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Drilling Performance Driver: Hard Geology or Hard Head

By John de Wardt

Executive Summary

The oil and gas drilling industry has a major unaddressed problem: the true minimum cycle time to drill competent wells. Generally, drilling operations report to management on their progress against their own previous performance and usually demonstrates improvement on a learning curve analysis. Few really address the gap between their own current performance and the maximum performance that is possible. Those that do address this real gap achieve major breakthroughs in drilling performance.

Globally, if your drilling department is not delivering wells in a spud to TD time at 2,000 feet per day (610 meters per day) then you are probably wasting resources: money, time to production. This is a strong signal to challenge the gap from your current performance to 2,000 feet per day (spud to TD). The current low oil price environment and the outlook that an oil price rise is not going to happen means that drilling performance has become a competitive advantage: everyone one involved in drilling any well will succeed or fail based on the performance results they deliver.

Many people claim it is the hardness of the geology that drives drilling performance; however, global performance reviews show that more often it is the hardness of the heads of those planning and executing drilling operations that is the primary driver of drilling performance long before the hardness of the geology takes effect.

Introduction

Drilling performance is becoming a driver of differentiation amongst all players in the well construction business. The old rate of penetration (ROP) measure is rapidly being replaced by the cycle time of release of the rig from a well to release of the rig from the next well. This measure encapsulates the full cycle of drilling the well and, if included, completing the well. It also includes rig moves. This involves all parties to the construction of the well; there are no longer perceptions on limits of responsibility nor contracts to hide behind.

Drilling contractors in the USA land business are changing their financial presentations from days of back log under contract to bragging about super-fast wells they were involved in drilling. At around 900 rigs operating on land in the USA, there are some 900 more capable rigs standing idle that may never be brought back into action. This is defining the shift to performance recognition as a driver for contracting a drilling contractor / rig type. The
global impact of shale drilling in the USA will not only drive the oil price but also drive the performance standards for drilling wells globally.

Problem

Simply put, the problem is that many people involved in drilling have a stake in maintaining the status quo. The company man on a day rate contract: ‘stand out but don’t rock the boat’. The drilling engineer who is more comfortable aiming for a normal, achievable target than re-engineering the whole drilling process. The drilling contractor: again, on a day rate contract, historically presented to analysts the number of days backlog to drive their stock price. So, backlog must equal normal drilling performance; why excel to reduce my backlog? Recently, some exemplary drilling contractors have started to present drilling performance in days per well as their differentiator. This is a game changer that, under the umbrella of lower rig counts, will move drilling performance forward as a recognized financial asset.

Unfortunately, the drilling industry has historically had its fair share of naysayers who prefer not to change. Some say this is a risk averse approach to drilling and safeguards the delivery of the well. Ford Brett’s USA drilling performance analysis came up with the following list of issues that prevent breakthroughs, epitomized in the character of “Mr. Can’t” - the opinioned team member who repeatedly tells everyone why “things can’t be done”.

How **NOT** to have a Breakthrough

- **Keep doing things the same old way**
  - a breakthrough requires change, and change requires commitment.
- **Don’t sweat the details**
  - Rarely (never?) is a breakthrough one “magic bullet.”
- **Only involve the experts**
  - A breakthrough touches everyone’s job
- **Don’t invest time & effort to change**
  - A breakthrough requires 5 - 10 X the normal planning, engineering, and coordination
Managers continue to astound by repeatedly asking me for the “one magic (silver) bullet to significantly improve their drilling performance”; they simply do not understand that there are a range of requirements for breakthrough drilling performance.

Drilling engineering and operations personnel mistakenly equate fast well construction (drilling) to unsafe practices and poor wells (quality and production capacity). This is simply not true; well organized teams deliver safe wells faster that achieve functionality with quality and thus production rate & life time objectives.

North Sea drilling performance has shown a continuous decline in meters per day for over 15 years. There was a promising uptick starting in 1998 that faded in 2005; the reason for this has not been explained however it is coincidental with the application of Lean Drilling™ (a DE WARDT AND COMPANY program) to drilling projects with multiple clients in the N. Sea. While the wells may have become more challenging, the technology has advanced to more than offset this decline. So, why does this decline continue?

Uppermost global drilling performance has been reported as follows:

- Offshore Thailand: 2,000 ft. per day spud to TD. The organization that achieved this was faced with bankruptcy of their company as their initial drilling (early 1980's) failed to deliver the quantities of gas required to meet government contracts. This company decided to “drill its way out of trouble”. Crisis driven.
• Land USA Colorado: 2,000 ft. per day spud to TD (rig moves location to location in 18 hours). Natural gas price crash required super-fast drilling to lower well costs and deliver production (volume).
• Land USA in tight gas and shale drilling (‘S’ shaped 15,000 ft. MD and long horizontals 20,000 ft. + MD): 2,000 ft. per day spud to TD. Low gas and low oil prices drove the need for rapid well delivery with lower well costs. Business survival.

