Dynegy Midstream Services, L.P.
Experience with the Natural Gas STAR Program

11th Annual Implementation Workshop
October 25 - 27, 2004
Houston, Texas
Outline

★ Background
★ Gas Processing Plant’s study
★ Pipeline Leak Study
★ Monument Gas Plant
★ Future Plans.
Background

- Dynegy Midstream Services, L.P.
- Corporate vs. Field staff
- Number of DMS facilities
Gas Plant’s Study

- Two DMS facilities in study
- Cost was $30 K
- Amount methane saved = 100 MMSCF/yr
  ($600K @ $6/MSCF)
- Savings Realized within 18 Months – Largest Cost-Effective Leaks Repaired
Economics of LAUF

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

Annual $ in Lost Product

Cubic Feet Per Minute

$0.00
$500.00
$1,000.00
$1,500.00
$2,000.00
$2,500.00

0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

At $4 Per 1000 Cubic Feet

0.238 cu ft/min
Estimated Economical to Repair
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

Absorbance

3.31µm

Wavelength (microns)

NIST

butane
ethane
propane
methane
water
CO2
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
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

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

- 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

- Cost of this project $7 MM
- Amount of fugitive methane losses saved is ~41 MMSCF/yr
- Ancillary Benefit - Criteria (e.g. NOx) 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 $876K @ $6/MSCF
Future Plans

- Study at least two additional gas plants and upstream compressor stations within 12 months
- Evaluate gathering system opportunities
- Apply the information from previous studies to other facilities
- Plan to implement DI&M surveys every two years at gas plants/compressor stations
Future Plans (contd.)

- Increase management commitment through awareness of cost effective opportunities
- Involve the Company media relation’s more effectively
Acknowledgement

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