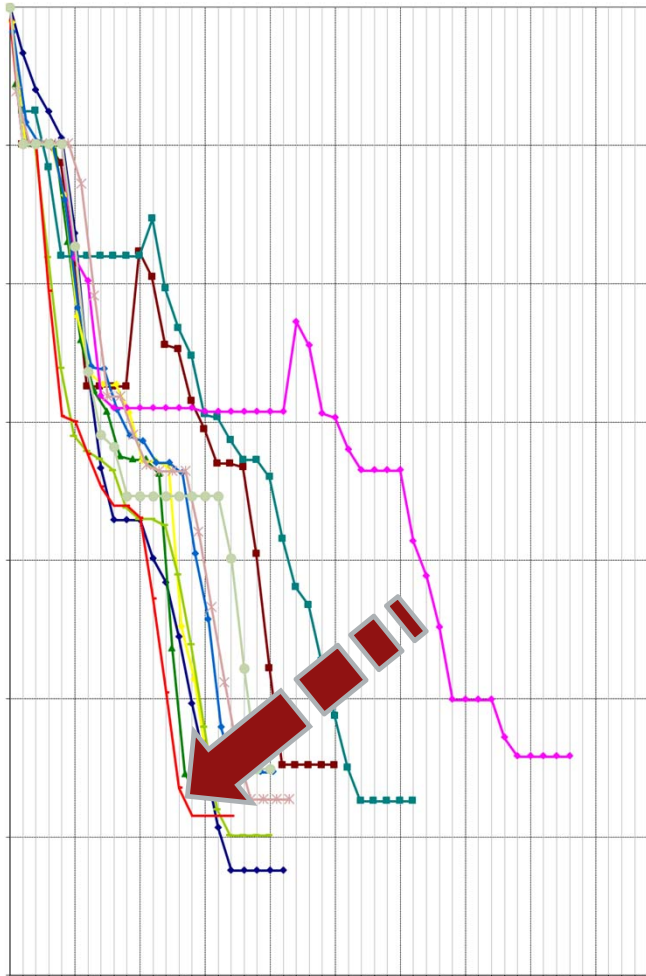


Accelerating the Drilling Curve



Beyond Writing a Program

February 19, 2013

Johnathan Ashcraft, PE

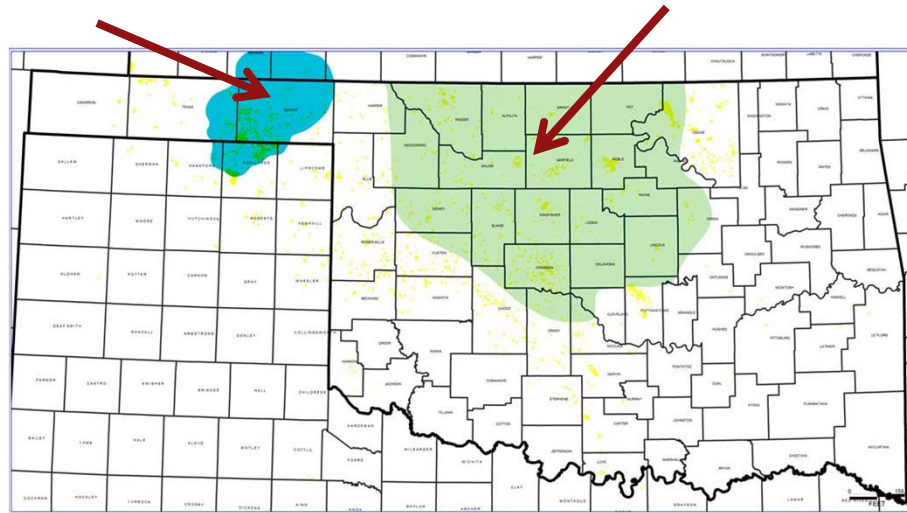
Accelerating the Drilling Curve Chaparral Overview



