

Company Reported Opportunities Technologies

From Natural Gas STAR Partners



EPA's Natural Gas STAR Program,
Pioneer Natural Resources USA, Inc., and
The Gas Processors Association

June 17, 2003

Why Are Company Reported Opportunities Important?

- Simple vehicle for sharing successes and continuing program's future
 - ◆ *BMP's*: the consensus best practices
 - ◆ *PRO's*: Partner Reported Opportunities
 - ◆ *Lessons Learned*: expansion on the most advantageous BMP's and PRO's
 - ◆ All posted on the Gas STAR website:
<http://www.epa.gov/gasstar>



Gathering & Processing Best Management Practices

- ❑ BMP 1: Replace Gas Pneumatics with Instrument Air Systems
- ❑ BMP 2: Install Flash Tank Separators on Glycol Dehydrators
- ❑ BMP 3: Implement Directed Inspection & Maintenance at Gas Plants and Booster Stations
- ❑ BMP 4: Partner Reported Opportunities (PRO's)



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits

Gas STAR PRO Fact Sheets

- PRO Fact Sheets from Annual Reports 1994-2002
 - ◆ 54 posted PROs
 - ◆ 26 PRO's applicable to Processing
 - 16 focused on operating practices
 - 10 focused on technology



Lessons Learned

- 📖 14 Lessons Learned posted
- 📖 8 applicable to Processing
 - ◆ 3 focused on operating practices
 - ◆ 5 focused on technology

- 📖 New Lessons Learned in development
 - ◆ Composite Wrap



Technology Focused Lessons Learned

- ❑ Convert Gas Pneumatic Controls to Instrument Air
- ❑ Replacing Wet Seals with Dry Seals in Centrifugal Compressors
- ❑ Reduce Methane Emissions from Compressor Rod Packing Systems
- ❑ Installation of Flash Tank Separators
- ❑ Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry



Technology Opportunities

□ Piping/Pipelines

◆ Composite Wrap

- SAVES... 5400Mcf/yr
- PAYOUT... < 1yr

□ Compressors & Engines

◆ Install Electric Compressors

- SAVES...6440Mcf/yr
- PAYOUT...> 10 yrs

◆ Install Electric Starters

- SAVES... 1350 Mcf/yr
- PAYOUT... 1-3 years



More Technology Opportunities

□ Dehydrators

◆ Reroute Glycol Skimmer Gas

- SAVES... 7600Mcf/yr
- PAYOUT... < 1 yr

◆ Reroute Glycol Dehydrator to Vapor Recovery

- SAVES... 3300 Mcf/yr
- PAYOUT... < 1 yr

◆ Convert Gas Driven Pumps to Air

- SAVES... 2500Mcf/yr
- PAYOUT... < 1 yr



What is the Problem?

Dehydrators present an excellent place to reduce emissions

- How much methane is emitted?
 - ◆ A 20 MMcf/day dehydrator with a vent condenser, no flash tank separator and a circulation rate of 5 gpm may produce 7,600 Mcf/yr of losses
- How can these losses be reduced?
 - ◆ Install a flash tank separator
 - ◆ Pipe vent gases to vapor recovery
 - ◆ Adjust circulation rates



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits

More Technology Opportunities

□ Tanks

◆ Install Pressurized Storage for condensate

- SAVES... 7,000 Mcf/yr
- PAYOUT... 1-3 years



More Technology Opportunities

□ Pneumatics & Controls

- ◆ Convert Pneumatics to Mechanical Controls
 - SAVES...500 Mcf/yr
 - PAYOUT... < 1 yr
- ◆ Replace Burst Plates with secondary RV's
 - SAVES...500 Mcf/yr
 - PAYOUT... < 1 yr



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits

More Technology Opportunities

□ Valves

- ◆ Use YALE® closures for ESD Testing
 - SAVES... 1,800 Mcf/yr
 - PAYOUT... 1-3 years
- ◆ Use Ultrasound to locate leaks
 - SAVES... 2,000 Mcf/yr
 - PAYOUT... < 1 yr



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits

What is the Problem?

Mandated Emergency Shutdown (ESD) Testing

- How much methane is emitted?
 - ◆ An 8" ESD valve with a 3' stack @ 500 psi vents 400 Mcf/min
- How can these losses be reduced?
 - ◆ Use of YALE[®] closure device reduces loss to 40 scf for 8" ESD valve
 - ◆ A YALE[®] closure device is a screwed-on pipe cap with a built-in bleed valve



Partner Experience

Emergency Shutdown (ESD) Testing

- 1,800 Mcf/yr savings based on a station with eight compressors and ten 8" ESD valves
 - ◆ Payout is 1-3 years
 - ◆ YALE[®] Closure Devices cost around \$800-1,600 for 8" to 12" sizes
 - ◆ YALE[®] Closure Devices require vent stack with threaded end connection



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits

Discussion Questions

- ❑ To what extent are you implementing these technologies?
- ❑ Do you have other opportunities to suggest?
- ❑ How could these opportunities be improved upon or altered for use in your operation?
- ❑ What are the barriers (technological, economic, lack of information, regulatory, etc.) that are preventing you from implementing these practices?



EPA POLLUTION PREVENTER

Reducing Emissions, Increasing Efficiency, Maximizing Profits