



CORROSION INDUSTRIES INC.



Dry Gas - Internal Corrosion Direct Assessment

DRY GAS - INTERNAL CORROSION DIRECT ASSESSMENT (DG-ICDA)

An intricate part of Pipeline Integrity Management (PIM) is the verification that internal corrosion does not exist in your transmission pipeline system. Our field-proven pipeline Direct Assessment specialists effectively combine the DG-ICDA process with other DA processes, providing a complete and cost effective PIM program.

ACI has assembled an experienced staff of proven Direct Assessment professionals, along with investing in state-of-the-art equipment required to identify and assess potential internal corrosion locations on dry gas transmission pipelines. Our DA staff consists of NACE certified Corrosion Specialists, Cathodic Protection Specialists and Internal Corrosion for Pipeline Technologists.

What is DG-ICDA?

As described in the NACE Standard SP0206-2006 Dry Gas Internal Corrosion Direct Assessment (DG-ICDA) for gas lines is a detailed examination of locations along a pipeline where liquids could first accumulate, allowing inferences to be made about the integrity of the remaining downstream length of pipe. The DG-ICDA process consists of four steps:

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

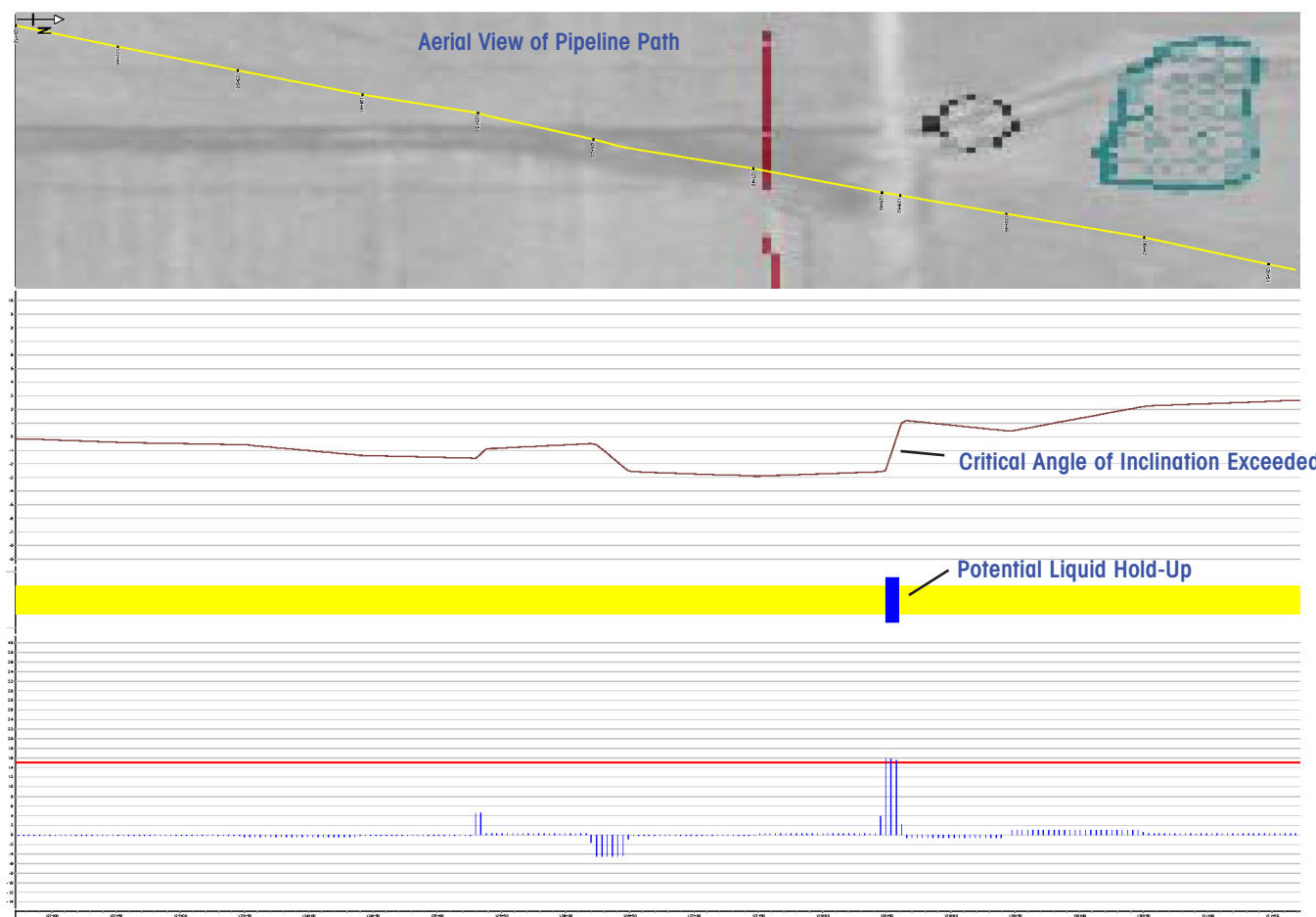


PRE-ASSESSMENT

The pre-assessment phase requires historical and current data collection, which is used to determine feasibility and identify regions for DG-ICDA. To minimize the interference with the operator's day to day operations, we normally provide a list of the minimum data elements required, along with a list of additional data elements requested if available. The actual collection of data, though normally performed by the operator, can be performed by our staff if requested.

INDIRECT INSPECTION

Utilizing sub-foot accurate GPS and a depth recording digital pipe locator, all connected to a data logger utilizing Utilimapper software, a pipeline elevation profile is created from data collected over the operator's pipeline. This data, in conjunction with the multi-phase flow modeling calculations determined by our liquid hold-up software are presented in both graphical and tabular form (see below).



