

## Paradigm Bladed Drilling Reamers Successfully Eliminate NPT associated with tight spots in the wellbore, and also improved drilling performance & hole quality.

### Overview

An operator in the ME was looking for an alternative way of drilling vertical well sections in their most challenging field. They were looking for a solution which would increase ROP, help increase tripping speed and reduce non-productive time (NPT), associated with tight spots, which in some cases had led to wells being side tracked, or plugged and abandoned.

### Challenge

Previous drilling was characterised by the vertical surface sections requiring constant back reaming, wiper trips and relentless control of the ROP & drilling parameters to maintain verticality.

### Solution

Two 12 1/4" Bladed Drilling Reamers (BDR) were placed in the BHA, to replace the Roller Reamers and to serve as low torque stabilisers in a stiff vertical drilling assembly. The well was drilled normally, with ROP only controlled periodically to avoid cuttings loading to prevent induced losses.

### Result

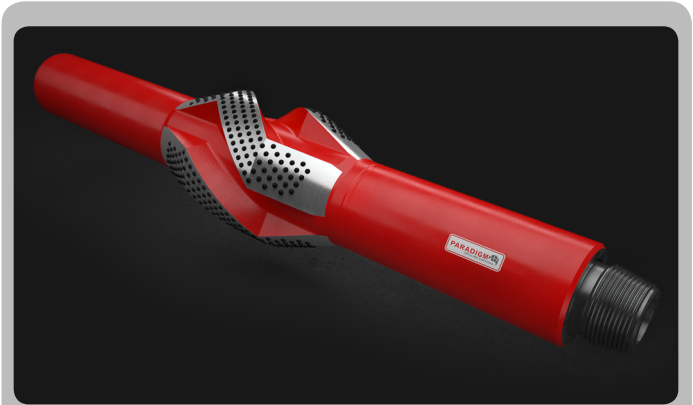
The section was drilled with a programmed wiper trip at the mid section, and at the end of the run. Neither of these wiper trips experienced any tight spots, and the BHA was POOH and 9 5/8" casing run without any problems whatsoever.

The client acknowledged that, neither wiper trip was probably necessary but, regardless, the well with the BDR's had the lowest recorded trip hours of any of the previous 140+ wells drilled in the field.

Paradigm were then provided offset information, from the previous best six wells, for the comparative study overpage and graph opposite. BDR's used in Well 7.

### Immediate Value to Client

**Fastest ROP with Inclination kept under full control**  
**Zero Non Productive Time, due to no tight spots.**  
**Casing Run to Bottom Without Incident**  
**BDR's POOH in Good Condition**

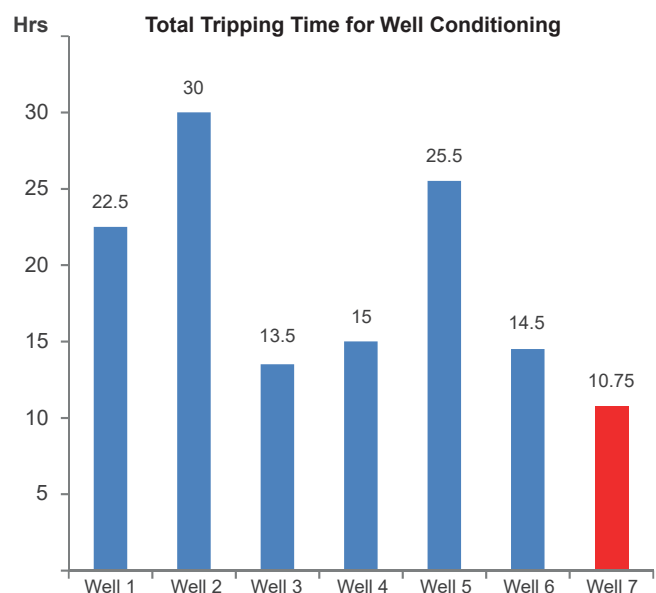


The Bladed Drilling Reamer is designed to replace Roller Reamers and offers low torque stabilisation whilst removing micro dog legs and ledges in the wellbore.

Diamond Insert Blades provide 70% less contact area than conventional stabilisers; reducing Torque, Drag & Stick / Slip.

