BP Alaska Wells

2016 AADE Operators Forum

1. Safety
2. 2015 Review
3. Refreshed expectations for DE’s?
2015 Alaska Wells Safety

- 0 Fatalities
- People Hurt
- First Aid Injuries
- Near Misses
- Observations

- Well Plan
- Fluid Hydrostatic
- Well Monitoring
- Undesired Event
  - Well Control Event
- Crew Training
- Well Control Equipment
- Prevention Barriers
- Mitigation Barriers
- Loss of Well Control
Global Wells Organization Safety Plan

Our Safety Priorities

- **Well Control** – We will never lose control of hydrocarbons.
- **Contractor Accountability** – Contractors rigorously apply their safety management system
- **BP Leadership** – Commitment to this safety agenda

Contractor self-verification and BP oversight will be applied to these focus areas:

1. Dropped Objects
2. Shift Handover
3. Fluid Management
4. Procedural Discipline
## 2015 GPB Numbers

<table>
<thead>
<tr>
<th></th>
<th>Plan</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>280 mboed</td>
<td>281 mboed</td>
</tr>
<tr>
<td>Wells cash (gross)</td>
<td>368</td>
<td>349</td>
</tr>
<tr>
<td>Wells Capex (gross)</td>
<td>491</td>
<td>507</td>
</tr>
<tr>
<td>Number of wells</td>
<td>59</td>
<td>65</td>
</tr>
<tr>
<td>Rate adding wellwork jobs</td>
<td>450</td>
<td>480</td>
</tr>
<tr>
<td>NPT rigs</td>
<td>19%</td>
<td>17%</td>
</tr>
<tr>
<td>NPT non-rig</td>
<td>Track</td>
<td>23%</td>
</tr>
</tbody>
</table>
Fractured Carbonate History and 2015 Approach

- **Field discovered in 1968 and delineated in the 1980’s**
  - Fractured carbonate reservoir
  - Did not meet reserves nor rate predictions
  - Challenging drilling with slow ROP and high loss rates in zone

- **Field developed in the 80’s and 90’s**
  - Small CTD campaign in 2006
  - Pilot injector in 2011
2015 Approach

• Long, horizontal wells in reservoir
  – Targeting natural fractures
• Bit and BHA redesign to increase ROP from previous campaigns
  – Reduce drilling time and cost
• Post-well acid and frac stimulation treatments through sliding sleeves
2015 Program Summary

Results

- ROP increased 23% over most recent well with increased bit life (fewer trips)
- Wells drilled and completed 7.6% ahead in days and 10% ahead of cost
- Combination frac and acid stimulation through frac sleeves
  - Acid treatments targeting high permeability zones
  - Prop frac treatments on poorer productivity zones
    - ~35k lbs proppant placed in each stage
- 2015 3-well program outperforming forecast

Future

- Sidetrack opportunities to eliminate surface hole and reduce well tie-in costs
- Redesigned stimulation program to reduce cost and downtime associated with screenouts and acid stim flexibility
- Options to optimize well design
Oil price environment
Lower for longer, but not lower forever

2016 Refreshed Drilling Engineer Expectations

Engineering solutions using existing proven technology
- Utilizing coil frac sleeves in lieu of ball-drop
- Bi-center bits

Optimize design to reduce cost per well
- Design contingency to mitigate the risk while reducing the number of casing strings
- Ensure right quantity of products is being used during fracturing
- Reduce liner top packer failure rate (CTD)
- Right scope wells

Continuous Improvement
- Target improved wellwork efficiency per job
- Reduce POP time by utilizing post-rig perforating opportunities
- Cost controls and contractor performance management

Relentless focus on safety and reliability