- **Core Operating Area — NOMP, Marmaton, and EOR**
- **Stable IP base with large upside – 727 MMBoe, R/P – 16 years**
- **Oil focused:**
 - (71% oil; 29% gas) – 2012 SEC Reserves
 - (65% oil; 35% gas) – 2013 Production Estimate
- **Key Growth Drivers**
 - **Near Term – Drilling Repeatable Resource Plays (~ 320,000 net acres; 3,450 unrisks gross locations)**
 - **Long Term – CO2 Enhanced Oil Recovery**

Marmaton

NOMP



Accelerating the Drilling Curve

2012- Constant Catch-Up



- ◆ 2012- Always Behind
 - + Unsubstantiated “advice” being given by other departments
 - + “Revolving door” of personnel
 - + No knowledge capture in place
 - + Inconsistent Rig and Well Inventories
 - + Lack of Toolkits/Software

Next wells were often unknown until rig release

Drilling programs were often delivered after spud

Lack of Process

No time for training



Accelerating the Drilling Curve

2013- More Than The Prog



- ◆ 2013- Improvements
 - Engineering Software
 - WellView Software
 - Landmark Software Suite
 - Knowledge Capture
 - Well Reviews After Rig Release
 - Root Cause Analysis Exercises
 - Drill-Well-On-Paper Exercises
 - Cost Codes
 - Investment in Personnel
 - Training
 - Field Rotation
 - Retainers
 - Company Process for Well Selection
 - Company goal to get 3 ready-to-drill locations ahead of each rig



Accelerating the Drilling Curve

2013- Software Toolkits

WellView

- Increased data capture
- Linked well data
- Validated well data



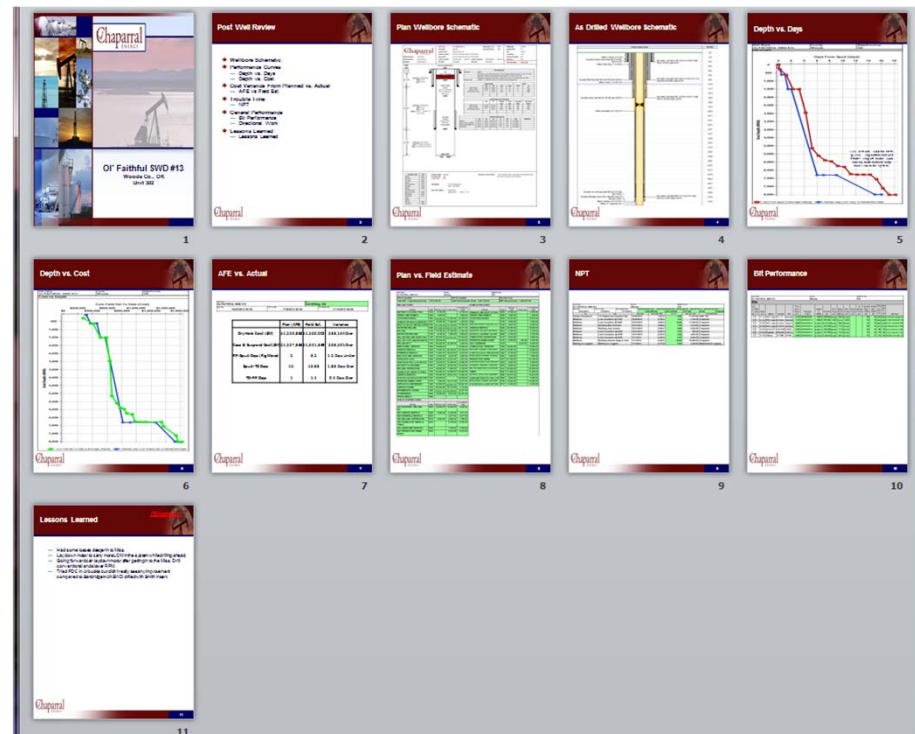
Accelerating the Drilling Curve

2013- Knowledge Capture Projects



Post Well Reviews

- Institutionalized best practices & lessons learned.
- Has all the data been scrubbed?
- What can we improve for next time?
- How well did we AFE?
- How did we do?



