Pine Hollow South Field Study
Pine Hollow South Field Study
Area Production
Pine Hollow South Field Study
Type Log
Booch Gross Interval Isopach
Showing Pine Hollow South Study Area

Contour interval = 100 feet
Pine Hollow South Field Study
Upper Booch Interval Isopach
Pine Hollow South Field Study
Structure: Top Booch
Pine Hollow South Field Study
Stratigraphic Cross-Section A-A’
PLATE 16 Pine Hollow South Field Stratigraphic Cross Section B-B'
Pine Hollow South Field Study
PS-5 Net Sand Isopach
Pine Hollow South Field Study
Stratigraphic Cross-Section A-A’
Pine Hollow South Field Study
Stratigraphic Cross-Section B-B’
Pine Hollow South Field Study
PS-2 Net Sand Isopach
Pine Hollow South Field Study
Structure: Top Booch
Pine Hollow South Field Study
Stratigraphic Cross-Section A-A’
Pine Hollow South Field Study
Apparent Penitentiary Fault Drag
Pine Hollow South Field Study
Newfield Sandra # 1-12
Sec 12 5N 13E
(Vertical Woodford Test)
Pine Hollow South Field Study
PS-1 Gross Sand Isopach
Pine Hollow South Field Study
PS-0 Net Sand Isopach
Pine Hollow South Field Study
Stratigraphic Cross-Section A-A'

PLATE 15
Pine Hollow South Field
Stratigraphic Cross Section A-A'
### TABLE 7. — Pine Hollow South Field (Study Area) Booch Production

<table>
<thead>
<tr>
<th>Operator name</th>
<th>Lease name</th>
<th>Well no.</th>
<th>Location</th>
<th>Status</th>
<th>Gas cum. (MCF)</th>
<th>EUR (\text{a}(\text{MMCF}))</th>
<th>Production (MCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All Boach PS-0 PS-5 PS-6 PS-6</td>
<td>PS no. b YTD Latest month First prod. date</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Frank</td>
<td>1</td>
<td>sec. 13, T5N, R13E SW SW SW</td>
<td>ACT</td>
<td>5,229</td>
<td>50 50 0 189</td>
<td>189</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Sandra</td>
<td>1</td>
<td>sec. 13, T5N, R13E C NE</td>
<td>ACT</td>
<td>130,848</td>
<td>225 225 5</td>
<td>1,569 1,569</td>
</tr>
<tr>
<td>Marbet LLC</td>
<td>Marbet LLC</td>
<td>31</td>
<td>sec. 14, T5N, R13E SE SE SE</td>
<td>ACT</td>
<td>71,342</td>
<td>275 275 5</td>
<td>9,512 3,135</td>
</tr>
<tr>
<td>Marbet LLC</td>
<td>Marbet LLC</td>
<td>25</td>
<td>sec. 23, T5N, R13E C SE</td>
<td>ACT</td>
<td>54,576</td>
<td>50 50 0, (H) (\text{a})</td>
<td>2,345 1,114</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Nell Mary</td>
<td>6</td>
<td>sec. 24, T5N, R13E NE SW NW</td>
<td>ACT</td>
<td>949</td>
<td>50 50 0, 1 342</td>
<td>349</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Nell Mary</td>
<td>2</td>
<td>sec. 24, T5N, R13E C NE</td>
<td>ACT</td>
<td>29,335</td>
<td>125 125 0</td>
<td>1,439 1,439</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Nell Mary</td>
<td>1</td>
<td>sec. 24, T5N, R13E NW NE NW</td>
<td>ACT</td>
<td>27,557</td>
<td>150 150 0, 1</td>
<td>1,843 1,843</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Nell Mary</td>
<td>3</td>
<td>sec. 24, T5N, R13E S SE</td>
<td>ACT</td>
<td>7,962</td>
<td>75 75 5</td>
<td>941</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Watkins Blake</td>
<td>1</td>
<td>sec. 7, T5N, R14E S N SW</td>
<td>ACT</td>
<td>59,377</td>
<td>100 100 5</td>
<td>364 364</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Geneva</td>
<td>4</td>
<td>sec. 16, T5N, R14E SW SW NE</td>
<td>ACT</td>
<td>7,731</td>
<td>25 25 0</td>
<td>247 247</td>
</tr>
<tr>
<td>Tag Team Resources LLC</td>
<td>Watson</td>
<td>1</td>
<td>sec. 18, T5N, R14E C SW</td>
<td>ACT</td>
<td>645,357</td>
<td>250 250 5, (H) (\text{a})</td>
<td>13,498 1,152</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,039,663</td>
<td>1,375 450 925</td>
</tr>
</tbody>
</table>

