Key Points

- US rig count has fallen dramatically since the commodity price downturn in late 2014
- Permian is only play with increasing rig count, reflecting superior economics and ever increasing single well deliverability
- Oil production has fallen in major plays across the US since the start of 2015 while Permian production has continued to rise
- Systematic refocusing and capital reallocation into the Permian Basin for both near term and long term
- Permian has most competitive rates of return today and remaining economic horizontal drilling locations >250,000 and may be upwards of 500,000
- Recent USGS report was for Wolfcamp only and Midland Basin only

### Upper Wolfcamp A Type Curve

<table>
<thead>
<tr>
<th>EUR</th>
<th>Economics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (MBbls)</td>
<td>1,019</td>
<td>D&amp;C ($MM)</td>
</tr>
<tr>
<td>Gas (MMcf)</td>
<td>1,630</td>
<td>IRR @ NYMEX (1)</td>
</tr>
<tr>
<td>EUR (MBoe)</td>
<td>1,291</td>
<td>PV-10 ($MM)</td>
</tr>
<tr>
<td>Lat. Length (Ft)</td>
<td>5,000</td>
<td>PV-15 ($MM)</td>
</tr>
<tr>
<td>IP30 (Boe/d)</td>
<td>1,242</td>
<td>PV-20 ($MM)</td>
</tr>
</tbody>
</table>

Note: Assumes optimized D&C costs and 5,000’ laterals unless otherwise noted.

(1) NYMEX strip pricing as of August 18, 2016.
### PV-10 Breakeven Price – Key U.S. Oil Plays

#### Comparison of Selected Plays’ Core and Tier I PV-10 Breakeven Prices

<table>
<thead>
<tr>
<th>Play</th>
<th>Core Acreage</th>
<th>Tier I Acreage</th>
<th>HZ Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midland Basin</td>
<td>$20.00</td>
<td>$35.00</td>
<td>12+</td>
</tr>
<tr>
<td>Delaware Basin</td>
<td>$25.00</td>
<td>$45.00</td>
<td>16+</td>
</tr>
<tr>
<td>SCOOP / STACK</td>
<td>$30.00</td>
<td>$48.00</td>
<td>4-7</td>
</tr>
<tr>
<td>Eagle Ford</td>
<td>$30.00</td>
<td>$52.50</td>
<td>2-3</td>
</tr>
<tr>
<td>DJ Basin</td>
<td>$40.00</td>
<td>$60.00</td>
<td>4</td>
</tr>
<tr>
<td>Bakken</td>
<td>$40.00</td>
<td>$60.00</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Source: EIA, Wall Street Research, Company filings, investor presentations and Jefferies estimates. Assumes crude oil to natural gas price ratio of 15:1. NYMEX pricing as of November 28, 2016.
Permian Rig Activity

[Map showing Permian basin with various regions and company logos].
## Permian Basin Resource Summary

**Key Points**

- Jefferies estimates a total resource potential of approximately 325 BBoe (212 BBo) across the productive core of the Midland and Delaware Basins
  - Delaware: 218 BBoe (128 BBo)
  - Midland: 106 BBoe (84 BBo)
- Spacing assumptions:
  - Delaware:
    - Wolfcamp A: 15 wells / section\(^{(1)}\)
    - Wolfcamp B: 15 wells / section
    - 2\(^{nd}\) Bone Spring: 8 wells / section
    - 3\(^{rd}\) Bone Spring: 8 wells / section
    - Avalon: 8 wells / section
  - Midland:
    - Wolfcamp A: 15 wells / section
    - Wolfcamp B: 15 wells / section
    - Mid. Spraberry: 10 wells / section
    - Lower Spraberry: 10 wells / section

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Core Surface Acreage</strong></td>
<td>~7,700,000 acres</td>
</tr>
<tr>
<td><strong>Total Core “Effective” Acreage</strong></td>
<td>~20,100,000 acres</td>
</tr>
<tr>
<td><strong>Productive Benches</strong></td>
<td>5 (Delaware) 4 (Midland)</td>
</tr>
<tr>
<td><strong>Assumed Spacing</strong></td>
<td>8-15 wells / section</td>
</tr>
<tr>
<td><strong>Number of Wells to Develop</strong></td>
<td>~316,000 wells</td>
</tr>
<tr>
<td><strong>Average EUR / Well</strong></td>
<td>1,137 MBoe (730 MBo)</td>
</tr>
<tr>
<td><strong>Total Recoverable Resource</strong></td>
<td>~325 BBoe (~212 BBo)</td>
</tr>
<tr>
<td><strong>Peak Oil Production</strong></td>
<td>~11,000 MBo/d</td>
</tr>
<tr>
<td><strong>Oil Reserves Half Life</strong></td>
<td>~32 Years</td>
</tr>
<tr>
<td><strong>Total Capital Needed</strong></td>
<td>~$1.9 Trillion</td>
</tr>
</tbody>
</table>

