Innovative Detection Solutions

Introduction

Ultra-Trac APL

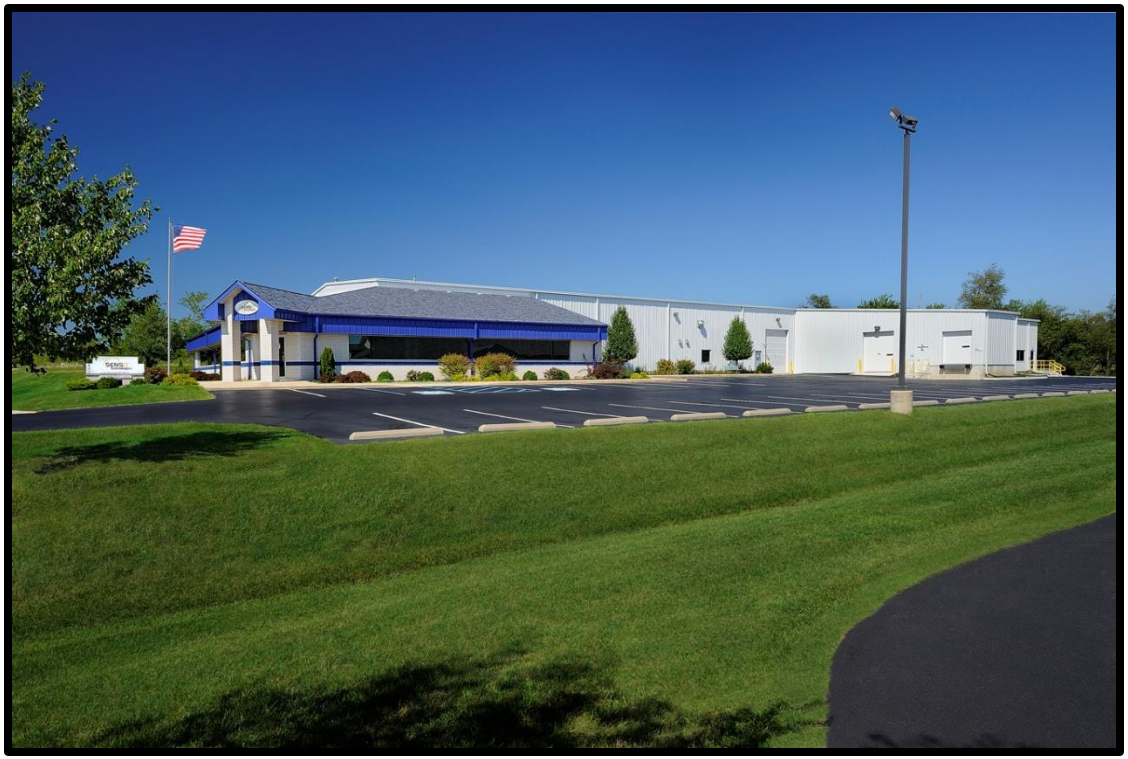
Acoustic Pipe Locator

Sensit Technologies
851 TRANSPORT DRIVE • VALPARAISO, INDIANA 46383
Phone: (219) 465-2700 • Fax: (219) 465-2701
www.gasleaksensors.com

February 4, 2013

FIND IT with SENSIT Technologies

SENSIT Technologies



Family business incorporated in 1980

Brands include: Sensit, Trak-It, Gas-Trac, Smart Cal and Ultra-Trac.

