

Staking University

Two-Day Locator Class



Class Outline and Itinerary

Day 1:

I. How Locating Instruments Work:

- A. There are two ways to energize the target line:
 - 1) Metal-to-metal
 - 2) Nonmetal-to-metal
- B. There are two ways to receive the transmitter's energy:
 - 1) Peak
 - 2) Null
- C. The transmitter's energy wants to leave the pipe or cable equally in all directions.
- D. The transmitter's energy always follows path of least resistance
- E. Different transmitter frequencies can and sometimes will do different things.
- F. The line tracing results cannot be changed with the receiver.

II. How to Use Locating Instruments: Current

- A. Whatever leaves the transmitter must come back to the transmitter.
- B. There are 4 major factors that influence current flow:
 - 1. Far end grounds
 - 2. Insulation
 - 3. Earth
 - 4. Frequency
- C. Assessing the current level anywhere along the pipe or cable with the receiver:
 - 1. Good
 - 2. OK
 - 3. Poor

III. How to Use Locating Instruments: Receiver and Transmitter

A. Receiver: There are five ways to determine the shape of the transmitter's energy after it leaves the pipe or cable.

1. Peak versus null
2. Digital depth validation
3. Null method
4. Triangulation
5. Peak method

B. Transmitter: There are four ways to change tracing results:

1. Change the grounding system
2. Change from conductive to inductive (or vice-versa)
3. Move the transmitter
4. Change the frequency

Outside hands-on demonstration and practice

Day 2:

IV. Current—Shape—Endpoint

- A. Voltage is placed on a metallic utility by a transmitter. Voltage produces alternating current as the metal utility and Earth form a circuit. Current travels in two directions on both the utility and through the earth.
- B. A product of this current flow is a field detectable at the Earth's surface.
- C. A coiled receiving antenna detects the field.
- D. Alternating current can be applied using a variety of frequencies. Without current, no field exists.
- E. A coiled-antenna can be positioned in one of two optimized-response positions: peak and null.
- F. The simultaneous use of multiple coiled-antennas within the field provides information beyond lateral location, such as utility depth estimation.
- G. A field generated by transmitters other than our own—such as a power plant—is referred to as a passive signal.
- H. The type of utility being located may only be determined by following the field to a logical or visual endpoint.

Outside hands-on demonstration and practice



2-Day Locator Training Class Itinerary

Day 1 8:30 am – 4:30 pm

Inside: 8:30-9:30 How Locating Instruments Work

Outside: 9:30-10:30 How to Use Locating Instruments: Current

Outside: 10:30-11:30 How to Use Locating Instruments: Receiver and
Transmitter

LUNCH 11:30-12:00

Outside: 12:00-2:00 Hands-on practice

Outside: 2:00-4:30 Locating Gas, Locating Electric

Day 2 8:30 am – 4:30 pm

Outside: 8:30-9:30 Visual Observation

Outside: 9:30-11:30 How to Use Locating Instruments: Field Shape

LUNCH 11:30-12:00

Outside: 12:00-2:00 Current. Shape. Endpoint

Inside: 2:00-3:30 Chalk Talk: Diagramming Outdoor Locating

Exercised

Inside: 3:30-4:30 Practical/Written Certification Test

Staking University's Scorecard

- I. **Demonstrate methods that will indicate amount of current flow on the utility.**
 - A. Good – steady peak response
 - B. Okay – peak response with slight fluctuation
 - C. Poor – wildly fluctuating peak response
- II. **Demonstrate at least three of the five methods to determine signal shape:**
 - A. Peak vs. null
 - B. Digital depth validation
 - C. Peak method
 - D. Null method
 - E. Triangulation
- III. **Assess the current flow and signal shape:**
 - A. Change frequency
 - B. Change ground connections to earth
 - C. Change application method (inductive or conductive)
 - D. Move the transmitter
- IV. **Demonstrate methods to determine utility being located.**

Follow the trace to a visual or logical endpoint and/ or direct a 2-man sweep.