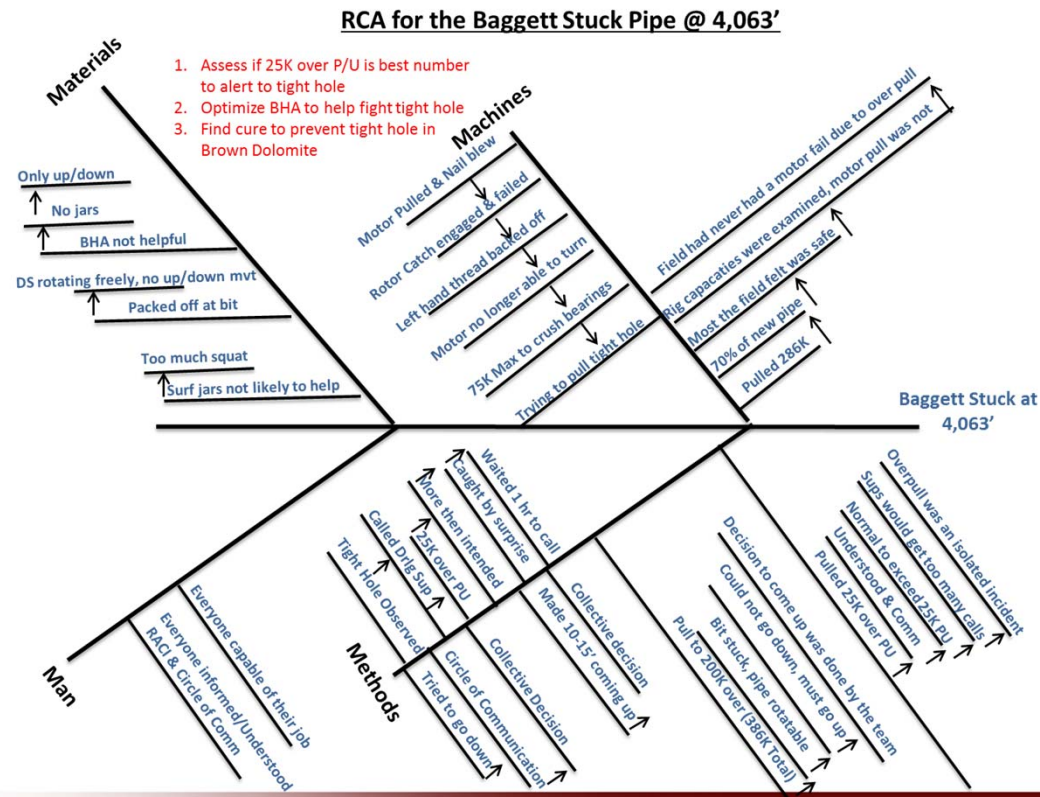
Accelerating the Drilling Curve

2013- Knowledge Capture Projects



RCA's

- Institutionalize best practices & lessons learned.
- What was the root cause?
- What are we going to do to improve?



