONS

After completion of the indirect inspections, the assessment specialists at Allied Corrosion analyze the data to select sites for excavations and pipe surface evaluations. The direct examination's data is examined together with prior data to determine the existence and severity of external corrosion on the pipeline. Our integrity specialists can evaluate the coating performance, provide corrosion measurements, pipe strength calculations, corrosion rate estimates, and root cause analysis during this step.

POST ASSESSMENT

This step involves analysis of data collected from the previous three ECDA steps to determine the effectiveness of the ECDA processes, establish pipeline integrity, and set future reassessment intervals.

Allied Corrosion has the qualifications and the specific technical expertise required to assist you with any of the appropriate ECDA field services or manage your entire Pipeline Integrity Management program. Corrosion prevention solutions are our business-----our only business!

All work is performed in accordance with the NACE Standard RP0502-2002, "Pipeline External Corrosion Direct Assessment Methodology".

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