



## Spectrum XLI

### A COMPLETE SYSTEM FOR ABOVE-GROUND PIPELINE INSPECTIONS

#### What is Spectrum XLI?

Spectrum XLI is a complete platform for proactive above ground inspection of buried pipelines. Unlike conventional above ground inspection tools - which often collect only a single data source in each pass - the XLI platform collects multiple sources of data in a single pass. Simultaneously, the system can collect: GPS/GIS, depth of cover, depth of water, gas leak detection, cathodic protection survey (CP CIPS/CIS), direct current voltage gradient (DCVG), alternating current voltage gradient (ACVG), alternating current-current attenuation (ACCA), and soil corrosivity measurements.

It can be used for the following inspections: External Corrosion Direct Assessment (ECDA), Internal Corrosion Direct Assessment (ICDA), Stress Corrosion Cracking Direct Assessment (SCCDA), Cathodic Protection (CP) and Close Internal Surveys (CIS).



## How does it work?

Inspections are completed by field teams that walk the pipeline ROW recording the desired pipeline data with the Spectrum XLI equipment. All measurements are logged into secured encrypted raw logs, which ensures that data cannot be compromised. The complete raw data log can be audited upon the pipeline owner's request.

Post-analysis and reporting of inspection results is completed by NACE certified CP and Corrosion Specialists, ensuring that reliable pipeline integrity recommendations are made. All project deliverables are completed and delivered quickly after the inspection, unlike traditional, single-technology platforms, which provide deliverables at different times in different vendor formats.

## When to use the technology?

Spectrum XLI should be used to identify potential areas of corrosion on buried pipelines before they occur. Because the system can collect multiple sources of data in a single pass, it should be used to reduce risk and create cost efficiencies within an above-ground inspection program that requires multiple surveys.

In single inspection above-ground surveys, Spectrum XLI offers more reliability than traditional single-inspection systems, since all measurements are logged in a secure encrypted raw log and can be audited by a third party.

## Why use Spectrum XLI?

Spectrum XLI is the only indirect inspection technology that can be customized to meet client's inspection needs by completing a combination surveys in a single pass. This reduces the risk and cost of collecting above-ground pipeline data by reducing the number of passes needed to collect that data.

The system also collects quality, auditable data that can be verified by the pipeline operator. This data eliminates guess work, and allows the pipeline owner to make defensible pipeline integrity and repair decisions.



# Spectrum XLI EQUIPMENT TOLERANCES

## Pipeline DOC Accuracy

Maximum Depth of Cover	9+ meters (30+ feet) typical conditions (>100' has been recorded)
Minimum Signal Strength	100 mA
Range	1 to 5 + Km (depends on soil conditions and quality of coating)
Processor Speed	48 MHz
DOC Accuracy (conductive)	+/- 2.5% to 3 meters (10 feet)* +/- 5.0% to 9 meters (30 feet)* Note: Less than +/- 10cm error when DOC < 3 meters
DOC accuracy (inductive)	Tolerances doubles when using inductive line illumination, i.e., +/- 5.0% to 3 meters (10 feet)* +/- 10.0% to 9 meters (30 feet)*

Current Accuracy +/-1.5% of calculated value\*

\* DOC and current accuracy are dependent on numerous factors and are achievable approximately 80% of the time

## GPS Specifications

Pipeline horizontal and vertical positions (GPS) RTK Static GPS[1],[2]	Horizontal: +/- 10mm (~ 3.9") 98% of the time Vertical: +/- 20mm (~ 7.9") 98% of the time
Pipeline horizontal and vertical positions (DGPS) RTK OmniStar HP[1],[3]	Horizontal: +/- 20cm (~ 7.9") 98% of the time Vertical: +/- 40cm (~ 15.7") 98% of the time
Pipeline horizontal and vertical positions (DGPS) NTRIP[1],[4]	Horizontal: +/- 20cm (~ 7.9") 98% of the time Vertical: +/- 40cm (~ 15.7") 98% of the time
Pipeline horizontal and vertical positions SBAS (WAAS)[1]	Horizontal +/- 60cm (~ 2') 95% of the time Vertical +/- 120cm (~ 4') 95% of the time
Horizontal accuracy (autonomous, no differential correction)[1]	Horizontal +/- 2.5 m (~ 8.2') 95% of the time Vertical +/- 5.0 m (~ 16.4') 95% of the time

\*DOC and current accuracy is dependent on numerous factors and are achievable approximately 80% of the time.

[1] Depends on multi-path environment, number of satellites in view, satellite geometry, and ionospheric activity.

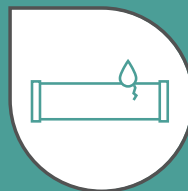
[2] Depends on baseline length.

[3] Requires a subscription to OmniSTAR.

[4] Requires a NTRIP subscription.



**ABOVE-GROUND  
INSPECTION  
SERVICES**



**LEAK DETECTION  
SERVICES**



**CORROSION  
CONTROL  
SERVICES**



**ADVANCED PIG  
TRACKING  
SERVICES**

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