65 Employees

We design, manufacture, service and sell from Valparaiso IN USA

Global reach to 60 countries

Primary customers include gas utility, gas transmission

ISO 9001:2008 certified company

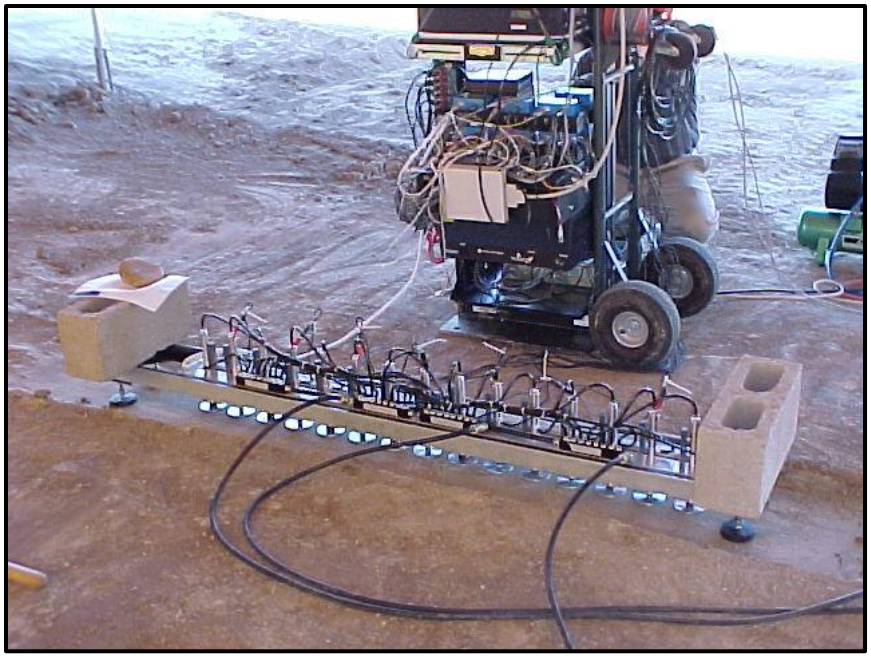
www.gasleaksensors.com

FIND IT with SENSIT Technologies

History

Gas Technology Institute Project

- **Began in late 90's**
- **Funding through GRI/GTI, OTD, PHMSA**
- **Research supported by many utilities**
- **Technology licensed to Sensit Technologies by GTI**
- **Commercialization efforts began in mid 2011**



Functional Goals

- Locate unmarked piping systems regardless of material type.
  - Gas distribution lines
  - Water lines
  - Sewer laterals
  - Field tile systems
- No access to the utility system needed
- One button operation
- Easy to interpret data
- Detect multiple pipes in single scan
- Locate within regulatory requirements
- Operate in soil, grass, concrete and asphalt ground covering

Ultra-Trac APL – Acoustic Pipe Locator

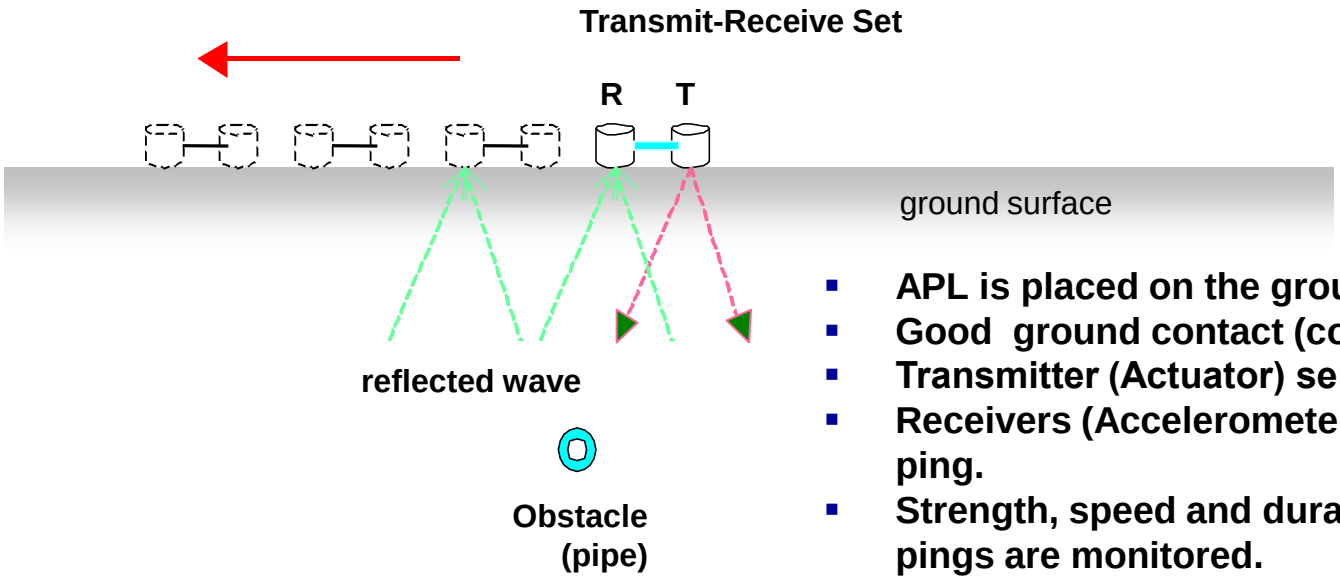
Commercial Goal

Convert this

To this

FIND IT with SENSIT Technologies

How does it work?