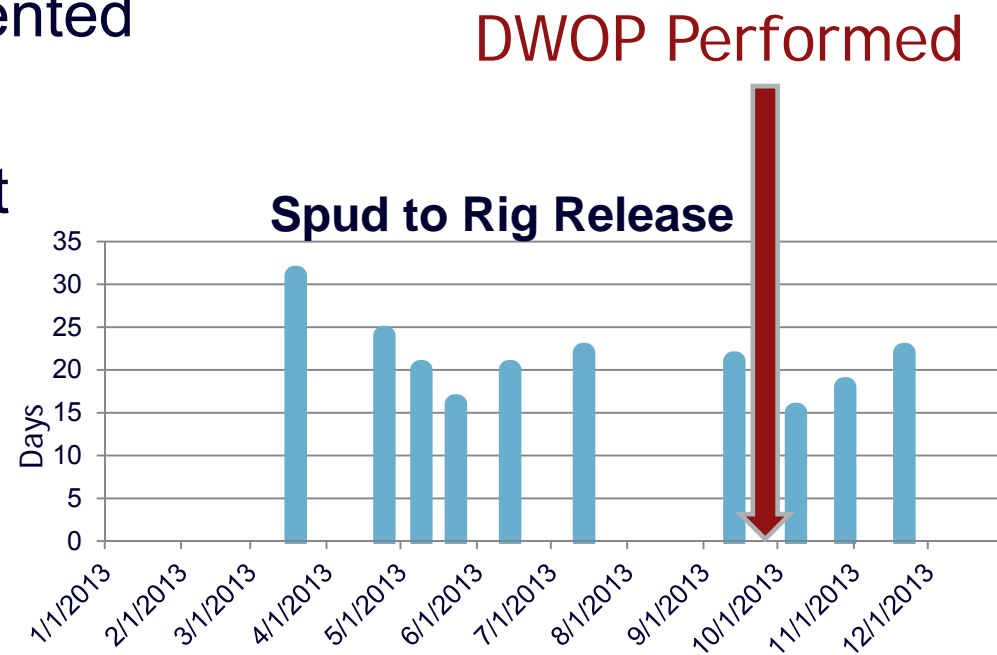
Accelerating the Drilling Curve

2013- Knowledge Capture Projects



Patterson 421 DWOP

- Breakout sessions and discussions contained to each hole section
- Vendor, rig, field, and office personnel contributed
- 35 suggestions
- 25 suggestions implemented
- Immediate Improvement on the next well!



Accelerating the Drilling Curve

2013- Knowledge Capture Projects

Lean Project- Cost Code Revision

- ◆ Accurately assigning of costs was difficult
 - Created accounting rework, cost duplication, or unintentionally unspent development funds.
 - Vague cost descriptions created confusion and inconsistency in budgeting, cost recording, and invoicing

