Shute Creek Treating Facility Project Updates

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LaBarge: 25 Years of Success

- History
  - 1981: Exxon drilled exploration wells
  - 1984: Shute Creek construction
  - 1986: First production

- Raw gas stream
  - Produced from the LaBarge Madison reservoir
  - Average well produces 45 MMCFD
  - Gathered to the Black Canyon Processing Facility
  - Transported 40 miles to the Shute Creek Treating Facility
Shute Creek Treating Facility

Shute Creek, Wyoming
Wyoming CO₂ Infrastructure

- 72,000 hp Compression
- 112 Miles 20” Line
- 48 Miles 24” Line

- Shute Creek CO₂ Meters
- 48 Miles 24” Line
- 112 Miles 20” Line

- Evanston
- Rock Springs
- Rawlins
- Cheyenne
- Laramie
- Niobrara
- Natrona
- Casper
- Converse
- Wyoming

- Sublette
- Fremont
- Carbon
- Sweetwater
- Lincoln
- Shute Creek

- 48 Miles 24” Line
- 112 Miles 20” Line
Shute Creek CO₂ Sales Gas Expansion

• **Project Purpose**
  - Install 23,000 hp of CO₂ compression to increase total CO₂ sales capacity to ~340 Mmcfd.

• **Scope**
  - Install compression to maximize existing CO₂ export capacity by incremental 110 Mmcfd
  - 20,000 hp HP (High Pressure)/MP (Medium Pressure) Compressor
  - 3,000 hp LP (Low Pressure) Compressor
  - Control system upgrade for LP and MP/HP compression

• **Accomplishments**
  - Project was funded in November 2007
  - Total of 88,000 engineering hours spent on project.
  - Total of 319,000 construction hours spent on location.
  - Low pressure compressor unit started up July 2010
  - High pressure compressor unit started up October 2010
  - Completed existing compressor controls retrofit November 2010

• **Start-up occurred late-November 2010 / $86.4 Million Total Cost**
Low Pressure Site
Low Pressure Site Interior
Medium/High Pressure Site
Medium/High Pressure Interior
Putting the Pieces Together

Successful commercialization of resources requires:

- Financing
- Transport
- Sustainability
- Performance
- Planning
Controlled Freeze Zone™

**CFZ™ Uses a Different Approach** -- Rather than avoiding solidification of CO₂, control it and confine it to specially designed section in distillation column
Pilot Plant / Commercial Demonstration Plant

1986 Clear Lake Pilot Plant

- Successfully proved the concept in 1986 in a 600 KSCFD pilot plant
- First facility to successfully demonstrate freezing and remelting of CO₂ as part of a separation process

2010 LaBarge CDP

- 23 times more capacity than the original pilot plant
- Size suitable to enable 75X scale up to 1 BSCFD
- Range of feed compositions:
- Integrated with LaBarge Acid Gas Injection
Commercial Demonstration Plant Design

- Construction of the CFZ™ Commercial Demonstration Plant (CDP) has been completed and unit is being started up

- CDP has a capacity to handle up to 13.5 MMSCFD of feed gas with significant variations in inlet composition:
  - Three feed gas streams are used to blend the desired feed gas
    - Sales gas stream of methane with a small amount of nitrogen
    - CO2 sales gas stream with a small amount of methane
    - Acid gas stream with 65 mol% H2S and 35 mol% CO2

- The plant is designed to recycle the bottom and overhead products to the inlet feed to minimize consumption of feed gas during the testing program
Controlled Freeze Zone™ Update

- Initial testing has shown a feed gas containing > 65 mol% CO$_2$ can be purified to yield a product gas with <1000 ppmv CO$_2$

- Once start-up operations are completed, a comprehensive test program will begin and continue into 2012
Summary

• The CFZ™ technology demonstrates ExxonMobil’s high commitment to:
  • advancing the most advantageous sour gas technologies,
  • developing integrated solutions to meet the challenges of sour natural gas, and
  • facilitating management of CO$_2$ and acid gases, including geosequestration and EOR

• We are making significant investments in facilities to capture and market CO$_2$ in Wyoming

• ExxonMobil is and will continue to be a significant long-term reliable supplier in the Wyoming CO2 market
## Carbon Dioxide Sales Organization

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