---

\(^{(1)}\) Assumes development of 8 wells / section for the Wolfcamp A-X/Y Sand in southern Eddy County, NM and northern Loving County, TX.
Permian Stratigraphy Overview

Key Points

- Midland and Delaware Basin oil producing deposits were laid down during early Permian time as a series of organic rich mudstones and fine-grained interbedded sand or detrital carbonate turbidites.
- The Midland and Delaware stratigraphic sections mirror each other on opposing sides of the Central Basin Platform with the Delaware section being slightly thicker.
- At least 8 targets are proven and economic in both basins.
Permian Basin Depositional Model

Key Points

- Delaware has three key rock types in Wolfcamp and Bone Spring intervals
- Organic rich Basinal Avalon and Wolfcamp shale:
  - Basin subsidence formed the depocenter for organic rich siliciclastic Avalon and Wolfcamp facies
- Carbonate:
  - Shallow water shelf-margin carbonate shoals and reefs were common around edges of the basin
  - Carbonate debris flow from unstable slope setting in Eastern margin
- Turbidite Sands:
  - Basinal turbidite channel deposits – Bone Spring sands, similar to Spraberry in the Midland Basin
- Midland Basin has similar depositional environments

Source: Matador Resources May 2014 investor presentation.
Key Points

- The Permian Basin is one of the most prolific oil and gas basins in the onshore U.S.
  - Several thousands of feet of horizontal targets
  - 20+ target intervals economic at today’s commodity pricing
- The Midland Basin has 1,500+ horizontal shale wells completed in Spraberry and Wolfcamp benches
  - Completion optimization has advanced rapidly compared to other basins
  - OOIP up to 300+ MMBo / section
- The Delaware Basin horizontal shale has 4,500+ shale wells, with highly economical results in the Avalon, Bone Spring, Delaware, Wolfcamp and Yeso horizons
  - Until recently, completions have lagged Midland Basin
  - OOIP up to 500+ MMBo / section
  - Horizontal targets can have more geologic complexity than Midland Basin
Midland Basin Activity Map – Key Well Results

Peak IP Rates Range Up to 3,000+ Boe/d

**Pioneer**
- EUR: 850 – 1,350 MBoe
- Capex: $5.5 - $6.8 MM
- Recent Martin County Wolfcamp A / B wells tracking above 1,000 MBoe type curve with new frac

**RSP Permian**
- EUR: 600 – 1,200 MBoe
- Capex: $5.2 - $5.6 MM
- Successful spacing test at 500’ in Lower Spraberry

**Diamondback**
- EUR: 530 – 1,000+ MBoe
- Capex: $5.0 - $5.5 MM
- Successful Middle and Lower Spraberry wells

**Callon**
- EUR: 670 – 1,050 MBoe
- Capex: $5.1 MM
- Silver City well is significantly outperforming 700 MBoe type curve

**Encana**
- EUR: 700 – 900 MBoe
- Capex: $4.7 - $5.7 MM
- Spacing tests of 330’ in Wolfcamp Howard County

---

**Wells Permitted Since 2010**

- **Energen – Wolfcamp A**
  - Jones-Holton #1-01H
  - 30-Day IP: 1,171 Boe/d
  - Lat Length: 6,675’

- **Diamondback – Wolfcamp B**
  - Mabee Breedlove #22-1H
  - IP: 1,029 Boe/d
  - Lat Length: 8,296’

- **Pioneer – Spraberry**
  - University 7-43 #16H
  - IP: 1,660 Boe/d
  - Lat Length: 7,502 ft

- **Pioneer – Wolfcamp D/Cline**
  - University 7-43 10H
  - IP: 3,605 Boe/d
  - Lat Length: 7,382’

- **RSP - Wolfcamp B**
  - Cross Bar Ranch 1811H
  - 30-Day IP: 650 Boe/d
  - Lat Length: 6,967’

- **Encana - Wolfcamp B**
  - Davidson 27C #12H
  - IP: 2,078 Boe/d
  - Lat Length: 7,426’

- **Diamondback - Spraberry**
  - ST W 702LS
  - 30-Day IP: 1,289 Boe/d
  - Lat Length: 7,291’

- **Parsley - Middle Spraberry**
  - Texas Ten Y #17H
  - 30-Day IP: 1,650 Boe/d
  - Lat Length: 7,500’

- **Parsley – Wolfcamp B**
  - Shauna 9-16B-4415H
  - Day IP: 1,498 Boe/d
  - Lat Length: 7,163’