Performed a Lean Project- DMAIC



Accelerating the Drilling Curve

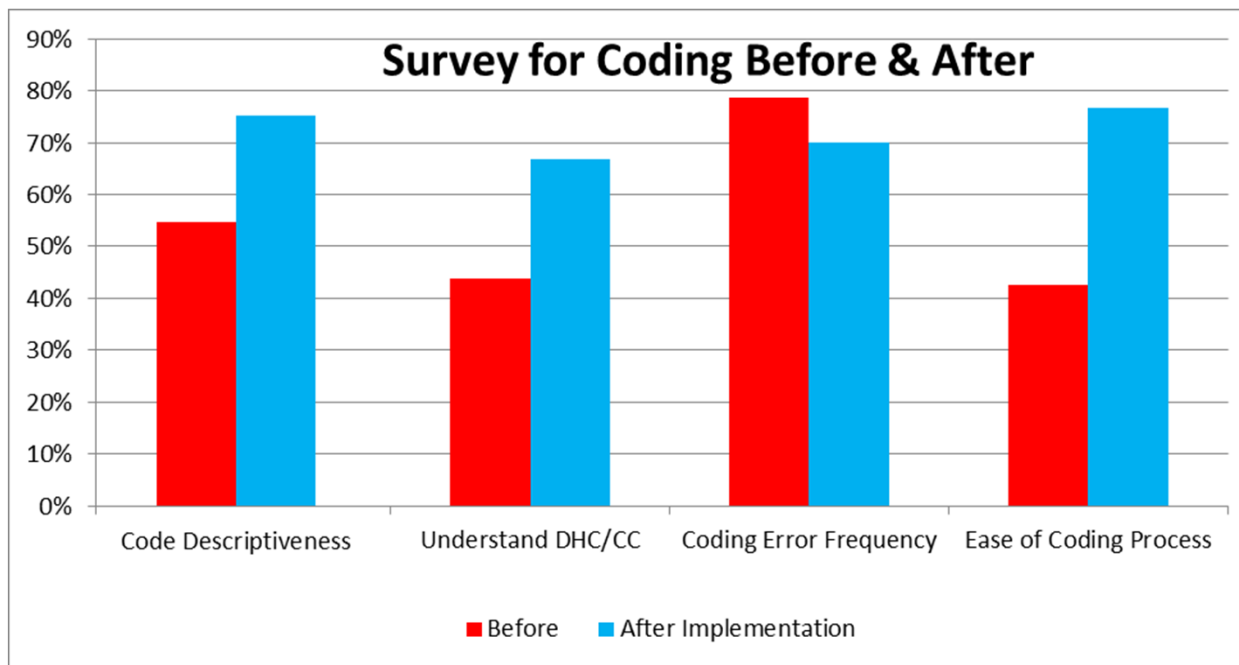
2013- Knowledge Capture Projects



Beneficially improved cost management

Freed up estimated 547 wellsite consultant hours

Freed up estimated 104 office hours



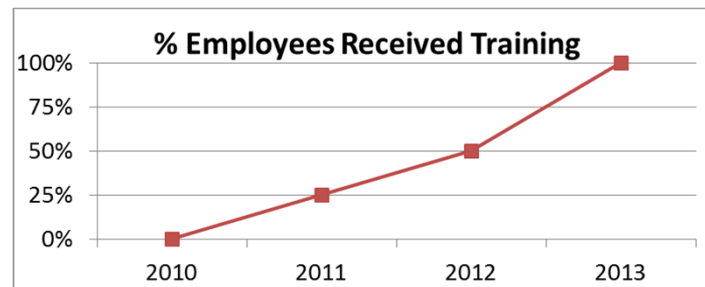
Accelerating the Drilling Curve

2013- Investment in Personnel



- Training

- ◆ 2013: Murchison, Well Design I & II, Directional Drilling, Project Management, Lean Six Sigma, Petroleum Engineering, WellView, Well Control, Database Admin



- Field Rotation

- ◆ Engineer kept in the field at all times

- Retainers

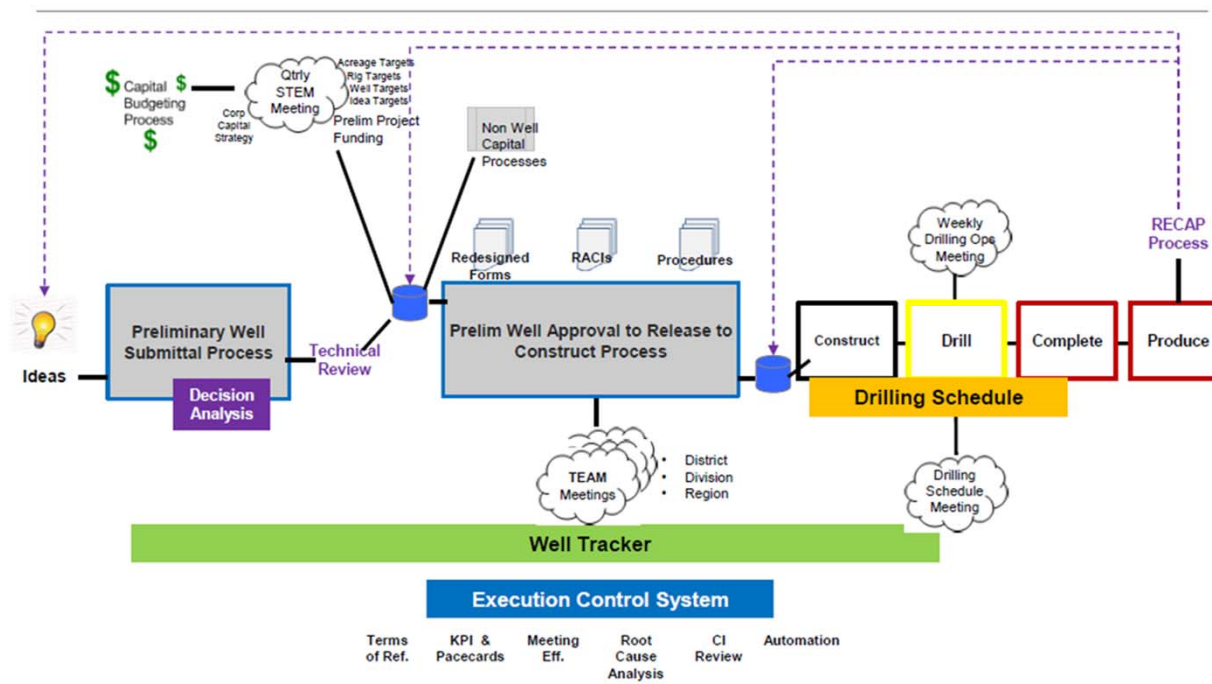
- ◆ Shut down the revolving door
- ◆ Retain key people that learned the expensive lessons
- ◆ Gain more respect and loyalty of key personnel
- ◆ Instituted Rig of the Quarter, recognize performance

