

# External Corrosion Direct Assessment (ECDA)

Pipeline configuration and operating conditions can prevent the use of in-line inspection or hydrostatic testing to evaluate the integrity of the pipe. External Corrosion Direct Assessment (ECDA) is an alternate inspection methodology approved by DOT 49 CFR Part 192 to assess external corrosion. Structural Integrity's vast experience in the application and development of ECDA since its inception in 2002 allows us to provide the most knowledge to your project.

ECDA is a four (4) step process that leverages sound engineering principles, complimentary above ground inspection practices, data integration and engineering analysis to determine the integrity of a pipeline system. This process optimizes excavation site selection, improving the likelihood that significant damage is evaluated, thereby reducing the risk of failure. ECDA provides the advantage and benefit of locating where damage is likely to initiate in addition to detecting areas with ongoing corrosion. A written procedure and experienced team is required to properly implement an ECDA project in accordance with the guidelines of NACE SP 0502-2008.

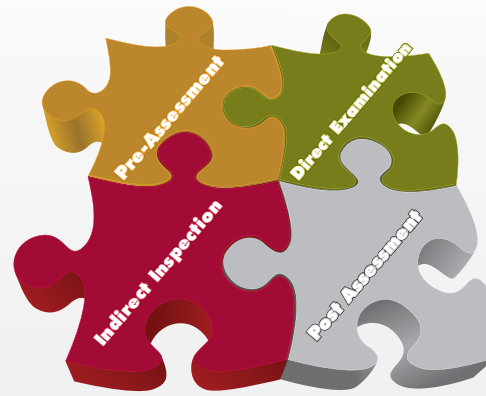
## Application of ECDA

ECDA can be applied to buried onshore ferrous pipeline systems such as:

- Transmission piping
- Distribution piping
- Penstocks & pressure conduits
- Fuel piping to power plants and industrial users
- Electrically isolated underground pipe

## Project Implementation and Procedure Development

- Development and Enhancement of written ECDA procedures in accordance with 49 CFR 192.925
- Turnkey project management – all engineering, data management, inspection & reporting



### Step 1: Pre-Assessment

- Engineering analysis of pipeline systems for documentation of Pre-Assessment
- TurboECDA™ software assists with data management and ECDA process documentation

### Step 2: Indirect Inspections

- Knowledge and expertise in the selection, field testing and data integration of Close interval Pipe-to-Soil Potential Surveys (CIS), Direct Current Voltage Gradient (DCVG), Pipeline Current Mapper (PCM), soil resistivity, Alternating Current Voltage Gradient (ACVG), and C-Scan

### Step 3: Direct Inspections

- Data Interpretation, including SI's SoilPro soil corrosion model, to optimize excavation site selection
- Bellhole inspections, non-destructive testing (UT, PT, MT), Remote Visual, Hardness and Alloy Identification
- Long range guided wave ultrasonic testing (G-Scan) for above and below ground piping systems
- Detailed thickness mapping at areas of metal loss using semi-automated UT thickness (B-Scan)
- Specialized techniques such as Time-of-Flight Diffraction, Annular and Linear Phased Array UT, Eddy Current, Boresonics, and Micro-TOFD for characterizing cracks

### Step 4: Post Assessment

- Engineering analysis of the ECDA process to determine re-assessment intervals, effectiveness of the ECDA and continuous improvement evaluation
- Remaining strength calculations, development of repair plans and monitoring programs to restore the integrity of pipeline system
- Prevention and mitigation measures to minimize further degradation
- Finalize regulatory documentation

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