- **AEP – Wolfcamp A**
  - Loftin Hughes 13-1212 1H
  - IP: 1,549 Boe/d (82% oil)
  - Lat Length: 5,123’

- **Parsley – Wolfcamp B**
  - Char-Hughes 2H
  - IP24: 1,107 Boe/d
  - Lat Length: 7,500’

- **EP Energy – Wolfcamp B**
  - University E 43-17-AH
  - IP: 1,560 Boe/d
  - Lat Length: 7,168’

---

1. Source: DrillingInfo.
2. Normalized.
Clear Indication of Completion Progress in Midland Basin

Key Points

- Key learnings with respect to Midland Basin completion practices were established in the southern portion of the basin, where lower pressures and higher GOR’s drove operators to enhance completions in horizontals.
- Some operators were early adopters.
- Early practices (“Gen 0”) were erratic, but had very low proppant concentrations.
- Gen 1 completions used proppant concentrations of <1,100 lb/ft:
  - Generally utilized 800 – 1,100 lb/ft proppant concentrations, and wide stage/cluster spacing.
- Gen 2 completions utilized proppant concentrations from 1,100 to 1,600 lb/ft with two modes (~1,200 and ~1,600 lb/ft).
- Gen 3 completions generally had the lowest stage/cluster spacing (150 – 170’ stages / 35’ clusters) and utilized the highest proppant concentrations (>1,600 lb/ft).
- Completions in the northern parts of the basin generally utilized Gen 2 completions, and progressed from there.

Midland Basin Completions Chronology

Key Learnings Generally Adopted as Horizontal Activity Progressed to the North

Completions Evolution initiated in Southern Midland Basin

Key Learnings

**Generation 1 – SMB**
- Wide stage spacing (>240 ft / stage)
- Sliding sleeves or wide clusters
- Proppant concentrations (<1,100 lb/ft)
- Use of cross-linked fluids common
- Flow units not clearly understood

**Generation 2 – SMB**
- Some operators testing stage / cluster spacing
- Low proppant concentrations (1,100 – 1,600 lb/ft)
- Hybrid jobs more common
- Early in understanding of optimum landing zones

**Generation 3 – SMB**
- Reduced cluster spacing (~150 – 185 ft stages)
- High proppant concentrations (>1,600 lb/ft)
- Some operators using thin fluid / slickwater fracs
- More attention to LZ / geo-steering
- Selective use of additives (e.g., nano-surfactant)
Wolfcamp B: Proven Development Target

Key Points

- Wolfcamp B is a primary development horizon for Pioneer in the Sale Ranch area of southern Martin County.
- Thick section supports upper and lower targets.
- Wolfcamp B expands to the south creating potential for additional stacked and staggered targets.

**Wolfcamp B Gross Thickness**

**Wolfcamp B Net Thickness (GR>75 API, Res>15 Ohms)**
Key Points

- Gross thickness ranges from 200’ - 500’
- Net shale thickness ranges from 150’ - 350’
- Wellhead EUR of 1,351 MBoe
- Sales EUR of 1,478 MBoe

Wolfcamp B – Core Locator Map

Wolfcamp B Net Thickness – Core

<table>
<thead>
<tr>
<th>Wolfcamp B - Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Well PV-10 ($MM)</td>
</tr>
<tr>
<td>$13.1(1)</td>
</tr>
<tr>
<td>Single Well IRR (%)</td>
</tr>
<tr>
<td>131%(1)</td>
</tr>
<tr>
<td>Total Type Curve Wells (#)</td>
</tr>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

(1) NYMEX pricing as of 11/8/2016, with 3-year forward averages of $49.73 / Bbl and $2.92 / MMBtu.
Wolfcamp B – Core Type Curve

Type Curve Parameters

- 30 analog wellbores normalized to 7,500’ lateral lengths
- Peak 24-Hour IP: 1,814 Boe/d

<table>
<thead>
<tr>
<th>Stream</th>
<th>30-Day IP</th>
<th>30-Day IP</th>
<th>24-Hr IP</th>
<th>Di</th>
<th>Df</th>
<th>b-factor</th>
<th>GOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (Bbl)</td>
<td>38,945</td>
<td>1,280</td>
<td>1,560</td>
<td>79</td>
<td>6.0</td>
<td>1.45</td>
<td>1.0 - 2.1</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>37,987</td>
<td>1,249</td>
<td>1,522</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GOR Profile

- GOR (MCF/Bbl) vs. Model

EUR (MBbl) table:

- Version 1.0
  - Oil: 1,015
  - Gas: 86
  - b-factor: 1.3
  - Prop-Ft: 1,009
  - Bin Range: 850-1,200
  - EUR (MBo): 454
  - EUR (MMcf): 852
  - Well Count: 11