- APL is placed on the ground.
- Good ground contact (coupling) is required
- Transmitter (Actuator) sends a set of “pings”
- Receivers (Accelerometers) listens to reflected ping.
- Strength, speed and duration of the reflected pings are monitored.
- Each activation of the transmitter and receiver device is a “slice”
- A group of “slices” is a “scan”
- A single scan is not a full search

FIND IT with SENSIT Technologies

Ultra-Trac APL – Acoustic Pipe Locator

Design criteria

- **Environmental**
  - Weather resistant
  - -4 to 120F (-20 to 50C)
  - 5-95% RH
- **Mechanical**
  - Weather resistant
  - Weight 20lbs (9.1kg)
- **Detection**
  - 1/2" ID pipe ≤30"
  - 2" ID pipe ≤ 48"
  - 4" ID pipe ≤96"
  - Does not measure depth
  - Any pipe material

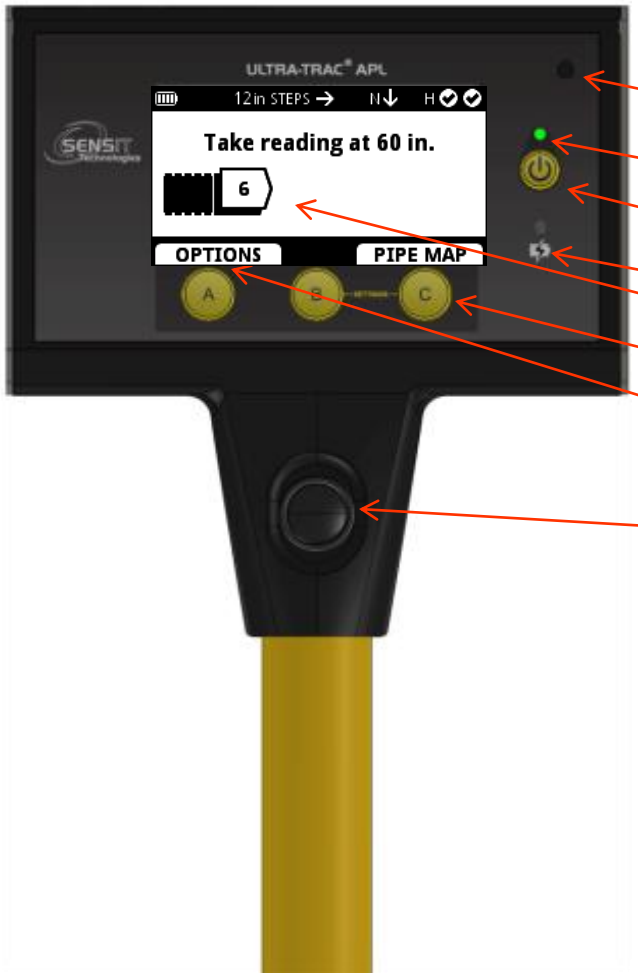
FIND IT with SENSIT Technologies

Ultra-Trac APL – Acoustic Pipe Locator

Mechanical Features

- Lithium Ion rechargeable battery (25hrs use)
- Heavy gauge steel handle and body
- Water resistant
- Easy to operate and interpret data
- Spring loaded Actuator for consistent coupling
- Dual accelerometers for surface wave cancelation
- Folding design for easy storage

Ultra-Trac APL – Acoustic Pipe Locator



Features: User Interface

- Sounder
- Power indicator
- Power button
- Charge indicator
- Bright LCD display
- Simple three button system
- ON-screen instructional prompts
- Large scan button
- Battery Icon (upper left corner)
- SD card slot (covered on top of housing)

