

NiSource Gas Transmission & Storage

# PIPELINE LEAK DETECTION



Transmission Pipeline  
Operator Perspectives

Washington, D.C.

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**NiSource Gas  
Transmission & Storage®**



# PIPELINE LEAK DETECTION

## Overview



### LEAK DETECTION FOR GAS TRANSMISSION

- Compliance Requirement
- Failure Recognition (Leak vs. Rupture)
- Emergency Preparedness & Response
- Understanding the asset performance for risk management decision making

REQUIRES AN “ALL OF THE ABOVE” SOLUTION



## TRADITIONAL AND TECHNOLOGY BASED SOLUTIONS

- Foot Patrol-Visual
- Foot Patrol-Instrument
- Aerial-Visual
- Aerial-Instrument
- Line Break
- SCADA Alarms
- Emergency Responder Training
- Public Awareness
- Etcetera



## TAILORS STRATEGY TO DESIRED OUTCOME & CAPABILITY

- Public Awareness supports early detection of large and small events
- Aerial Patrol enables coverage across wide, remote geographic regions
- Foot Patrol addresses tight pipeline footprints (i.e. canopy, residential)
- Combination of instrument + visual balances error
- Emergency Responder Training supplements traditional opportunity for detection and improves leak response
- SCADA alarms rapidly point to significant upset conditions
- Line break signals augment SCADA alarms

## PIPELINE LEAK DETECTION

### Limitations



- Heavily Reactive
- Difficult to cover 100% of pipeline
- Labor Intensive
- Subject to Human Error
- Weather Dependent
- Regionally Influenced



### PROMISING RESULTS WITH OPTIMAL TECHNOLOGIES

- Prior to 2007 – Two company owned fixed wing aircraft and one contracted helicopter were performing patrols, coordinated by Operations Team Leaders
- 2007 – Bell 206B3 Jet Ranger Helicopter purchased to replace portion of contracted service
- Mid 2008 – The helicopter patrol area expanded
- April 2009 – Aerial Patrol Program established, assumed operational and scheduling responsibilities. FLIR U-8000e thermal imaging camera system installed on helicopter
- August 2009 – Class III & IV instrument patrol areas were added to helicopter patrol
- January 2010 – The Apogee Scientific LDS (Leak Detection System) installed operational on the helicopter platform
- June 2010 - The iMove Immersive Camera System became operational on helicopter platform

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## PIPELINE LEAK DETECTION

NGT&S Case Study



**Helicopters** are a vital technology platform for facility & leakage patrols



Natural gas is **odorless,**  
**invisible &**  
**combustible**









**Infrared Imaging Camera**



**Direct Sample Analysis**



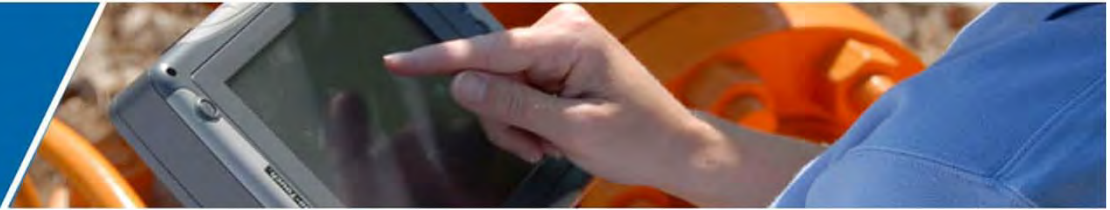
## **Multiple outfitted aircrafts allow for:**

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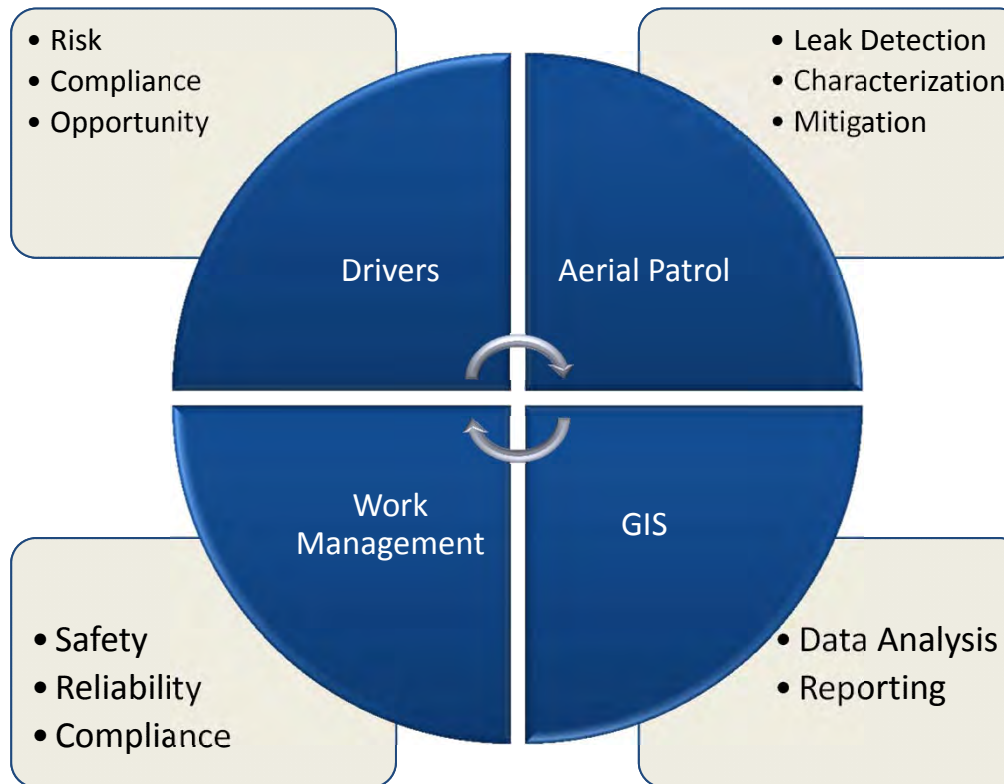
- Real-time indication of leakage
- Geo-referenced data for the first responders
- Storage in a central portal

# PIPELINE LEAK DETECTION

“All of the Above” Evolution



## FITS IN THE INTEGRITY MANAGEMENT PROCESS



## PIPELINE LEAK DETECTION

### The IMP Strategy



REACTIVE AT THE INCIDENT LEVEL, BUT LEADING INDICATOR AS WE  
LEARN ABOUT ASSET PERFORMANCE



**Thank You**





Q & A

A & Q