



Session IV: Well Placement and Construction “Drilling or Well Building?”

SPE Forum February 14th 2012

Brandon Foster

K&M Technology Group

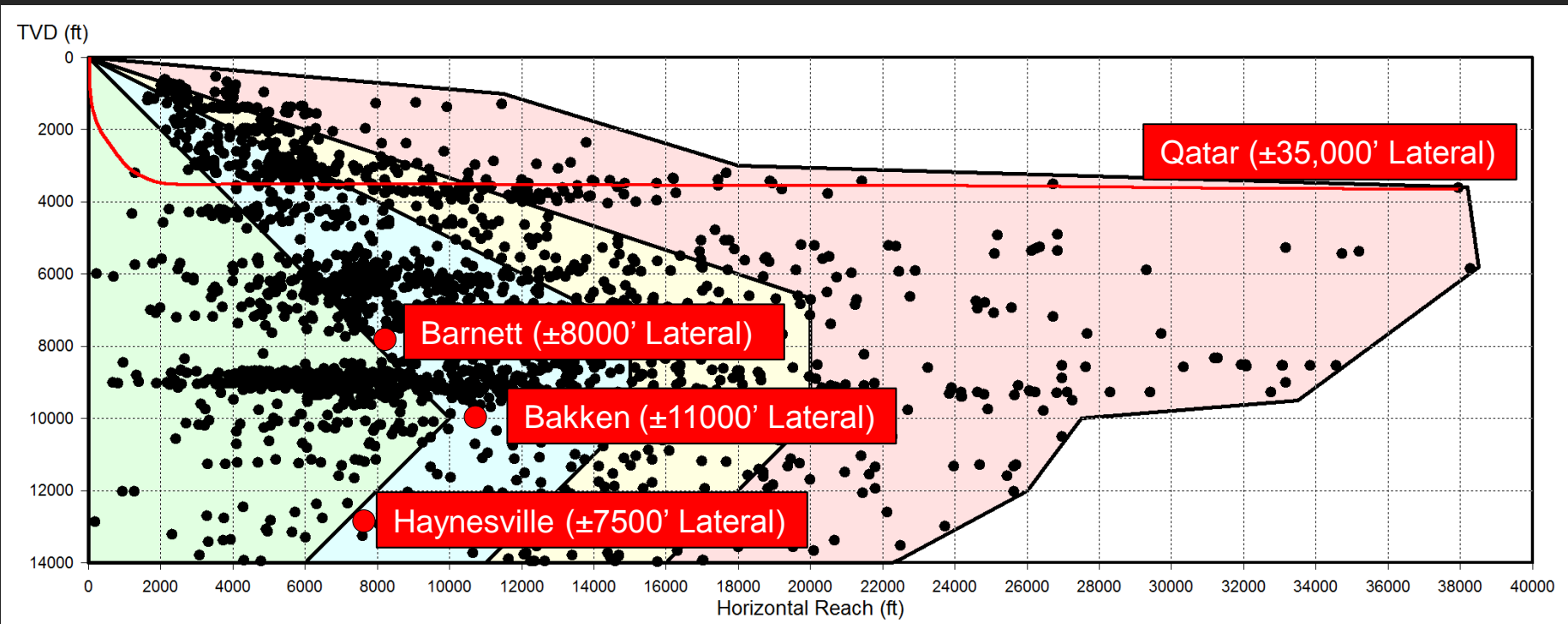
Drilling or Well Building?

“To extract maximum value tomorrow, we need to build better wells than we currently do today.”

Challenges have Technical and Non-Technical aspects:

- Minimizing Footprint (fewer surface locations)
- Efficiency (higher ROP, lower flat time, lower NPT)
- Well Integrity / Quality (fewer train wrecks)
- Alignment (behavior is driven by incentives)
- Competence (“Houston, we have a problem...”)

