Optimizing Engineer Workflow for Appraisal Drilling Environment

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Agenda Overview

• Situational Overview
  – Strategy shift due to changing environment from 2015 to 2016

• Planning: Breaking Down Work Silos in Well Planning

• Execution: KPI Changes and Focus of Resources

• Closing: Capturing Lessons Learned for Future Development
Situational Overview
Situation Overview

Area of Interest

Devon Other Core Areas

Heavy Oil

Rockies Oil

Anadarko Basin

Permian Basin

Barnett Shale

Eagle Ford
2015 Program Overview
Strategy: Development

Development Drilling Goal:
1. Drill Wells Fast and Faster
2. Drill wells Cheap and Cheaper

**Meramec 2015 Roll-Up**

<table>
<thead>
<tr>
<th>Well Count</th>
<th>SPUD-TD</th>
<th>SPUD-RR</th>
<th>FE Thru RR</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>17.15</td>
<td>20.90</td>
<td>$2,644,740</td>
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**Woodford 2015 Roll-Up**

<table>
<thead>
<tr>
<th>Well Count</th>
<th>SPUD-TD</th>
<th>SPUD-RR</th>
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<tr>
<td>64</td>
<td>23.61</td>
<td>27.41</td>
<td>$3,331,716</td>
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Key Terrain
- Calumet
- Geary
- Watonga
- Kingfisher
2015 Development Environment

Development Keys to Success:

• Disciplined Project Management Approach to Operational Continuous Process Improvement

• Trials and pilots easy to manage due to pad drilling

• Successful operations and Lessons Learned can be immediately applied to next well

• Well after well a greater understanding of the Geology to get to the Reservoir and the Reservoir itself
2016 Program Dramatic Shift

• Continued depressed commodity price with hedging running out.

• Reduction in Rigs, Staff and Capital

<table>
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<tr>
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<th>Rigs</th>
<th>Staff</th>
<th>Capital</th>
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<tbody>
<tr>
<td>2015</td>
<td>5</td>
<td>20</td>
<td>~600 Million</td>
</tr>
<tr>
<td>2016</td>
<td>2 Low / 5 end of year</td>
<td>13</td>
<td>~325 Million</td>
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• Great Opportunity with ~2Billion Dollar Acquisition of Felix Energy STACK acreage!
2016 Program Overview
Strategy: Appraisal

Appraisal Drilling Challenges:
1. One well per section on 35 different sections
2. Supporting Technical Team to Characterize Reservoir
3. Reservoir and Geology Complexity Across the Field

Goals Focus:
1. Technical Planning on every well due to unique well construction parameters
2. Successfully complete science
3. Capital Discipline

Key Terrain
- Calumet
- Geary
- Watonga
- Kingfisher
Planning: Breaking Down the Work Silos
Natural Work Silos

- Geology & Geophysics
- Reservoir
- Production
- Drilling

Integrated Planning
2016 Program Overview
Technical Internal Review

Natural Work Silos

Integrated Team Development

Technical Review

Dedicated Collaborative Technical Review With Entire Team to Management
Key Takeaways:

• Technical Internal Review Process Led by Integrated Planner (Drilling Engineer)

• Ongoing – Each well in the appraisal phase will have a Technical Review

• Collaborative – Capture expertise of the group to ensure best design

• Team members are assigned to a specific well giving sense of ownership of well design to all Stakeholders

• Facilitates integrated, long-term planning for the wells life-cycle

• **Result:** 35 well program only 2 unplanned 1 Million dollar events, met success on all science after first well.
Execution: KPI Development & Resource Loading
2016 Program Overview
Strategy: Appraisal – We have to work differently!

- Goal Visualization

Focusing Resources:

1. Ensure we are planning the Well (technical Review) and Communicating the Plan to the Field (On-site Pre-Spud)
2. Identify Science that is needed and track success
3. Capital Discipline – With reduction in capital, ensure we are planning and tracking drilling cost accurately
4. Avoid unplanned Million Dollar Events - track and learn from experience
5. Close out the well construction after RR

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<th>Well I.D.</th>
<th>Planning</th>
<th>Execution</th>
<th>Project Close-Out</th>
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<tr>
<td>#</td>
<td>WellName</td>
<td>Target &amp; Casing Design</td>
<td>Spud - RR</td>
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<tr>
<td>-----------</td>
<td>----------</td>
<td>------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>OLD RICKY'S RIDGE 31_30-14N-7W 1HX</td>
<td>Woodford B 3 String</td>
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<td>5</td>
<td>Simba 12 14N-8W 1H</td>
<td>Meramec 200 2 String</td>
<td>16.71</td>
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Closing Out the Well:
Capturing Lessons Learned for Future Development
Lessons Learned For Future Development

• Capturing Lessons Learned….

Challenges:
  1. **What** do I need to write down to ensure we are set up for success when we come back to develop section.

  2. **How** will it be stored in the best usable format.

Solutions:

  1. What – Focused on details to ensure efficiency gains are not lost with time.

  2. How:
     • Lessons Learned briefed during DVD curve with group.
     • Lessons Learned inputted into data architecture
       • Allows the information to be queryable
       • Information is not lost with staff changes/time
2016 Program Overview
Lessons Learned Win

- 2 Different Rig Teams
- 9 months apart

Kudron took opportunities and risks learned from the Champagne in order to decrease days spud to rig release by 3 days.
Conclusion

- Integrated Planning allowed for optimized well plan resulting in limited issues drilling appraisal wells

- KPI shift from faster and cheaper to planning, science, capital discipline, and preparation for future development

- Lessons Learned are nested in the Data Architecture and focus on gained efficiencies for development
Thank you.