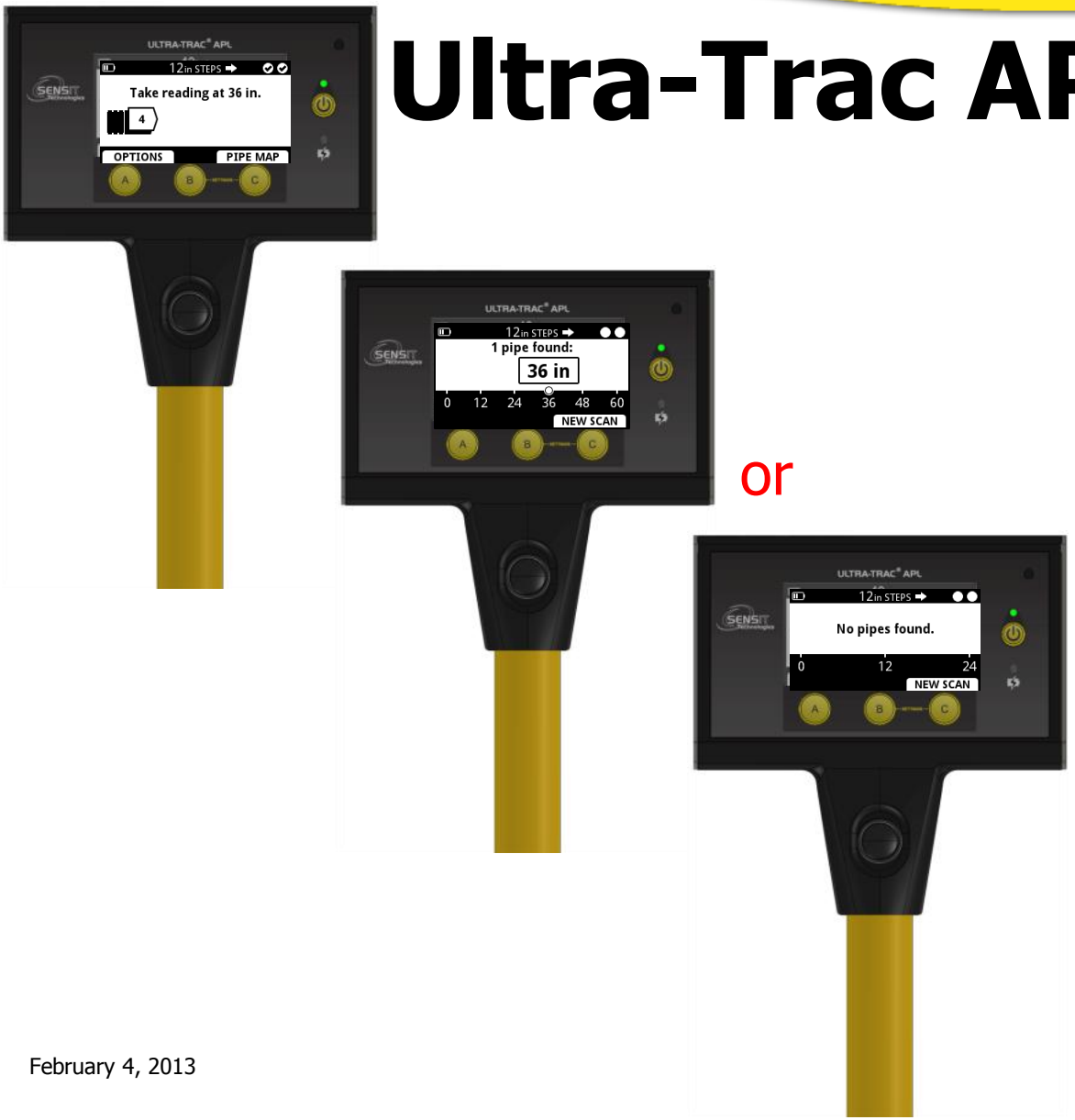
Ultra-Trac APL – How to Use

- Start up by pressing power button until display illuminates (less than 1 minute)
- Display logo followed by date, time and software version.
- Select a Scan depth (normal or deep i.e. <10')
  - "H" denotes high (normal) sensitivity
- Select a Scan direction (L->R or R->L)
- Select 6 or 12" slices
- Place unit on ground and wait for check marks on display indicating receivers are ready

Ultra-Trac APL – How to Use

- Place foot on footpad
- Push handle forward (creates the coupling t the ground)
- Push and release the scan button. Failure to compress the actuator will cause the unit to beep 3 times and display "retry".
- Unit will tell you go to the next slice in seconds. Move the selected distance
- Must do at least 5 slices for a scan
- Press "Pipe Map" to show results.

