United States Production Company

Natural Gas STAR Program Involvement and Experience

September 21, 2004
Overview

- USP Background
- Communication and buy-in
- Data Collection
- Reduction Opportunities:
  - Plunger Lifts
  - Replacement of high-bleed gas pneumatics
  - Environmental Vapor Recovery Unit
**Background - US Production Company (USP)**

- Formed in 2003
  - Previously 2 separate organizations (US East and US West)

- Consists of oil and gas production operations
  - Approx. 680 billion cf of gas in ‘03
  - Approx. 80 million bbls of oil in ‘03

- Produces in 11 states and Gulf of Mexico

- Employs approximately 2500 people

- Would rank 37th on Fortune 500 as a stand-alone company

*ExxonMobil US Production Co.*
Background - USP Production

[Map showing highlighted states in yellow]
Background - US Production Company

• Facilities include:
  - Gas plants
  - Compressor stations
  - Offshore platforms
  - Drilling rigs
  - Tank batteries

• Operational Scope
  - Primary/Secondary/Tertiary Oil
  - Heavy oil
  - Tight gas
  - Depths to 17,000 ft
  - Vertical & horizontal wells

ExxonMobil US Production Co.
Communication and Data Collection

• Challenges
  - Size
  - Job rotation

• Approach
  - Brainstorming session with air team:
    + Newsletter article
    + Meetings with facilities engineers
    + Field trips
    + Project database
    + Tracking tool
**Plunger Lift Installation**

- Many low-pressure gas wells must be vented periodically to prevent backpressure

- Installation of artificial lift such as plunger lifts eliminates or reduces venting

- Increasing number of plunger lift installations
  - In 2003, achieved methane reduction credit due to these installations

- Must be evaluated on individual basis to determine reduction amount, if any
Replacement of High-Bleed Gas Pneumatics

- Gas-driven pneumatics are one of the largest sources of vented methane emissions

- Retrofit project at Sarita field realized savings of 40,000 kcf/yr with a quick payback

- Conducted company-wide study to determine whether any field still contain gas-driven pneumatics
  - Most already replaced
  - Discovered 3 fields still using
    + Plan to evaluate cost/benefit of replacement options
Environmental Vapor Recovery Unit Technology (EVRU)

• Traditional Vapor Recovery Unit (VRU)
  - Compressor driven:
    + Reliability issues
    + Maintenance requirements
    + Resistance
Environmental Vapor Recovery Unit Technology (EVRU)

- New technology
- Operates on the Venturi Principle (no compressor involved)
  + Requires:
    - High-pressure motive gas stream
    - Low to intermediate pressure system to send gas
- EPA issued Environmental Technology Verification Report

EVRU - Mariposa Compressor Station
Environmental Vapor Recovery Unit Technology (EVRU)

- Advantages
  - Operational
    - Requires no fuel
    - Requires little space
      - Can be skid or pipe-mounted
  - Efficiency
    - Almost 100% efficient (VRU - 95% efficient)
  - Maintenance
    - Essentially no maintenance (no moving parts)
  - Implementation
    - Quicker - buy-in and shorter delivery time
  - Compliance
    - Reduced risk of noncompliance
      - Reliable and emissions-free

EVRU - Mariposa Compressor Station
Environmental Vapor Recovery Unit Technology (EVRU)

• System evaluated for use and implemented at Mariposa Compressor Station
  - $11,000/yr. operating expense savings

• Payback period approx. 14 months vs. 7 months for VRU
  - Due to higher capital cost of EVRU
  - Able to justify due to other benefits
    + Reduced operating and maintenance costs
    + Reduced downtime

EVRU - Mariposa Compressor Station
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