

The background is a solid blue color. A white curved line starts from the left edge and curves downwards towards the center. A blue triangular shape is positioned in the lower right quadrant, pointing towards the center.

**LaSen, Inc.**

**Airborne Lidar Pipeline Inspection  
System**

# Basic Laser Operation

- **Laser is tuned to absorption wave-length of methane molecules**
- **Laser passes through atmosphere with a portion being absorbed by methane**
- **Return signal measured to determine amount/existence of methane in atmosphere**

# LaSen ALPIS

- **Airborne Lidar Pipeline Inspection Service – ALPIS**
- **Tunable Laser mounted on helicopter**
- **Laser beam path 40' wide**
- **Successfully flown over 25,000 miles of gathering/transmission lines with many repeat customers**



# LaSen ALPIS

- **Eye safe laser**
- **Fires at 400 Hz**
- **Flies 150-300ft AGL**
- **Flies up to 60mph**
- **Various aerial platforms**
- **Operators are OQ'd**
- **Sensitivity – 5ppm-m  
(10 SCFH)**



# Reporting Results

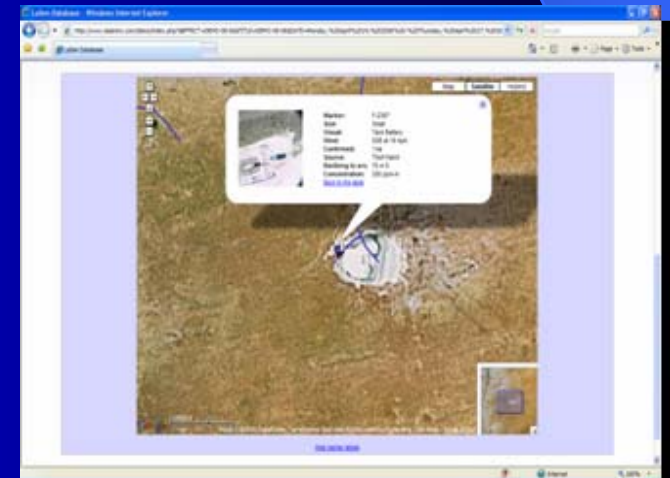
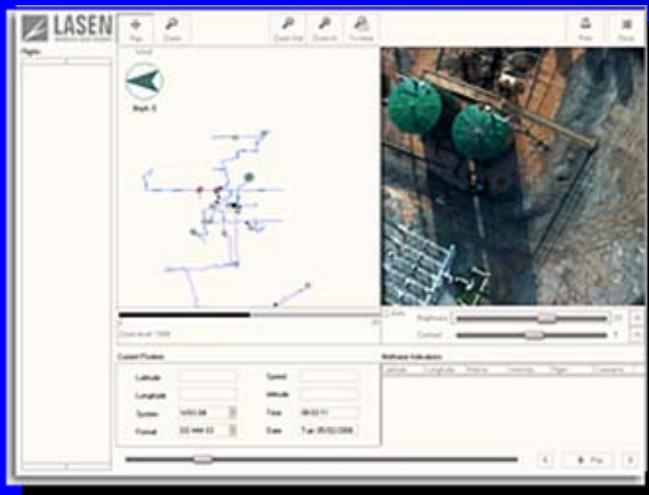
- LaSen – Secure online database includes GPS location of leaks, maps, digital and satellite imagery of ROW available online 1-12 hrs after survey. Hard copy of report and software package delivered 1 week after survey.

Report Summary:

Inspection	0200-05-06
Date	4/24/2006 -- 4/27/2006
Miles Surveyed	85.88
Estimated Yield	14

Disclaimer: All information contained herein is for informational purposes only. Positive coordinates and leak locations used in the sample database are fictitious and do not correspond to any real systems.

ID#	Lat/lon	Lat/lon	Size	Depth	Flow	Controlled	Status	Depth/Flow	Control	Leak Type	Notes
A.4221	32 227895	-107 423448	Small	Water Pressure	10000 @ 20 mph.	Yes	Water	7 m SW	40		
A.30000	32 248193	-107 389362	Large	Water Pressure	10000 @ 20 mph.	Yes	Water	exact	10000		
B.04720	32 119408	-107 403804	Medium		10000 @ 20 mph.	Yes	Underground	10 m W	120		
B.10010	32 081470	-107 409024	Large		10000 @ 20 mph.	Yes	Underground	exact	300		
C.08700	32 204474	-107 399420	Small		0 @ 0 mph.	Yes	Underground	exact	40		
D.01040	32 190007	-107 373808	Medium		0 @ 0 mph.	Yes	Underground	10 m S	160		
D.10110	32 124004	-107 419020	Medium		0 @ 0 mph.	Yes	Underground	exact	170		
E.00000	32 194502	-107 380707	Small		0 @ 0 mph.	Yes	Underground	exact	60		
E.00000	32 200004	-107 399000	Large	Valve Setting	0 @ 0 mph.	Yes	Leaking Valve Stem	exact	2000		
F.0000	32 119820	-107 399420	Small	Two Battery	0 @ 0 mph.	Yes	Thief Hatch	10 m S	200		
F.07000	32 194020	-107 399000	Small		0 @ 0 mph.	Yes	Underground	exact	100		
F.04000	32 181707	-107 391000	Medium		0 @ 0 mph.	Yes	Underground	exact	140		
F.10000	32 180024	-107 381000	Large		0 @ 0 mph.	Yes	Underground	exact	300		



# Benefits

- **Fast**
- **Accurate**
- **Cost Effective**