Minimizing Footprint



- Extending lateral length could be a game changer
 - Environmental Impact
 - PR Implications
 - Cost/BBL (lots of surface locations are a nuisance)

Minimizing Footprint

In 2012, we drill wells we can't complete (properly):

- Installation

- Need to be able to rotate to overcome drag/buckling
- Open Hole packer systems don't like to be rotated
- Casing design must be fit for purpose

- Intervention

- Beyond a certain point coil tubing requires a tractor
- Jointed pipe has a multitude of benefits, but is slow and expensive
- We need completions that don't need to be intervened into

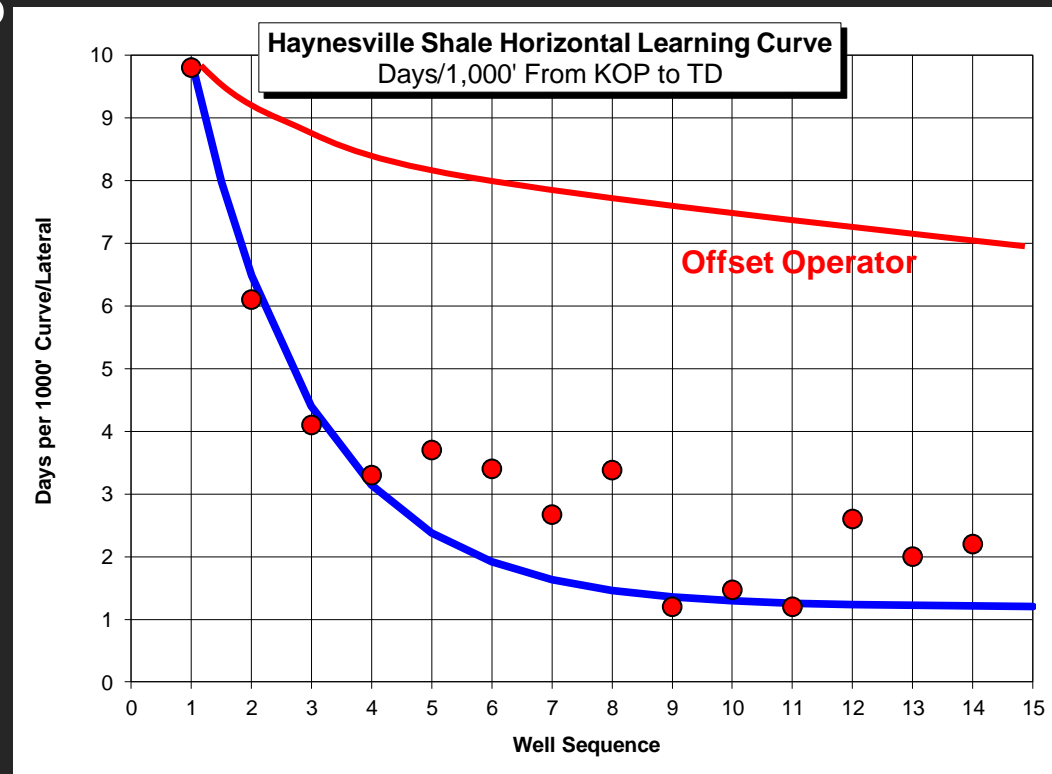
- Monitoring

- Accessories need to be rotatable too

How are we going to address this in the future?

Efficiency

- How much **hidden** NPT is there in the drilling process?
- What is the root cause?
- How do we attack this?



Well Integrity / Quality

- Are we getting what we need out of our wellbores?
 - “Optimum” completion on bottom every time
 - Effective zonal isolation
 - Contribution from the entire lateral
 - Long term integrity
- If not, why?
 - Cost of current technology?
 - Gaps in current technology?
 - Maybe it doesn't have anything to do with technology...



Alignment

- Do you consider the “drillers” to be anything more than a cost control measure?
- Are your “drillers” incentivized on the right KPI’s?
 - Focused on **cost** or **value**?
 - Bonus based on cost/ft , cost/bbl, or capital efficiency?
- Are your “drillers” and completers in the same group?

Competence

- Major misconceptions about important topics;
 - Hole Cleaning
 - Torque, Drag, and Buckling
 - Annular Friction Pressure (aka, ECD)
 - Wellbore Instability
- Academia: What is preventing us from producing technically competent well builders?
- Industry: Do we need a “horizontal well construction” certification standard?