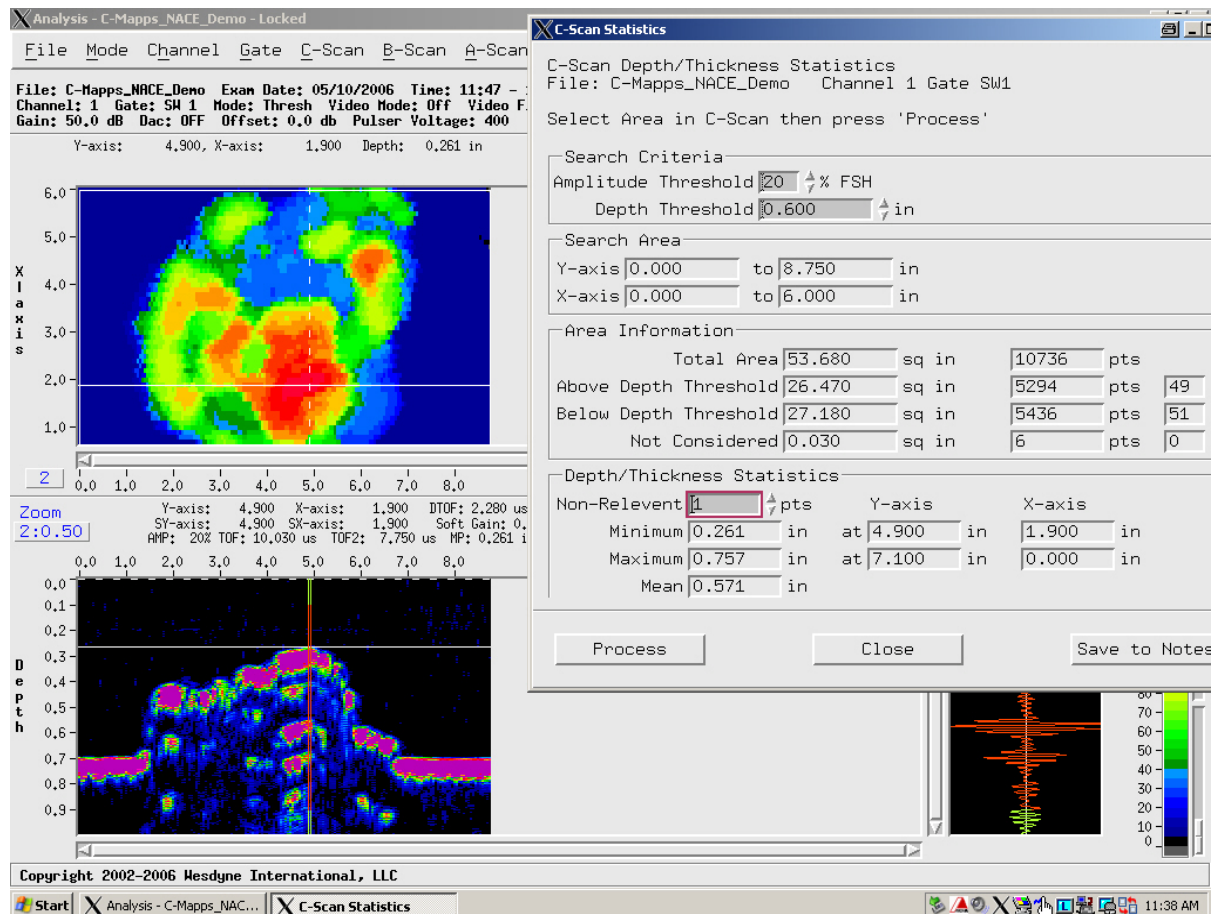
DIRECT EXAMINATION

The objective of the direct examination step is to identify three consecutive potential liquid hold-up locations that are free of internal corrosion. The best case being, that no internal corrosion is found at the first three locations examined. The direct examination is accomplished by excavating the pipeline at predetermined intervals along the entire segment identified as a potential liquid hold-up location.

GUIDEDWAVE ULTRASONIC INSPECTION



Utilizing Long Range Guidedwave Ultrasonic equipment, the pipe segment between excavations is inspected for anomalies. All anomalies indicated by the GUL inspection are then excavated and examined utilizing our Automated Ultrasonic Corrosion Mapping System (shown to the right). This system provides documented results verifying the existence or nonexistence of internal, mid-wall, or external anomalies. It performs the inspection using raster scan technology at sample intervals as fine as every .04 of an inch with speeds reaching 10 inches per second. The results of a scan indicating internal corrosion are shown here to the right. In addition to examining the condition of the pipeline at each excavation, our pipeline integrity management team can design and install internal corrosion monitoring systems, ranging from permanently installed GUL transducer belts to coupons. These types of installations can ultimately save the operator large expenditures in excavation costs.



POST ASSESSMENT

The objective of this step is to determine the effectiveness of the whole DG-ICDA process and to determine reassessment intervals. Utilizing all of the information collected throughout the entire process, we can provide the operator with written documentation, discussing the functions performed during each step of the DG-ICDA methodology. The effectiveness, along with suggested improvements to the application of DG-ICDA are included in this documentation.

Our Pipeline Integrity Management Staff is ready to provide turn-key DG-ICDA services or any portion of the methodology an operator requires. Our goal is to provide you with the highest quality of professional customized Direct Assessment Services that you require. We are available to meet all of your DA needs. Please contact one of our Pipeline Integrity Management Specialists to discuss how we can assist you in meeting your requirements.



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