**NOTE:** Data from IHS Energy (through February 2004). EUR — estimated ultimate recovery.

\(\text{a}\)EUR calculated using latest monthly production 12–5 years. Many recent wells are not yet on production, making EURs provisional.

\(\text{b}\)Parasequence completed.

\(\text{c}\)H — Harshorne. Harshorne commingled assigns 33% to Booch zone.
### Pine Hollow South Field Study Volumetric Input

<table>
<thead>
<tr>
<th>Interval</th>
<th>Avg. Net Sd</th>
<th>Area (ac)</th>
<th>Avg. Por</th>
<th>Avg. Sg</th>
<th>Pore Vol (Ac. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-0:</td>
<td>10 ft</td>
<td>2,528</td>
<td>9%</td>
<td>75%</td>
<td>1,706</td>
</tr>
<tr>
<td>PS-5:</td>
<td>17 ft</td>
<td>1,952</td>
<td>10%</td>
<td>80%</td>
<td>2,655</td>
</tr>
</tbody>
</table>
Pine Hollow South Field Study Gas Volumes

<table>
<thead>
<tr>
<th>Interval</th>
<th>Gas IIP</th>
<th>Cum Prod</th>
<th>E.U.R.</th>
<th>Proj. R.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-0:</td>
<td>1,264</td>
<td>88</td>
<td>450</td>
<td>36%</td>
</tr>
<tr>
<td>PS-5:</td>
<td>2,544</td>
<td>485</td>
<td>925</td>
<td>36%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>3,808</strong></td>
<td><strong>573</strong></td>
<td><strong>1,375</strong></td>
<td><strong>Avg: 36%</strong></td>
</tr>
</tbody>
</table>
Pine Hollow South Field Study
Lessons Learned

• Evaluation Issues

• Keys to Viability
General Conclusions
Conclusions: Stratigraphy

• Booch not equivalent to McAlester

• Records eight progradational cycles (all sourced from the north)
  • Lower Booch (2 cycles) most marine & poorest producer
  • Middle Booch (3 cycles) maximum progradation & best producer
  • Upper Booch (3 cycles) intermediate

• Reservoirs all sandstones (occurring at tops of cycles)
  • Best are channel-fills
  • Tidally reworked deltaics are poorer
Conclusions: Petroleum System

- Booch marine shales and coals are the dominant source rocks
  - Gas prone
  - Somewhat immature (may explain under-filling)

- Migration
  - Most occurs from adjacent shales and coals
  - Longer distant possible via channel sands (Brooken)
  - Cross-fault from Hartshorne - Atoka and deeper possible

- Stratigraphy the key to economic entrapment
Conclusions: Evaluation

• Challenges
  • Volumetrics of limited value
  • Complex reservoir geometry
  • Few penetrations per accumulation
  • Production allocation issues (commingling)
  • Fuzzy line defining potential reservoir and pay
  • Under-pressure requires early compression

• Exploration
  • Many opportunities (in high-price environment)
  • Drilling shallow and cheap
  • Entirely subsurface play (will reward detailed analysis)
  • Most reservoirs of limited aerial extent (easy to miss)
  • Underlying Hartshorne excellent secondary objective
Acknowledgements

Max Tilford

Neil Suneson

Rick Andrews
Don’t forget the
Booch Field Trip March 4-5, 2009