



# Dynegy Midstream Services, L.P. Experience in Methane Emissions Mitigation



Processor's Transfer Workshop  
April 22, 2005  
Oklahoma City , Oklahoma

# Outline

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- ★ Background
- ★ Gas Processing Plant's study
- ★ Pipeline Leak Study
- ★ Monument Gas Plant
- ★ Current Plans
- ★ Future Plans



# Background

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- ★ **Dynegy Midstream Services, L.P.**
- ★ **Corporate vs. Field staff**
- ★ **Number of DMS facilities**



# Gas Plant's Study

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- ★ Two DMS facilities in study
- ★ Cost was \$ 30 K
- ★ Amount methane saved = 100 MMSCF/yr  
(\$700K @ \$7/MSCF)
- ★ Savings Realized within 18 Months – Largest  
Cost-Effective Leaks Repaired



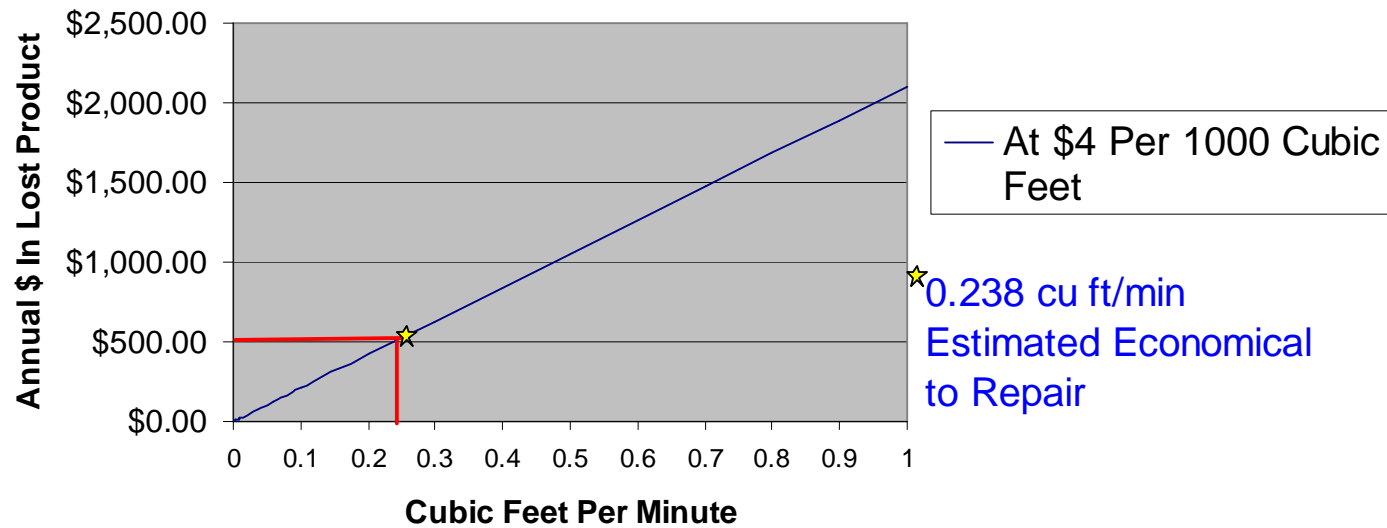
# Chico Gas Plant



# Economics of LAUF



## Lost and Unaccounted For Product Potential \$ Savings Equating Pure Methane Leak Rate to Dollars



# Optical Remote Leak Detection

## Infrared Differential Absorption

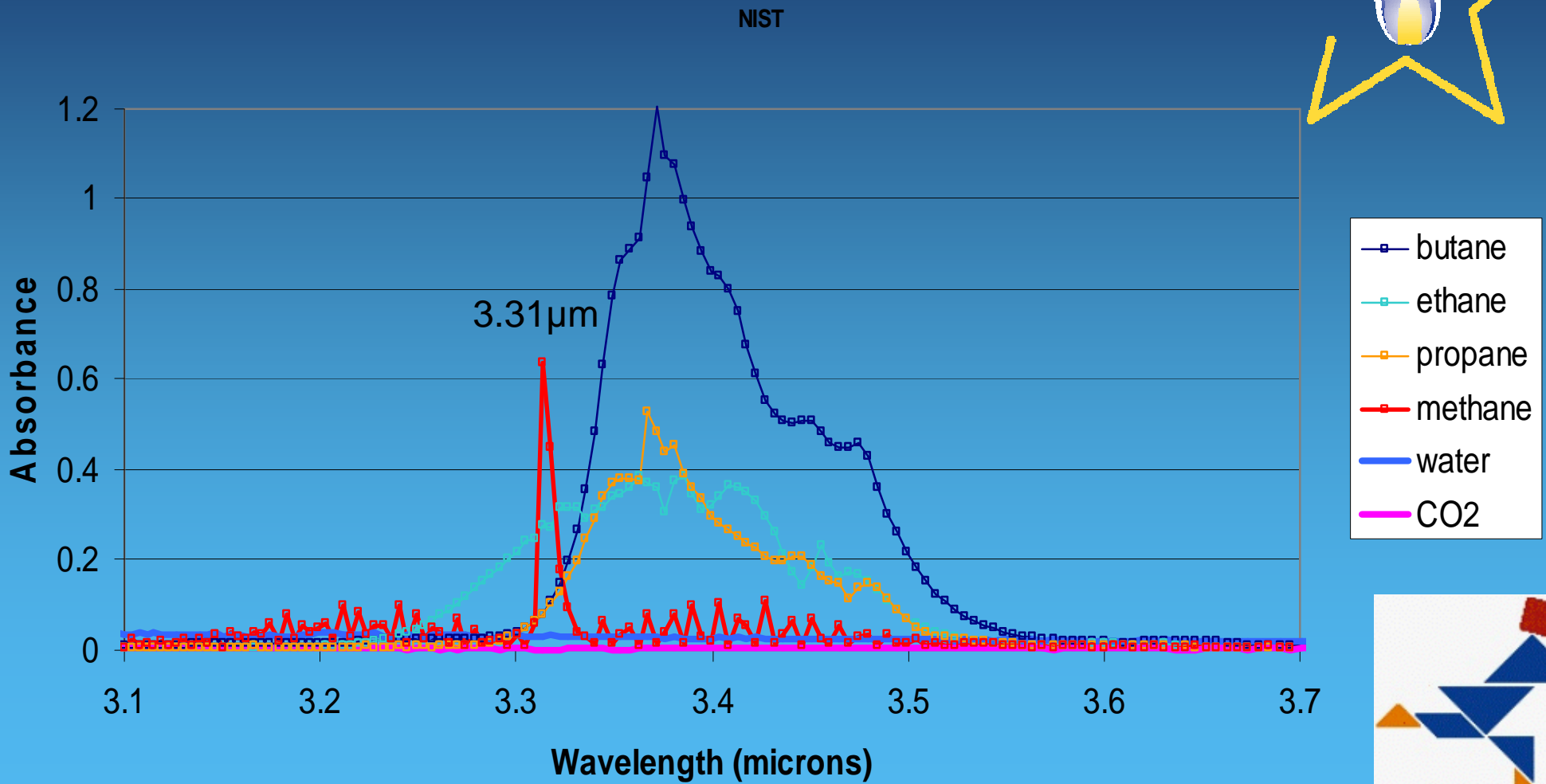
- ★ **Mid wave Infrared - 3 to 5  $\mu\text{m}$**
- ★ **Long wave Infrared - 8 to 11  $\mu\text{m}$**
- ★ **Visible - 0.4 to 1.0 Microns**
- ★ **Near IR - 0.9 to 1.6 Microns**

Remote sensing is the science and art of obtaining information about an object, area, or phenomenon through the analysis of data acquired by a device that is not in contact with the object, area, or phenomenon under investigation.

From Remote Sensing and Image Interpretation, Lilles and Kiefer, 1987



# Similar to Gas Chromatography





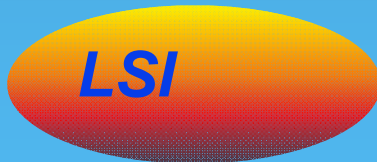
# Active vs. Passive Imaging



- ★ Active techniques employ an artificial radiation source (e.g. a microwave transmitter, a laser, a thermal heater, etc.) for illumination of the target area
- ★ Passive techniques utilize the naturally occurring ambient radiation



# Passive Remote Optical Infrared Leak Detection, Quantification, and Speciation



PAT



# LSI Camera Visualizes Gasoline Vapor



- ★ Field Portable
- ★ Rugged
- ★ Reliable
- ★ Repeatable
- ★ Sensitivity
- ★ Ease of Use - Doesn't Require Frequent Adjustment
- ★ Capable of Identifying "Inaccessible" Leaks