- Version 2 & 3.0
  - Oil: 1,620
  - Gas: 79
  - b-factor: 1.45
  - Prop-Ft: 1,400-1,700
  - Bin Range: 1,000-1,200
  - EUR (MBo): 1,025
  - EUR (MMcf): 1,954
  - Well Count: 100+

Oil, Bbl/Mo vs. Months

- Exponential

EUR (MMcf) table:

- Version 1.0
  - Oil: 454
  - Gas: 852

- Version 2 & 3.0
  - Oil: 1,025
  - Gas: 1,955

Well Count vs. Months

- 0 to 100

EUR (MBoe) table:

- Version 1.0
  - Oil: 1,351

- Version 2 & 3.0
  - Oil: 1,351

Exponential:

- Oil: 76%
- Years: 11.0

EUR (Bcfe) table:

- Version 1.0
  - Oil: 8.1

- Version 2 & 3.0
  - Oil: 8.1

Well Count vs. EUR (MBoe)

- 0 to 100

EUR (MMcf) vs. EUR (MBbl)

- 0 to 100

EUR (MMcf) vs. Well Count

- 0 to 100

EUR (MBoe) vs. Well Count

- 0 to 100
Lower Spraberry Shale: A Proven Development Target

Key Points
- Lower Spraberry is a primary development horizon for the western portion of the Midland Basin, with expansion into the central and eastern basin
- Thick section supports upper and lower targets
- Lower well count reflective of acreage holding requirements rather than lesser economics and deliverability

Lower Spraberry Shale Gross Thickness

Lower Spraberry Shale Net Thickness (GR>75 API, Res>15 Ohms)
Key Points

- Gross thickness ranges from 300’ - 450’
- Net shale thickness ranges from 100’ - 260’
- Wellhead EUR of 1,175 MBoe
- Sales EUR of 1,254 MBoe

Lower Spraberry Shale Net Thickness

<table>
<thead>
<tr>
<th>Lower Spraberry – West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Well PV-10 ($MM)</td>
</tr>
<tr>
<td>Single Well IRR (%)</td>
</tr>
<tr>
<td>Total Type Curve Wells (#)</td>
</tr>
</tbody>
</table>

(1) NYMEX pricing as of 11/8/2016, with 3-year forward averages of $49.73 / Bbl and $2.92 / MMBtu.
**Type Curve Parameters**

- 26 analog wellbores normalized to 7,500' lateral lengths
- Peak 24-Hour IP: 1,836 Boe/d

---

### Table: Crude Oil Performance

<table>
<thead>
<tr>
<th>Unit</th>
<th>30-Day IP Per Month</th>
<th>30-Day IP Per Day</th>
<th>24-Hr IP Per Day</th>
<th>Di</th>
<th>Df</th>
<th>b-factor</th>
<th>GOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (Bbl)</td>
<td>37,132</td>
<td>1,221</td>
<td>1,600</td>
<td>82</td>
<td>6.0</td>
<td>1.60</td>
<td>0.9 - 1.4</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>32,824</td>
<td>1,079</td>
<td>1,414</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### GOR Profile

- **GOR (MCF/Bbl)**
- **Model**

---

### EUR Calculation

- **EUR (MBoe)**: 723
- **EUR (MMcf)**: 1,237

---

### Well Count

- 15 wells

---

### EUR (MBbl) vs. Exponential

- **EUR (MBbl)**: 971
- **EUR (MMcf)**: 1,224

---

### Oil and Gas Performance

- **Oil (Bbl)**: 37,132
- **Gas (Mcf)**: 32,824
- **Di**: 82%
- **Df**: 6.0%
- **b-factor**: 1.60
- **GOR**: 0.9 - 1.4

---

### Current versus Optimized Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current</th>
<th>Optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qi</td>
<td>875</td>
<td>1,600</td>
</tr>
<tr>
<td>Di</td>
<td>75</td>
<td>82</td>
</tr>
<tr>
<td>Df</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>b-factor</td>
<td>1.55</td>
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- **Well Count**: 15

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- Gross thickness ranges from 300' - 450'
- Net shale thickness ranges from 100' - 260'
- Wellhead EUR of 1,006 MBoe
- Sales EUR of 1,073 MBoe

<table>
<thead>
<tr>
<th>Lower Spraberry – East (North)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Well PV-10 ($MM)</td>
</tr>
<tr>
<td>Single Well IRR (%)</td>
</tr>
<tr>
<td>Total Type Curve Wells (#)</td>
</tr>
</tbody>
</table>

\textsuperscript{(1)} NYMEX pricing as of 11/8/2016, with 3-year forward averages of $49.73 / Bbl and $2.92 / MMBtu.
Lower Spraberry – East (North)