Accelerating the Drilling Curve

2013- Company Well Selection

- Company wide effort to create a process for E&P
- Well selection process devised for repeatable high success well selection.
- Goal of 3 ready-to-drill locations ahead of each rig at all times.

P2P Simplified Integration Model



Accelerating the Drilling Curve

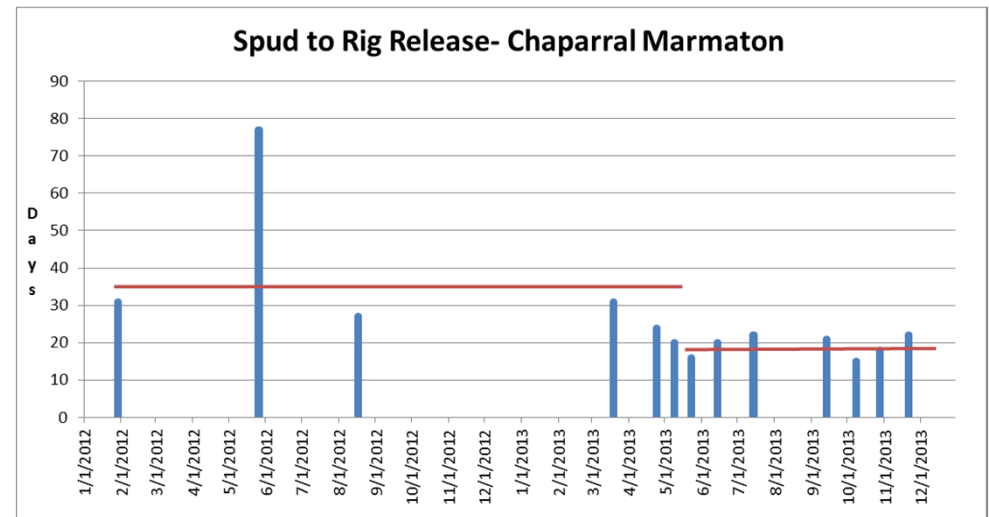
2013- More Than The Prog



- ◆ Improvements
 - Engineering Software
 - Knowledge Capture
 - Investment in Personnel
 - Company Process for Well Selection

Average Marmaton well fell from
34 to 19 days spud-Rig Release

Capital Efficiency increased 400%
from 2012 to 2013



Accelerating the Drilling Curve

2013- More Than The Prog



- ◆ Improvements
 - Engineering Software
 - Knowledge Capture
 - Investment in Personnel
 - Company Process for Well Selection

Average Marmaton well fell from
34 to 19 days spud-Rig Release

Capital Efficiency increased 400%
from 2012 to 2013

Questions?

