“Partner Experiences”

Pioneer Natural Resources, USA

Presented by James Meier

Processors Technology Transfer Workshop
September 23, 2004
Dallas, Texas
How Did Pioneer Get Involved?

★ Pioneer formed in 1997 as a merger between Parker & Parsley Petroleum Co. and MESA Inc.

★ Pioneer was originally contacted in 1998 by The Cadmus Group, Inc.

★ In July 1999, Pioneer began reviewing benefits of membership in STAR.
How Did Pioneer Get Involved?

★ Weighing Pro’s and Con’s
   ➢ Audit potential
   ➢ Compliance with EPA regulations

★ Pioneer contacted several member companies who expressed positive support for the program
How Did Pioneer Get Involved?

★ In the end, there were only advantages:

➢ Demonstrate Pioneer’s commitment
➢ Continue to identify and reduce air emissions
➢ Share information with other companies
➢ Reap financial rewards

★ Total management support!
How Did Pioneer Get Involved?

- July 25, 2000 – Pioneer Natural Resources USA signed Memorandum of Understanding for Production Companies
- September 18, 2000 – Pioneer Natural Resources USA signed Memorandum of Understanding for Gathering and Processing Companies, becoming a Charter Partner
Pioneer Natural Resources’ Gas Facilities

- Fain Gas Plant – Amarillo, Texas
- Ulysses Gas Plant – Ulysses, Kansas
- Satanta Gas Plant – Ulysses, Kansas
Best Management Practices (BMP’s)

- Jointly identified by EPA and the industry as cost-effective options for reducing methane emissions
  - Replace gas pneumatics with instrument air systems
  - Install flash tank separators on glycol dehydrators
  - Implement directed inspection and maintenance at gas plants and booster stations
Instrument air system already existed at Fain and Satanta. Instrument air compressor installed at Ulysses in September 2002.

Glycol flash tank separators already existed at Fain, Ulysses, and Satanta.

VOC detection performed at Fain, Ulysses, and Satanta. The results are used to repair leaks. Leaks at all sites have been reduced to less than 2% of all points tested.
PRO’s at Fain

★ 1996
- Installed turbine speed controllers (59 Mcf/yr)
- Installed plant recycle valve (180 Mcf/yr)
- DCS upgrade (13 Mcf/yr)

★ 1997
- Install heat tracing (58 Mcf/yr)
PRO’s at Fain

★ 1999
- Install blowdown pipe to flare (12 Mcf/yr)

★ 2000
- Install condensate pipeline (31,238 Mcf/yr)
- Switch to commercial power (180 Mcf/yr)
- Adjust gas regulator (4,138 Mcf/yr)
**PRO’s at Fain**

- **2001**
  - Modify compressor logic (34 Mcf/yr)
  - Larger stabilizer reboiler (2,901 Mcf/yr)
  - Vapor recovery on slug catcher (3,796 Mcf/yr)

- **2002**
  - BTEX removal (641 Mcf/yr)
PRO’s at Ulysses

★ 1990
- Install separator (7,814 Mcf/yr)

★ 1997
- Flash separator piping (521 Mcf/yr)
- Storage tank piping (260 Mcf/yr)
PRO’s at Ulysses

★ 2001
- BTEX removal (398 Mcf/yr)

★ 2002
- Remove burn pit (4,721 Mcf/yr)
- Convert to instrument air (588 Mcf/yr)
PRO’s at Satanta

- **1995**
  - Repair NRU (163,054 Mcf/yr)

- **1999**
  - Install amine unit (78,300 Mcf/yr)
PRO’s at Satanta

★ 2000
  ➢ Convert compressor blowdown (1,038 Mcf/yr)
  ➢ Pipe TEG flash to amine flare header (2,365 Mcf/yr)

★ 2001
  ➢ BTEX removal (134 Mcf/yr)
Fain Starting Air System

★ Convert starting gas to starting air.
★ Starting air system already existed for older reciprocating engines (small air users)
★ System would be expanded to include all engines at the plant, including large horsepower reciprocating engines and turbines
★ Project was presented to management and approved as a STAR project
Fain Starting Air System

★ Capital Expenditures:
  - Air Compressor
  - Air Receiver
  - Piping
  - Regulator and PSV modifications as necessary

★ Estimated Methane Reduction:
  - 9,798 Mcf/yr
## STAR Results (1990-2004)

<table>
<thead>
<tr>
<th>Location</th>
<th>Methane Reduction (Mcf/year)</th>
<th>Value of Gas Saved ($/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fain</td>
<td>53,048</td>
<td>$159,144</td>
</tr>
<tr>
<td>Ulysses</td>
<td>14,562</td>
<td>$43,686</td>
</tr>
<tr>
<td>Satanta</td>
<td>244,891</td>
<td>$734,673</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>312,501</strong></td>
<td><strong>$937,503</strong></td>
</tr>
</tbody>
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**Additional Accomplishments**

- Earned STAR Rookie of the Year in 2001 for strong initial program implementation
- Presented “Partner Experiences” at 9th Annual Implementation Workshop in October, 2002
- Earned Processing Partner of the Year award for 2002
- Host/Presenter for Methane Emissions Reduction Technology Transfer Workshop in 2003
- Participated with EPA on Partner Profile published in February 2004
The Future of STAR at Pioneer

★ Current projects include:

➢ Converting starting gas to starting air for compressors at Satanta

➢ Evaluating with manufacturers if additional compressors can avoid being blown down during trip/shut-down to prevent emissions to atmosphere