Type Curve Parameters
- 9 analog wellbores normalized to 7,500' lateral lengths
- Peak 24-Hour IP: 1,061 Boe/d
- Falkor is example of current best practice
  - 1,800+ lbs/ft proppant
  - 40+ stages
  - Nanosurfactant
  - Optimal landing zone

<table>
<thead>
<tr>
<th>Stream</th>
<th>30-Day IP</th>
<th>30-Day IP</th>
<th>24-Hr IP</th>
<th>Di</th>
<th>Df</th>
<th>b-factor</th>
<th>GOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>Per Month</td>
<td>Per Day</td>
<td>Per Day</td>
<td>%</td>
<td>%</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>Oil (Bbl)</td>
<td>25,183</td>
<td>828</td>
<td>956</td>
<td>73</td>
<td>6.0</td>
<td>1.50</td>
<td>0.7</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>16,518</td>
<td>543</td>
<td>627</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GOR Profile
- GOR (MCF/Bbl) Model

GOR Profile Chart

EUR Crude Oil Wellhead Gas Wellhead Total Wellhead Total Oil Exponential
- Unit MBbl MMcf MBoe Bcfe % Years
- 835 1,029 1,006 6.0 83% 10.6
Cross Bar Ranch – Lower Spraberry Increased Density Plot
RSP Permian

Key Points

- RSP’s 500’ spacing test at Cross Bar Ranch has performed above expectations despite relatively less oil in place vs. other RSP core acreage
- Original 3 wells of pattern completed during July 2015 with prior frac design; next 3 wells completed during August 2016 with latest vintage frac design
- Performance to date strongly supportive of high density frac design paired with downspacing
- Potential for second row of wells 50’ above the Dean

Cross Bar Ranch LS Performance

- 7,500’ LS Type Curve (~830MBoe)
- Original 3 Well Avg. (prior frac design)
- Next 3 Well Avg. (latest vintage frac design)
Midland Basin Well Spacing

Key Points

- AEP is developing a long lateral DSU with stacked and staggered targets in the Wolfcamp A, B, and C (also called Lower Wolfcamp B by others like Pioneer)
- Current drilling activity suggests full section development with similar spacing assumptions
- 125’ – 150’ spacing between vertical targets
Middle Spraberry: An Emerging Midland Basin Target

Key Points

- Middle Spraberry is shallower than the Lower Spraberry and possesses similar petrophysical attributes.
- Trend of early development (>50 wells) is along the western portion of the northern portion of the basin in Midland and Martin Counties.
- Early production is extremely encouraging and advances in completions will aid development expansion across the basin.

Middle Spraberry Gross Thickness

Middle Spraberry Net Thickness (GR>75 API, Res>15 Ohms)
Middle Spraberry: An Emerging Midland Basin Target

Key Points

- Typical target is in the organic rich mudstone on top of the Lower Spraberry siltstone in high GR and resistive section
- Operators such as QEP, Pioneer, RSP, OXY, and Diamondback have targeted the Middle Spraberry
Middle Spraberry Type Curve

Type Curve Parameters

- Type curve derived by fitting to the average oil production curve of 7 analog wellbores normalized to 7,500' lateral lengths
- Type curve EUR (50 year life): 873 MBoe
- Technical parameters:
  - 30-day IP: 612 Bo/d
  - Dinit: 54-65%
  - B-Factor: 1.40
  - Dfinal: 6%

<table>
<thead>
<tr>
<th>First Month</th>
<th>30-day IP (per day)</th>
<th>1st-day IP (per day)</th>
<th>Di (%)</th>
<th>Df (%)</th>
<th>b</th>
<th>IP30 GOR (Mcf/bbl)</th>
<th>IP30 BOEPD</th>
<th>IP30 %Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (Bbl)</td>
<td>18,621</td>
<td>612</td>
<td>670</td>
<td>65</td>
<td>6</td>
<td>1.40</td>
<td>0.9</td>
<td>699</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>15,833</td>
<td>521</td>
<td>550</td>
<td>54</td>
<td>6</td>
<td>1.40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- EUR Oil (Mbbl): 734.7
- EUR Wellhead Gas (Bcf): 0.832
- EUR Mboe (2-stream): 873
- EUR GOR (Mcf/bbl): 1.1
- EUR Bcfe (2-stream): 5.24
- Oil Exp Switch (Yrs): 11.2
- Gas Exp Switch (Yrs): 11.0
- EUR Time (Yrs): 50.0
Key Points

- Wolfcamp has been the primary target in Texas and Bone Spring has been the primary target in New Mexico.
- Completions advances in the Wolfcamp have been applied to Bone Spring in New Mexico with success.
- XY Sands are attractive emerging target with high rate production.

