Targa Midstream Services Limited Partnership’s Experience with EPA’s Natural Gas STAR Program

Producers and Processors Technology Transfer Workshop (New Mexico)
February 21, 2006
Farmington, NM

Outline

★ Background
★ Gas Processing Plant’s Phase I study
★ Optical Imaging
★ Phase II Study
★ Pipeline Leak Study
★ Future Plans
EPA STAR Program is a voluntary, cooperative partnership between EPA and oil & gas industry.

Program is designed to help & encourage companies to reduce methane emissions.

Gas processing plant accounts for 12 % which is 36 Bcf.

Fugitives: 24 Bcf
Combustion stack exhaust: 7 Bcf
Other sources: 5 Bcf

Methane 21 times more potent than CO2.
Gas Plant’s Phase I Study

- 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 µm
★ Long wave Infrared - 8 to 11 µm
★ 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

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

Infrared LSI Camera
High Volume Sampler

Phase II Study

- Eunice Gas Plant – Eunice, NM
- Eunice North & South Comp. Stns.
- Chico Gas Plant – Chico, TX
- East Chico & Sitz Comp. Stns.
Eunice Gas Plant

- Constructed in 1948
- Sour Gas Processing Plant
- Part of the Facility under LDAR Program
- Number of components monitored
- Number of leaks found
Eunice Compressor Stations

- Eunice North Comp. Stn.
- Number of components monitored vs. leaks found
- Eunice South Comp. Stn
- Number of components monitored vs. leaks found

Chico Gas Plant

- Constructed in 1966
- Sweet Gas Processing Plant
- Part of the Facility under LDAR Program
- Number of components monitored
- Number of leaks found
Chico area Compressor Stations

- East Chico Compressor Station
- Number of components monitored vs. leaks found
- Sitz Compressor Station
- Number of components monitored vs. leaks found

East Chico Compressor Station
Sitz Compressor Station

D I & M program- Identification of leaks

- Conventional methods such as sniffing, soaping and ultrasonic etc.

- Optical Infrared Remote Leak Detection method
Conventional vs Remote Sensing

- **Speed:** 2,400 comp./day vs 2,300 comp./hr
- **Mobility:**
  - most areas: difficult in congest.
  - elevated: difficult vs easy
- **Cost:**
  - $1200/ day vs $4000/ day
- **Safety:**
  - less vs more
  - proximity vs distance

Pipeline Leak Study

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

★ 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

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

Future Plans

- Planning a D I & M study at our Sand hills gas plant in West Texas
- Conduct more pipeline Leak Studies in SE New Mexico on a periodic basis
- Conduct D I & M studies in LA
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