It is possible to deliver super drilling performance across the globe. Many companies fail to recognize this and miss a massive opportunity to deliver wells at a faster pace and thus at lower well cost.

High-Level Solution

How do companies that have not recognized their ability to significantly improve drilling performance move their personnel forward to address improving drilling performance in a safe and aggressive manner?

Management must learn to ask the right questions. Drilling operations have been viewed as some kind of ‘black magic’ about which managers are expected to have little understanding. Performance measures lacked transparency and global comparisons. Drilling is becoming more science than art so it can be measured & acted upon far more than in the past.

Managers raised in an environment where a single digit percentage point improvement was considered success lack the experience of breakthrough performance measured in tens of
percentage points to envision real stretch performance goals. These managers struggle to ask the right questions. A drilling manager who led a team that reduced drilling days by 85% over a number of years commented that ‘knowing what he knew after making the breakthrough performance he would have set a far more aggressive stretch goal at the beginning of the performance improvement initiative’.

Everyone in the drilling team must feel the need and drive to deliver significant performance improvement. “Mr. Can’t” must leave the team so others who have a can-do attitude lead the way.

Everyone involved in drilling a well must be aligned to a stretch goal that motivates them to significantly improve (breakthrough) drilling performance. Many people in this industry appreciate personal recognition for their efforts; this recognition often prevails over contractual and business relationships when the team is properly organized, focused on a common stretch goal and given the support to deliver it.

**Solution**

Experience and studies have shown the reasons that drilling teams achieve extraordinary performance. It is known, it is understood, it has been published. Organizations need to recognize this (rather than their own tainted views) and adopt these best practices wholeheartedly. The slide below shows a consolidated version of performance drivers from two successful industry leaders: John de Wardt and Ford Brett.

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**What actually drives real performance improvement**

*John de Wardt and Ford Brett*

- **Organization Architecture** = alignment to objectives through tiered delivery systems across breadth & depth of organization
- **Involvement** = “Everyone (all competencies) participates”
- **Culture change / team building** = vision, values, equal players, common objective
- **Commitment** = “we are going to do this no matter what”
- **Performance gap recognition** = team owned stretch goal (MTP beyond TL, BIC, BOB)
- **Financial Return** = “Need to see return to make investment”
- **Project services systems** = professional detailed scheduling, cost estimation / control, risk management
- **Detailed process focus** = “The devil is in the details”

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A highly successful drilling performance manager (in the over 2,000 feet per day club) encapsulates some lessons under the above headings:

- Involving everyone does not just mean the office personnel, it means everyone at the rig site; treating each of them as professionals recognizing their input will change your world.
- Commitment requires acceptance of occasional failures as a price for significant long-term success; these become important lessons learned. Or as Thomas Watson Sr. ia quoted "The fastest way to succeed is to double your failure rate”.
- Financial return means valuing bottom line costs and getting away from emphasizing price of products; cheap products do not usually equate to low cost wells.
- Detailed process focus requires detailed analysis of the drilling activity breakdown at levels far below those written in the daily drilling report; combined with feedback of the analysis to drilling crews on site.

**Business benefits**

Drilling fast competent wells safely is becoming the possibility for all operations globally. Ignoring this capability will cost oil / gas companies millions in missed revenues and unnecessary costs leading to reduction in growth. Ultimately, in the low oil price environment now prevailing it could contribute to bankruptcy.

USA land drilling together with Thailand offshore leads this performance wave. Europe, Mid-East and other areas are far behind the performance curve. The challenge for management is to recognize what is possible, understand how to address it and then motivate their organizations to deliver.

**Summary**

Many wells globally can be drilled in a third to a sixth of the current drilling time (3 times to 6 times faster). This is a massive unaddressed opportunity to deliver earlier revenue streams from wells as well as reduce well cost from less days of day rate cost.

NOC’s could achieve their oil / gas target production rates from far fewer drilling rigs than they currently employ should they choose to adopt effective programs to improve drilling performance.

**Achieve breakthrough drilling performance**

Contact DE WARDT AND COMPANY today for a dialogue on possibilities to improve your drilling performance. DE WARDT AND COMPANY has the knowledge and experience to bring their program Lean Drilling™ as well as call upon various professional associates in different global markets who add their specialist (local) expertise to ensure results are delivered.