Extended Laterals Reaching From North Dakota to Oklahoma!

February 27, 2013
Transferring Long Lateral Drilling Technology from Bakken to SCOOP
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What’s the SCOOP?
How will longer laterals impact the SCOOP?

Benefits
• Reduced cycle times
• Improved efficiencies
• Positive Economic impact

Challenges
• Managing Torque & Drag
• Cleaning the hole
• BHA Design
• Complex Drilling Demands Great Team Work
What’s the “SCOOP”?

South Central Oklahoma Oil Province

- Epicenter of Oklahoma Oil
- Oil and liquids-rich province
- 3 of the top oil-producing counties in Oklahoma
- 3.2 BBo produced
- 60 reservoirs

- Golden Trend (1945) 590 MMBo
- Sho-Vel-Tum (1905) 1,433 MMBo
- Healdton (1913) 363 MMBo
- Knox 97 MMBo
Here’s the “SCOOP”
World-Class Resource Shale

- One of the thickest, best quality resource shale reservoirs in the country
  - Up to 400’ oil-rich shale
  - Dual reservoir target
- Excellent siliceous reservoir
  - Highly fractured
- Source of the oil

The Woodford Shale
70 BBo remains in-situ
Drilling the SCOOP

Tough 12-14” Vertical
- Sharp, ratty sands
  - Deese, Gibson, Hart
- Crooked Hole Country

8-3/4” Vertical
- Losses in 8-3/4” hole
  - Primrose, Cunningham, Britt

Sensitive Curves
- Caney shale sensitive to inclination
- Inconsistent doglegs
SCOOP Single Unit Economics

Single Unit Well Costs
- Approximately 73% of drilling cost is to reach the target formation.
- From this point the lateral is drilling in the target formation.

Vertical & Curve
73% of Drlg Cost

1 Section (5,280')
SCOOP Multi Unit Economics

2 Sections (10,560′)

Why not keep drilling?
SCOOP Single vs Multi Unit Economics

1 Single Unit Wells
- 4,500’ lateral

2 Single Unit Wells
- = 2 x Original Drilling Cost
- 9,000’ lateral

1 Multi Unit Well
- = 1.3 x Original Drilling Cost
- 9,800’ lateral
2 Single Unit Wells
- Unit setbacks create uncompleted formation.
- Potentially Inefficient Drainage
- Potentially Stranded Minerals

1 Multi Unit Well
- Additional 800’ or 2-3 completion stages.
- 8-9% more producing lateral.
Efficiencies Gained in NW Cana

1st cross-unit (extended lateral) well in OK (HB 1909)
Toms 1-21XH

Multi-Unit Drilling Efficiency in NW Cana

Days

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<th></th>
<th>Days</th>
<th>Efficiency</th>
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<tr>
<td>Single Unit 4,500'</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Multi-Unit 9,800'</td>
<td>45</td>
<td>41%</td>
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<tr>
<td>2 Single units 9,000'</td>
<td>76</td>
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Toms 1-21XH vs Petty 1-17H

Days

<table>
<thead>
<tr>
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<th>Days</th>
<th>Depth</th>
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<tbody>
<tr>
<td>Petty 1-17H</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Petty 1-17H Second Time</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Toms 1-21XH</td>
<td>45</td>
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31 days
Challenge: Managing Torque & Drag

- 2 Most Impactful Characteristics of T&D
  - Tortuosity
  - Hole Cleaning
Challenge: Managing Torque & Drag

- Tortuosity
  - Smooth Wellbore
  - BHA Design
  - 10° to 12°/100’ curve
  - Minimize sliding/steering
  - Rotate!
  - Great Teamwork
Challenges: Hole Cleaning

Clean hole with GPM & RPM.
Transferring Multiple Reservoir Technology too!

- Cana-Woodford Infill well density:
  - 9 wells/section (65 acre spacing)
  - One horizon SCOOP down spacing potential
  - 9 wells per horizon (65 acre spacing)
  - Up to 18 wells/section
  - 4-4 well pads; 1-2 well pad
  - _ net locations
  - Participating in OSO infill drilling pilot programs
  - Testing lateral and vertical height growth

- Barnett tested down to 20 acre spacing
- Eagleford testing to 40 acre spacing
SCOOP: Doubling Down!

Stacked laterals
- Woodford thickness typically 200-300’
- Frac height is 70-100’ (internal studies)
- Requires 2 wells to stimulate Woodford
- Both targets proven commercial

Testing the concept
- Continue to analyze data from both targets
- Plan 2013 test of high/low
Summary

- The SCOOP is growing horizontally and vertically through technology transfer!
- Great team work will overcome the challenges of long laterals.
- Benefits of long laterals and multiple reservoirs will develop the SCOOP into CLR’s next high impact oil & liquids-rich play!
Questions?