Anadarko

- EUR: 1,000+ MBoe
- Capex: <$5 MM - $5.8 MM

EOG Resources

- EUR: 950 – 1,550 MBoe
- Capex: $7.8 MM
- Currently testing 500’ spacing and additional targets in the Wolfcamp.

Matador

- EUR: 450 – 1,100 MBoe
- Capex: $4.5 - $6.5 MM

Formation | Targets
--- | ---
Wolfcamp | 7+
Bone Spring | 7+
Avalon | 2
Brushy Canyon | 1
Straw & Deeper | NA

Source: Publicly available information.
Operators are Improving Completions in the Wolfcamp

**Key Points**

- Most operators prefer slickwater (SW) and hybrid completion jobs over cross-linked gel completions in the Wolfcamp.
- Fracs have increased to over 3,200+ lbs/ft and well performance has improved accordingly.
- Additional optimization can include adjusting other parameters, such as:
  - Pump rate and proppant concentration (ppg)
  - Cluster spacing
  - Landing zone
  - Early time flowback management
  - Nanosurfactant additives
- Operators are now also experimenting with diverting agents to maximize frac initiation at all clusters.
- Matador has seen a 38% uplift in production from its first offset test with diversion and has completed 5 total wells in Loving County with diversion that have yielded positive diagnostic results.

**Frac Type Market Share**

<table>
<thead>
<tr>
<th>Year</th>
<th>Slickwater</th>
<th>Hybrid</th>
<th>Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>72%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>48%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>26%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>55%</td>
<td>36%</td>
<td>9%</td>
</tr>
<tr>
<td>2016</td>
<td>39%</td>
<td>47%</td>
<td>14%</td>
</tr>
</tbody>
</table>

**Average Proppant per Ft. vs. Date – Completion (Quarter)**

- Note: Production normalized to 5,000' lateral length.
- Gen 1: 2012
- Gen 2: Q1 2013
- Gen 3: Q2 2014
- Gen 4: Q3 2015

**Diverting Agent Case Study**

From Matador Investor Presentation, August 2016.

Select operators’ completions chronology (horizontal wells at least 2,000’ long since 1/2012).
Southern Delaware Basin Optimized Type Curve – Wolfcamp A Red Bull North

Key Points

- Completions optimization changes production dramatically
- Large proppant volumes are translating into outsized production
- Type curve parameters (7,500' lateral):
  - Wellhead EUR: 1,250 MBo (1,459 MBoe)
  - Initial rate (30-day): 1,203 Bbls/d / 1,021 Mcf/d
  - b Factor: 1.40 (oil) / 1.30 (gas)
  - Initial decline rate: 70% (oil) / 62% (gas)
  - Terminal decline rate: 6.0% (oil) / 6.0% (gas)

Locator Map

<table>
<thead>
<tr>
<th>Peak Month</th>
<th>30-day IP (per day)</th>
<th>1st-day IP (per day)</th>
<th>Di (%)</th>
<th>Df (%)</th>
<th>b</th>
<th>GOR (Mcf/Bbl)</th>
<th>Shrink</th>
<th>NGL (bbl/MMcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (bbl)</td>
<td>25,742</td>
<td>846</td>
<td>985</td>
<td>55</td>
<td>6.0</td>
<td>1.20</td>
<td>0.9 - 1.4</td>
<td>100%</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>21,420</td>
<td>704</td>
<td>820</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

![Graph showing oil and gas production over time with various wells and type curves.](image)

<table>
<thead>
<tr>
<th>EUR Gas (MMcf)</th>
<th>EUR Oil (Mbo)</th>
<th>EUR Sales Gas (Bcfs)</th>
<th>EUR NGL (Mbbl)</th>
<th>EUR Mboe</th>
<th>EUR Bcfe</th>
<th>Exponential Switch (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,664.5</td>
<td>1,299</td>
<td>1.665</td>
<td>0.0</td>
<td>1,576.5</td>
<td>9.46</td>
<td>12.8</td>
</tr>
</tbody>
</table>
**Upper Wolfcamp B Type Curve**

### Key Points
- Large proppant volumes and modern completions are translating into astounding production.
- Type curve parameters (7,500’ lateral):
  - Wellhead EUR: 1,819 MBbls (2,274 MBoe)
  - Initial rate (30-day): 1,603 Bbls/d
  - b Factor: 1.5
  - Initial decline rate: 69%
  - Terminal decline rate: 6%
  - GOR: 1.5 Mcf/Bbl

### Table

<table>
<thead>
<tr>
<th>Stream</th>
<th>30-Day IP</th>
<th>30-Day IP</th>
<th>24-HR IP</th>
<th>Di</th>
<th>Df</th>
<th>GOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit</td>
<td>Per Month</td>
<td>Per Day</td>
<td>Per Day</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Oil (Bbl)</td>
<td>48,743</td>
<td>1,603</td>
<td>1,800</td>
<td>69</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Gas (Mcf)</td>
<td>73,115</td>
<td>2,404</td>
<td>2,700</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Single Well IRR\(^{(1)}\)**

- Single Well: 76%
- Pad Well: 116%

\(^{(1)}\) Assumes NYMEX strip pricing as of October 31, 2016.

