Utica-Point Pleasant Shale Activity and Performance Update

Wes Casto, P.E.
Casto Petroleum Engineering
SOOGA Spring Meeting
April 21, 2016
Based in Marietta

Evaluations of reserves and economics for conventional and unconventional assets (Utica & Marcellus)

Fair Market Value reports

Acquisition and Divestiture analysis

Clinton Refracs
Contents

1. Overview of Thermal Maturity Windows (Eclipse Resources)
2. For Each Window:
   • Activity Update – Well Counts by Status
   • Activity Update – Most Active Operators
   • Well Performance Summary
3. Comparison of Windows – Activity and Performance
4. Questions
Contents

1. Overview of Thermal Maturity Windows (Eclipse Resources)
2. For Each Window:
   - Activity Update – Well Counts by Status
   - Activity Update – Most Active Operators
   - Well Performance Summary
3. Comparison of Windows – Activity and Performance
4. Questions
Thermal Maturity Windows

Source: Eclipse Resources Investor Presentation, March 2016
Thermal Maturity Windows

Black Dots = Utica Wells, All Status (ODNR 3-5-16):
- Permitted
- Drilling
- Drilled
- Producing

Data Sources: ODNR, Drilling Info, Eclipse Resources
Contents

1. Overview of Thermal Maturity Windows (Eclipse Resources)
2. For Each Window:
   • Activity Update – Well Counts by Status
   • Activity Update – Most Active Operators
   • Well Performance Summary
3. Comparison of Windows – Activity and Performance
4. Questions
Oil Window

Well Counts by Status:

- Permitted = 30
- Drilling = 2
- Drilled = 11
- Producing = 14
- Total = 57

Data Sources: ODNR, Drilling Info, Eclipse Resources

Arbitrary western boundary = 5,000’ Top of Trenton Contour (ODNR)
Oil Window

Most Active Operators:
- Permits = Chesapeake (16)
- Drilling = Halcon (1)
- Drilled = Chesapeake (7)
- Producing = Chesapeake (5)
- Total, All Operators = 57

Data Sources: ODNR, Drilling Info, Eclipse Resources
Oil Window

Average Well Performance:
- Gas EUR/1,000’ = 0.20 Bcf
- Oil/Cond. Yield = 55 bbl/MMcf
- Lateral Length = 4,316 ft

Average Well Implied EURs:
- 0.86 Bcf Gas
- 47 Mbbl Oil/Cond.

Decline Curve Parameters:
- b-factor, oil = 1.5
- D_{min}, oil = 6%
- b-factor, gas = 1.5
- D_{min}, gas = 5%
- Life = 50 years
- Public production data
- *Includes wells with very little production!*

Data Sources: ODNR, Drilling Info, Eclipse Resources
Condensate Window

Well Counts by Status:
- Permitted = 88
- Drilling = 21
- Drilled = 73
- Producing = 414
- Total = 596

Data Sources: ODNR, Drilling Info, Eclipse Resources
Condensate Window

Most Active Operators:
- Permits = Chesapeake (42)
- Drilling = Ascent (12)
- Drilled = Chesapeake (40)
- Producing = Chesapeake (258)
- Total, All Operators = 596

Data Sources: ODNR, Drilling Info, Eclipse Resources
Condensate Window

Average Well Performance:
- Gas EUR/1,000’ = 0.57 Bcf
- Oil/Cond. Yield = 71 bbl/MMcf
- Lateral Length = 5,807 ft

Average Well Implied EURs:
- 3.31 Bcf Gas
- 235 Mbbl Oil/Cond.

Data Sources: ODNR, Drilling Info, Eclipse Resources
Wet Gas Window

Well Counts by Status:
- Permitted = 119
- Drilling = 26
- Drilled = 61
- Producing = 512
- Total = 718

Data Sources: ODNR, Drilling Info, Eclipse Resources
Wet Gas Window

Most Active Operators:
- Permits = Chesapeake (31)
- Drilling = Eclipse (7)
- Drilled = Chesapeake (33)
- Producing = Chesapeake (301)
- Total, All Operators = 718

Data Sources: ODNR, Drilling Info, Eclipse Resources
Wet Gas Window

Average Well Performance:
- Gas EUR/1,000’ = 1.17 Bcf
- Oil/Cond. Yield = 21 bbl/MMcf
- Lateral Length = 6,047 ft

Average Well Implied EURs:
- 7.07 Bcf Gas
- 149 Mbbl Oil/Cond.

Data Sources: ODNR, Drilling Info, Eclipse Resources
Dry Gas Window

Well Count by Status:
- Permitted = 173
- Drilling = 71
- Drilled = 171
- Producing = 288
- Total = 703

Data Sources: ODNR, Drilling Info, Eclipse Resources
Dry Gas Window

Most Active Operators:
- Permits = Gulfport (35)
- Drilling = Ascent (18)
- Drilled = Gulfport (35)
- Producing = Gulfport (116)
- Total, All Operators = 703

Data Sources: ODNR, Drilling Info, Eclipse Resources
Dry Gas Window

Average Well Performance:
- Gas EUR/1,000’ = 2.13 Bcf
- Oil/Cond. Yield = N/A
- Lateral Length = 7,036 ft

Average Well Implied EURs:
- 14.99 Bcf Gas

Data Sources: ODNR, Drilling Info, Eclipse Resources
Contents

1. Overview of Thermal Maturity Windows (Eclipse Resources)
2. For Each Window:
   - Activity Update – Well Counts by Status
   - Activity Update – Most Active Operators
   - Well Performance Summary
3. Comparison of Windows – Activity and Performance
4. Questions
## WELL COUNT BY WINDOW BY STATUS - ODNR MARCH 5, 2016