Ultra-Trac APL – How to Use



- Review display for location of detected substructure and mark
- Instrument will detect up to 3 objects per scan
- The results are matched to measuring device to the nearest 6 or 12 inches depending on scan width selected
- Slices closer together allow better accuracy on small pipe and shallow depths
- Repeat procedure 10-20’ away to create a point to point identification of substructure

Ultra-Trac APL – How to Use

- Repeat procedure 10-20’ away to create a point to point identification of substructure
- Select NEW SCAN
- Select SAME or NEW settings
- SAME keeps all previous settings
- NEW allows reset of set up
- Mark all locations as previous scan

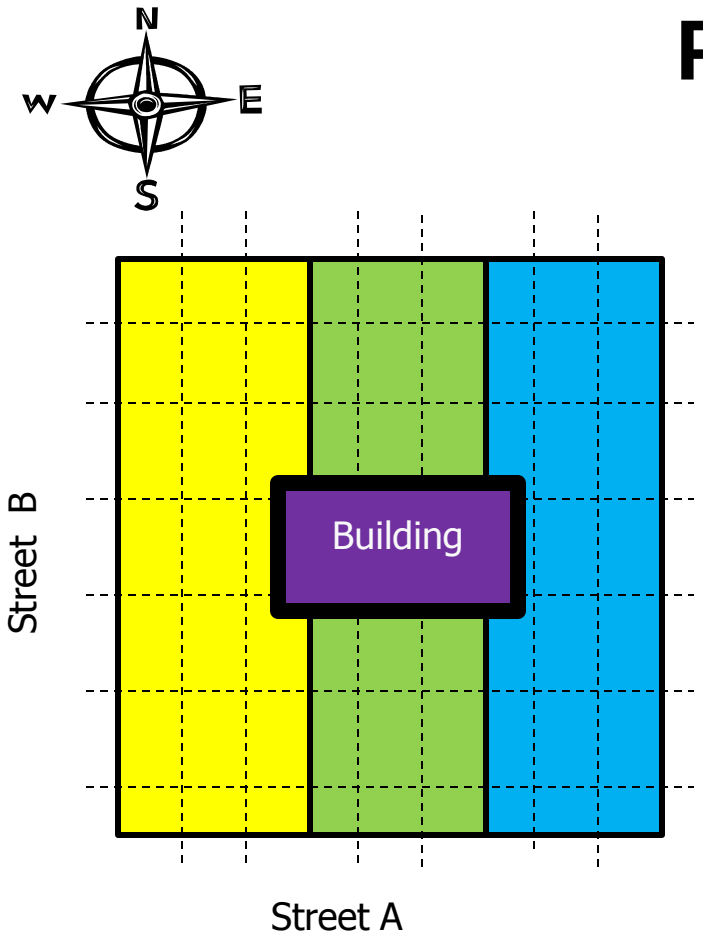
Ultra-Trac APL – Options

- The OPTIONS selection allows you to change scan settings.
  - Continue if no changes are desired though the button was pressed
- Change directions of a scan
- Restart the scan
- Change sensitivity
- Change number of pipes detected to 5.
- Reset all settings
- Use A or B button to scroll to highlight desired setting
- Pressing SELECT will allow the change.
- After making the change the unit will be ready to take the first reading.