# LSI Leak Surveys Video Imagery



**Flange Leak**



**Buried Pipeline Leak**

# Pipeline Leak Study

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- ★ Driving – visible signs (e.g. vegetation stress)
- ★ Driving with sniffer trucks twice a year
- ★ 25 – 40 miles per day



# Pipeline Leak Study

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- ★ Mass Balance Discrepancy Identified Need for Survey
- ★ Infrared Remote Sensing from helicopter
- ★ 200-400 miles per day
- ★ Amount of methane estimated at ~146 MM SCF /yr  
or (0.5 MMSCFD)



# Monument Gas Plant



Monument Gas Processing Facility, Monument, NM



# Monument Gas Plant

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- ★ Original plant built in 1936
- ★ Modifications in 1963 & 1976
- ★ 31 engines for combined 25, 000 hp





# Monument Gas Plant

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- ★ 26 engines to be replaced with integral electric compression
- ★ 18, 500 HP Replaced
- ★ Amount of fuel saved is 1.5 BCF/yr and Corresponding CO2 Reductions



# Monument Gas Plant



# Monument Gas Plant



# Monument Gas Plant

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- ★ Cost of this project \$ 8.3 MM
- ★ Amount of fugitive methane losses saved is  
~41 MMSCF/yr
- ★ Ancillary Benefit - Criteria (e.g. NO<sub>x</sub>) and  
HAPs pollutant reduction



# Monument Gas Plant



- ★ Infrared survey conducted to identify sources of leakage
- ★ ~200 leaking sources identified
- ★ Largest opportunities - blow down vents and valve packing
- ★ Amount of methane saved is ~146 MMSCF/yr \$1022K  
@ \$7/MSCF





# Current Plans

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- ★ Phase II- EPA Study- Eunice Gas Plant and upstream compressors
- ★ Chico Gas Plant Retest
- ★ Include the LSI Infra red camera ( tool kit )
- ★ Plan to implement DI&M surveys every two years at gas plants/compressor stations



## Future Plans

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- ★ Coordinated Efforts for Sharing BMPs with Field Operations and Maintenance Personnel in 2005.
- ★ Increase management commitment through awareness of cost effective opportunities
- ★ Dynegy is evaluating implementing D, I & M system wide
- ★ Involve the Company media relation's more effectively



# Contact Information

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