<table>
<thead>
<tr>
<th>STATUS</th>
<th>OIL</th>
<th>CONDENSATE</th>
<th>WET GAS</th>
<th>DRY GAS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted</td>
<td>30</td>
<td>88</td>
<td>119</td>
<td>173</td>
<td>410</td>
</tr>
<tr>
<td>Drilling</td>
<td>2</td>
<td>21</td>
<td>26</td>
<td>71</td>
<td>120</td>
</tr>
<tr>
<td>Drilled</td>
<td>11</td>
<td>73</td>
<td>61</td>
<td>171</td>
<td>316</td>
</tr>
<tr>
<td>Producing</td>
<td>14</td>
<td>414</td>
<td>512</td>
<td>288</td>
<td>1228</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>596</td>
<td>718</td>
<td>703</td>
<td>2074</td>
</tr>
</tbody>
</table>

Data Sources: ODNR, Drilling Info, Eclipse Resources
### Well Count by Window

<table>
<thead>
<tr>
<th>STATUS</th>
<th>OIL</th>
<th>CONDENSATE</th>
<th>WET GAS</th>
<th>DRY GAS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted</td>
<td>30</td>
<td>88</td>
<td>119</td>
<td>173</td>
<td>410</td>
</tr>
<tr>
<td>Drilling</td>
<td>2</td>
<td>21</td>
<td>26</td>
<td>71</td>
<td>120</td>
</tr>
<tr>
<td>Drilled</td>
<td>11</td>
<td>73</td>
<td>61</td>
<td>171</td>
<td>316</td>
</tr>
<tr>
<td>Producing</td>
<td>14</td>
<td>414</td>
<td>512</td>
<td>288</td>
<td>1228</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>57</strong></td>
<td><strong>596</strong></td>
<td><strong>718</strong></td>
<td><strong>703</strong></td>
<td><strong>2074</strong></td>
</tr>
</tbody>
</table>

Data Sources: ODNR, Drilling Info, Eclipse Resources
Most Active Operators by Window

<table>
<thead>
<tr>
<th>STATUS</th>
<th>OIL</th>
<th>CONDENSATE</th>
<th>WET GAS</th>
<th>DRY GAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted</td>
<td>Chesapeake (16)</td>
<td>Chesapeake (42)</td>
<td>Chesapeake (31)</td>
<td>Gulfport (35)</td>
</tr>
<tr>
<td>Drilling</td>
<td>Halcon (1)</td>
<td>Ascent (12)</td>
<td>Eclipse (7)</td>
<td>Ascent (18)</td>
</tr>
<tr>
<td>Drilled</td>
<td>Chesapeake (7)</td>
<td>Chesapeake (40)</td>
<td>Chesapeake (33)</td>
<td>Gulfport (35)</td>
</tr>
<tr>
<td>Producing</td>
<td>Chesapeake (5)</td>
<td>Chesapeake (258)</td>
<td>Chesapeake (301)</td>
<td>Gulfport (116)</td>
</tr>
</tbody>
</table>

Data Sources: ODNR, Drilling Info, Eclipse Resources
### Average Well Performance Summary by Window

<table>
<thead>
<tr>
<th>STATUS</th>
<th>OIL</th>
<th>CONDENSATE</th>
<th>WET GAS</th>
<th>DRY GAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas EUR/1,000' (Bcf)</td>
<td>0.2</td>
<td>0.57</td>
<td>1.17</td>
<td>2.13</td>
</tr>
<tr>
<td>Oil/Cond. Yield (bbl/MMcfd)</td>
<td>55</td>
<td>71</td>
<td>21</td>
<td>N/A</td>
</tr>
<tr>
<td>Effective Lateral Length (feet)</td>
<td>4,316</td>
<td>5,807</td>
<td>6,047</td>
<td>7,036</td>
</tr>
<tr>
<td>Avg. Well Implied Gas EUR (Bcf)</td>
<td>0.86</td>
<td>3.31</td>
<td>7.07</td>
<td>14.99</td>
</tr>
<tr>
<td>Avg. Well Implied Oil/Cond. EUR (Mbld)</td>
<td>47</td>
<td>235</td>
<td>149</td>
<td>N/A</td>
</tr>
<tr>
<td>Avg. Well Implied EUR-equiv (Bcfe), Pre-Processing</td>
<td>1.14</td>
<td>4.72</td>
<td>7.96</td>
<td>14.99</td>
</tr>
<tr>
<td>Avg. Well Implied Bcfe/1,000', Pre-Processing</td>
<td>0.26</td>
<td>0.81</td>
<td>1.32</td>
<td>2.13</td>
</tr>
<tr>
<td>Average Completion Date</td>
<td>5/4/2012</td>
<td>10/5/2013</td>
<td>11/10/2013</td>
<td>6/12/2014</td>
</tr>
</tbody>
</table>

Bigger EURs over time... geology, learning curve, or both?

- Remember: These metrics include certain wells with very little production data
- No discrimination between different well “vintages”
- No discernment of important geological factors
Contents

1. Overview of Thermal Maturity Windows (Eclipse Resources)
2. For Each Window:
   - Activity Update – Well Counts by Status
   - Activity Update – Most Active Operators
   - Well Performance Summary
3. Comparison of Windows – Activity and Performance
4. Questions
CASTO

PETROLEUM ENGINEERING

- Phone: 740-236-2221
- Email: wes@castope.com
- Website: www.castope.com