

Magnetic Flux Leakage and Data Analysis Training



MFL use and signal Application

Day 1*

INTRODUCTIONS

MFL 101

- Simple Theory
- Signal Response
- Capabilities and Limitations

TOOL APPLICATION

- Physical Characteristics of Tools

FIELD OPERATIONS PROCESS

- Calibration
- Survey Confirmation
- Run Failure Review

Day 2*

DATA ANALYSIS DEPT. PROCESS

DATA ANALYSIS

- Feature Recognition
- Clustering
- Determining Signal Response Origin
- Nomenclature

LINAVIEW

- Data Analysis Tools in LinaView

PRACTICAL EXERCISE

LINAVIEW GIS PRESENTATION

About the Class

This is a two day course that covers basic Magnetic Flux Leakage (MFL) technology and MFL signal analysis. Also covered are In Line Inspection (ILI) processes for field operations and data analysis.

The first day of the class concentrates on MFL technology and how this technology is applied to pipeline inspection using an In-Line Inspection tool. The basics of magnetics are covered; magnetic properties of materials, magnetic characteristics such as permeability, susceptibility, and reluctivity, hysteresis curve, magnetic flux leakage, advantages and disadvantages of magnetic flux leakage, and signal response for various pipeline anomalies. A better understanding of ILI surveys is acquired through definitions, graphics, illustrations, and an up close look at ILI tools. Also included on the first day is a review of field procedures followed prior to launching a tool and after trapping a tool.

The second day of class concentrates on data analysis. This includes an overview of data analysis processes within the Data Analysis Department and an in-depth review of MFL signal response. The review includes signal response of fixtures, repairs, corrosion anomalies, non-corrosion anomalies, and signal response as it relates to anomaly geometry. The application of anomaly interaction to MFL data is also covered.

The course is held at Tuboscope Pipeline Services' facilities which allow the participants to have an up close look at a variety of ILI tools and complete practical exercises for signal analysis using the 30" Flow Loop.

This course can be modified to include an overview of additional ILI technology such as Ultrasonic and Deformation.

Who should attend

This class is designed for pipeline operators and contractors that are new to the In Line Inspection (ILI) industry or desire more knowledge about ILI signal analysis.

Attendees that would gain from this class include field operation personnel, project managers, and Integrity Assessment personnel such as management and project engineers.

Benefits of the class include a basic understanding of ILI processes and "hands on" experience.

**Both days include Continental breakfast and lunch.*



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