\(^{(2)}\) Assumes D+C Capex for 7,500’ lateral of $8.2 MM.
Type Well Statistics
- 31 wells selected for type curve
  - Avg IP-30: 688
  - Avg proppant: 1,246 lbs/ft
Key Points

- Completions learnings from the Wolfcamp are working in the Bone Spring
  - Wellhead EUR: 497 MBbls (778 MBoe)
  - Initial rate (30-day): 1,116 Bbls/d
  - b Factor: 1.10
  - Initial decline rate: 85%
  - Terminal decline rate: 6%
  - GOR: 1.4 – 3.9 Mcf/Bbl
  - Proppant: 1,246 # / linear-ft

Single Well IRR\(^{(1)}\)

- Assumptions:
  - Single well and pad well capex of $4.5 MM and $3.8 MM, respectively.

---

\(^{(1)}\) Assumes single well and pad well capex of $4.5 MM and $3.8 MM, respectively.
Key Points

- EOG down-spacing of ~600' in the State Galileo unit represents 8 wells / section in Lower 2nd Bone Spring sand landing zone
- Devon has several successful spacing Upper / Lower Landing zone tests in the 2nd Bone Spring sand
- EOG has tested Avalon spacing of 250’-270’ in the Sandbar Field – Excelsior 12 and State Mercury units
Delaware Basin Fluid Production

Key Points
- Basin is oilier in the deeper eastern portion of the basin and gassier in the shallow west
  - Combination of depth, pressure, rock quality, thickness / number of targets and hydrocarbon mix makes this one of the highest performing basins for resource plays
- Some uplifting of the basin during Laramide Orogeny created the divergence of depth and fluid type relationship
- Mantle thermal hot zones are associated with higher GOR in the west

Source: DrillingInfo.
Key Points

- Recent Wolfcamp A wells drilled in higher GOR regions of Reeves and Culberson have come on line with strong production
- EUR’s from TC analysis suggest total production 779 Mbo and 4.4 Bcf
Oil Trend Plot – Wolfcamp A
5,000’ Lateral Length

Key Points

Type Curve Parameters (5,000’ lateral):
- Oil EUR: 779 MBo
- B factor: 1.20
- Initial decline rate of 65%
- Terminal decline rate of 6.0%

<table>
<thead>
<tr>
<th>Well Name</th>
<th>EUR Oil (Mbo)</th>
<th>Exponential Switch (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice Fee 34 1H</td>
<td>779</td>
<td>13.1</td>
</tr>
<tr>
<td>Ava State 36 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ave Liles State 6 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Georgette State 2H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother Fee 2B 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pat Fee 4 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>William Fee 32 1H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Name</th>
<th>EUR Oil (Mbo)</th>
<th>Exponential Switch (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wells Average</td>
<td>779</td>
<td>13.1</td>
</tr>
<tr>
<td>All Wells Type Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alice Fee 34 1H</td>
<td>779</td>
<td>13.1</td>
</tr>
<tr>
<td>Ava State 36 1H</td>
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<td></td>
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<tr>
<td>Ave Liles State 6 1H</td>
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<tr>
<td>Georgette State 2H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother Fee 2B 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pat Fee 4 1H</td>
<td></td>
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</tr>
<tr>
<td>William Fee 32 1H</td>
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</table>

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<tr>
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<tr>
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<td>779</td>
<td>13.1</td>
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<tr>
<td>All Wells Type Curve</td>
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<td></td>
</tr>
<tr>
<td>Alice Fee 34 1H</td>
<td>779</td>
<td>13.1</td>
</tr>
<tr>
<td>Ava State 36 1H</td>
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<tr>
<td>Ave Liles State 6 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Georgette State 2H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother Fee 2B 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pat Fee 4 1H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>William Fee 32 1H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gas Trend Plot – Wolfcamp A
5,000’ Lateral Length

Key Points
Type Curve Parameters (5,000’ lateral):
- Gas EUR: 4,418 MMcf
- B factor: 1.30
- Initial decline rate of 65%
- Terminal decline rate of 6.0%