### Main Features / Benefits

- One Integral Piece: No Bearings to Fail / Fall Out
- Premium Quality Impregnated Diamond Inserts
- Increased durability over PDC or Tungsten
- Helps Maintain Wellbore Trajectory
- Improved Wellbore Conditioning
- Reduced Back Reaming



# Paradigm Bladed Drilling Reamer Successfully Eliminate NPT Comparative Data to Previous Best Six Wells Drilled in Field

## Summary

Two 12 ¼” Bladed Drilling Reamers (BDR) were run as a trial to improve hole conditions in a very challenging field, with the primary purpose of eliminating NPT due to tight spots.

The BDR’s replaced two Roller Reamers, as part of a stiff vertical drilling BHA.

## Inclination Versus ROP

Even with stiff Roller Reamer assemblies, the verticality of previous wells had only been achieved by control drilling with low WOB and reduced parameters. The section drilled with the BDR’s was not constrained by controlling the drilling parameters, for inclination, and recorded the second fastest ROP of the field (>70 Ft/hr), and maintained the lowest inclination of just 0.7 Degrees.

This ROP had only been exceeded once before, with the direct result that the inclination over the quickly drilled section had risen past 6 Degrees.

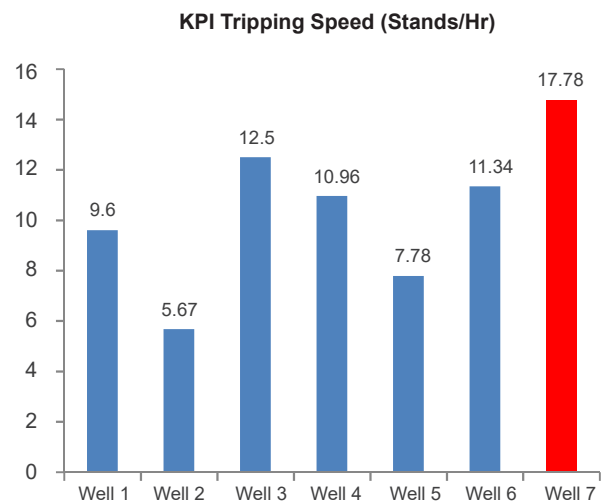
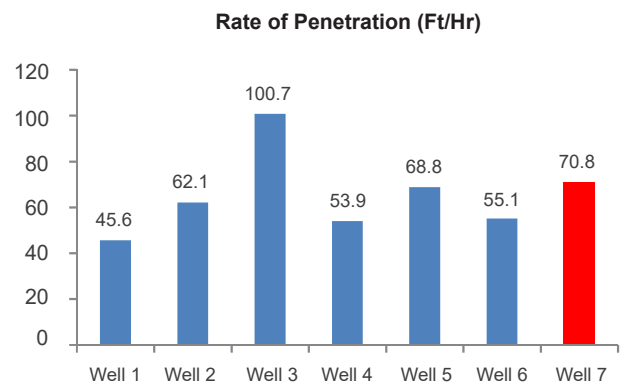
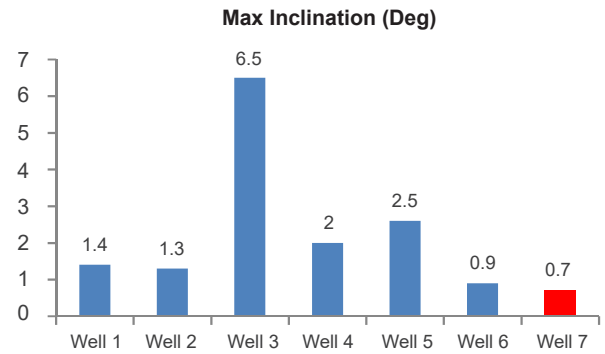
## Tripping Speed

The main challenge experienced when drilling in the field was encountering tight spots, and the subsequent problems that prevailed: slow tripping, stuck pipe and not getting casing to bottom.

The reaming capability of the BDR’s helped condition the wellbore whilst drilling, and neither of the wiper trips showed any tight spots, resulting in no back reaming requirement and the fastest tripping speed recorded in the field.

## Results

- Zero NPT due to Tight Spots**
- Fastest ROP at Low Inclination**
- Fastest Recorded Tripping Times**
- No Back Reaming / Extra Wiper Trips**
- Casing Run and Cemented Without Incident**



**Operator Strongly Recommended BDR for all Future Sections in this Field**