FIND IT with SENSIT Technologies

Ultra-Trac APL – Acoustic Pipe Locator

Performing a locate: Step 1



Planning the locate

- Grid property into test segments up to 25’ in width.
  - Urban areas use segments of up to 12’.
  - Large properties may need to be divided several times as indicated by the colored areas.
- If in an area with no structures present use the compass for illustration purposes plan to scan West to East first. Then North to South. Be sure to mark your starting lines.
- If in an area near structures such as buildings start parallel with the building followed by perpendicular

FIND IT with SENSIT Technologies

Ultra-Trac APL – Acoustic Pipe Locator

APL Quick Start: Step 2

- Unfold the handle and lock into position
- Press the power button until the instruments beeps and display illuminates
- Wait for warm up sequence to complete for approximately 15 seconds
- Using the on-screen prompts select the desired settings.
- Position measuring device
- Take slices
- Review scan
- Mark suspected areas

Ultra-Trac APL – Acoustic Pipe Locator

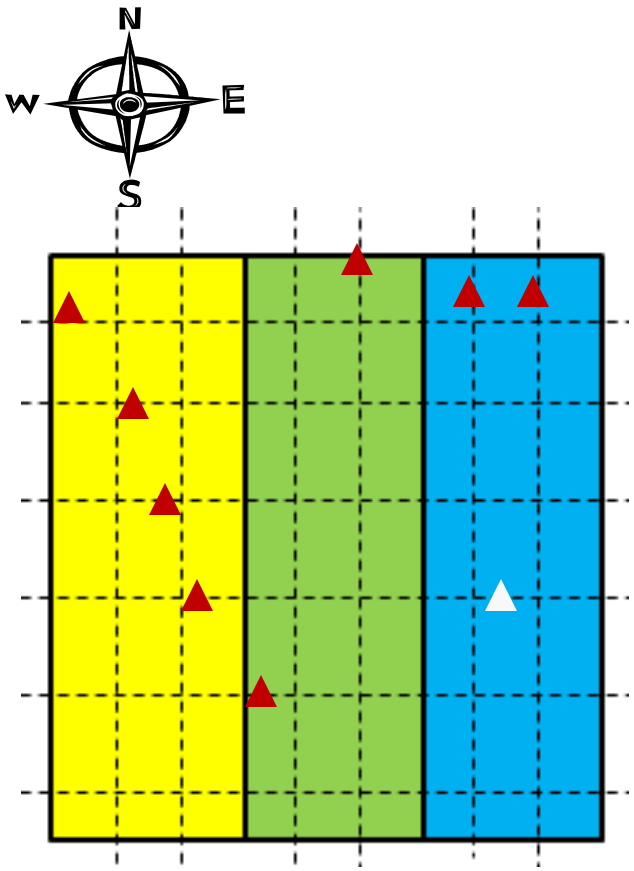
Performing a locate: Step 3

Planning for different surfaces

- Perform scans (series of slices) on one type of surface.
- Do not mix surface types such as asphalt/grass or concrete/gravel in single scan.
- Do not test on large cracks or expansion joints
- Do not test on curbs
- Mixing of materials for a full locate is generally not a problem.
- Softer materials, loose stone and new construction requires narrow scans (6”).

FIND IT with SENSIT Technologies

Ultra-Trac APL – Acoustic Pipe Locator



Performing a locate: Step 4

Using APL

- Lay the measuring device in such a manner to accomplish the grid pattern
- Place the APL on the ground behind the measuring device such that the edge of the housing aligns with the beginning of the measuring device.
- Operate the APL as required
- When prompted move to the next reading coinciding with the distance on the display.
- Perform the needed slices and “MAP PIPE”
- Use marking paint/chalk to mark the locations on the ground show on display using the measuring device as reference.
- Align markings to identify probable piping locations
- Lone marks may be just a void or anomaly

Examples of locates using the "Alpha" APL

2" gas line 42" below surface

1.25" water line
14" below surface

Confirmation by excavation

Examples of locates using the "Alpha" APL

Sewer line from house

crossing pipes in test field

gas water and sewer located

Ultra-Trac APL

Thank you for your business and the opportunity!

We look forward to working with you in the future!

Development recognition:
Gas Technology Institute
Dr. Kiran Kothari
www.gastechnology.org

Sensit Technologies
851 TRANSPORT DRIVE
VALPARAISO, INDIANA
46383
Phone: (219) 465-2700
Fax: (219) 465-2701
www.gasleaksensors.com

FIND IT with SENSIT Technologies