<table>
<thead>
<tr>
<th>Gas (Mcf)</th>
<th>Peak Month</th>
<th>30-day IP (per day)</th>
<th>1st-day IP (per day)</th>
<th>Di (%)</th>
<th>Df (%)</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>118,957</td>
<td>3,911</td>
<td>4,260</td>
<td>65</td>
<td>6.0</td>
<td>1.30</td>
<td></td>
</tr>
</tbody>
</table>

- Exponential Switch (Yrs): 12.1
- EUR Gas (Mmcf): 4,417.5

![Type Curve Graph]

- Well Count Gas, Mcf/Mo
- Months
- EUR Gas (Mmcf) 4,417.5
- Exponential Switch (Yrs) 12.1
XY Sands: An Emerging Delaware Basin Target

Key Points
- Turbidite reservoirs of the XY Sands of the Upper Wolfcamp A have produced some of the highest rate oil wells in the Permian Basin
- Operators such as EOG, Concho, and Matador have targeted the reservoirs, primarily in New Mexico
- Completions advancements continue to show better results

XY Sand Gross Thickness

XY Sand Net Thickness (6% DPHI)
Key Points

- Low resistivity and low GR lobes of the Upper Wolfcamp A are diagnostic of the XY Sands
- These reservoirs have exceptionally good porosity upwards of 10%+
Wolfcamp A-X/Y Sand Locator Map – Red Hills East

Type Well Statistics

- 8 wells selected for type curve
  - Avg IP-30: 1,426 Boe/d
  - Avg proppant: 1,632 lbs/ft

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Operator</th>
<th>LL (ft)</th>
<th>Prop. (lbs/ft)</th>
<th>IP-30 (Boe/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Bear 36 State 701H</td>
<td>EOG</td>
<td>4,616</td>
<td>1,510</td>
<td>1,925</td>
</tr>
<tr>
<td>Brown Bear 36 State 702H</td>
<td>EOG</td>
<td>4,585</td>
<td>1,613</td>
<td>1,420</td>
</tr>
<tr>
<td>Brown Bear 36 State 703H</td>
<td>EOG</td>
<td>4,583</td>
<td>1,633</td>
<td>1,519</td>
</tr>
<tr>
<td>Ruby 2 State Com 701H</td>
<td>EOG</td>
<td>4,720</td>
<td>1,535</td>
<td>959</td>
</tr>
<tr>
<td>Stove Pipe Federal Com 2H</td>
<td>Concho</td>
<td>6,805</td>
<td>1,979</td>
<td>2,261</td>
</tr>
<tr>
<td>Telecaster Bass 36 State 4H</td>
<td>Endurance</td>
<td>3,968</td>
<td>1,269</td>
<td>392</td>
</tr>
<tr>
<td>Viking Helmet Federal Com 3H</td>
<td>Concho</td>
<td>6,973</td>
<td>1,986</td>
<td>1,880</td>
</tr>
<tr>
<td>Wheatfield 16 State 701H</td>
<td>EOG</td>
<td>4,450</td>
<td>1,529</td>
<td>1,054</td>
</tr>
</tbody>
</table>
Key Points

- Type curve parameters (5,000’ lateral):
  - Wellhead EUR: 871 MBbls (1,096 MBoe)
  - Initial rate (30-day): 1,181 Bbls/d
  - b Factor: 1.60
  - Initial decline rate: 84%
  - Terminal decline rate: 6%
  - GOR: 1.3 - 1.6 Mcf/Bbl
  - Proppant: 1,632 # / linear-ft

Single Well IRR

- 71% Single Well
- 80% Pad Well

(1) Assumes single well and pad well capex of $6.7 MM and $6.3 MM, respectively.
Offset Upper Wolfcamp A Development Well Spacing

Key Points

- EOG has tested downspacing of 420'-455' targeting the Upper A shale in their Excelsior lease
- Matador has drilled several spacing tests (<660') with staggered X/Y sand landing zones
- Matador microseismic tests in Barnett 90-TTT-B01 wells indicate that well spacing of 660' between X/Y targets can be achieved without material microseismic events in the adjacent drilling unit
**Key Points**

- 50 wells / section translates to $350 MM / section in development capex for primary development
- Potential for additional 30 development wells with spacing tests
- Reduced need for large acreage footprint, rather, small footprint in core areas can turn large capex investment into best in class returns

**Spacing Schematic – Full 640 Acre Development**

Delaware / Brushy Canyon

- Avalon
- 1\textsuperscript{st} Bone Spring
- 2\textsuperscript{nd} Bone Spring
- 3\textsuperscript{rd} Bone Spring
- Wolfcamp A
- Upper Wolfcamp B
- Lower Wolfcamp B (Upside)

1 mile

Derisked
Upside

**Delaware Basin Generic Development Spacing Schematic**