



ADVANCED WELL ENGINEERING

PREMIUM ENGINEERING SERVICES TO MAXIMIZE THE EFFICIENCY OF YOUR WELL DELIVERY PROCESS

H&P's Advanced Well Engineering service combines the vast experience of their engineering team and DrillScan® digital solutions, an industry-leading technology, to optimize the delivery of high-performance wells for operators. Our comprehensive solutions are tailored to help you achieve your desired outcome by addressing critical areas such as drilling performance, operation efficiency, and well design. We offer reduced cycle times, lighter well architectures, and measures to minimize exposure to safety hazards associated with drilling operations.

“OUR SERVICE IS TRULY AN UNBIASED VIEW OF THE DATA PROVIDED, COMBINED WITH OUR UNIQUE PHYSICS-BASED MODELS AND EXTENSIVE EXPERIENCE TO HELP DELIVER AN OPTIMAL WELL”

WE TAILOR EACH SERVICE TO ALIGN WITH THE SPECIFIC DESIRED OUTCOME OF OUR CLIENTS



We offer a range of specific outcomes for our clients through our three pillars of service: Real-Time Advisory, Well Delivery, and Tailored Analysis. The pillars of service can also be combined with many other Helmerich & Payne technology offerings, such as the Bit Guidance System and AutoSlide® technology, to unlock further value for our clients.

Real-Time Advisory

Drilling Engineer Advisory
Remote Operations Center

Well Delivery

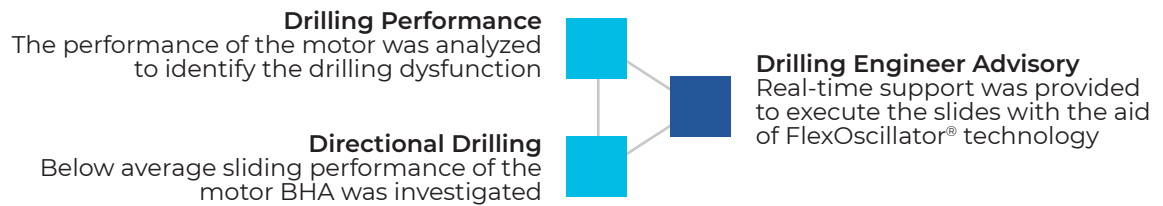
Project Definition
Feasibility Assessment
Technology & Services Selection
Time & Cost Estimation
Well Design
Execution

Tailored Analysis

Directional Drilling
Drilling Performance
Tubular Integrity
Well Integrity

FIELD-PROVEN EXECUTION

OPERATOR CHALLENGE: MITIGATE COSTLY MOTOR FAILURES WHILE DRILLING TWO-MILE UNCONVENTIONAL LATERAL SECTIONS



OUTCOME:

Time Savings

One run/curve lateral saved 1.75 days of nonproductive time (NPT), equating to approximately \$105,000

Reduce BHA Failures and Repair Costs

4 out of the 5 following wells were able to drill the curve and lateral in one run

Reduce Time to Target

Slide ROP increased over 120%*

SAVED 1.75 DAYS AND 1 LATERAL BHA EQUATING TO > \$105,000 PER WELL

■ AFTER STUDY WAS STARTED

* TRIP DUE TO DIRECTIONAL ERROR AND RESULTING BAILOUT ASSEMBLY, NO MOTOR FAILURES.

WELL	SLIDE ROP (FT/HR)	SLIDE TIME %	FORMATION DIFFICULTY	CURVE/LATERAL BHA'S
1	36	50	high	2
2	16	44	high	2
3	20	14	high	2
4	34	20	low	1
5	72	18	low	1
6	70	17	low	1
7	50	22	low	3*
8	42	28	low	1

	BEFORE STUDY	AFTER STUDY
AVG. SLIDE ROP	24 ft/hr	54 ft/hr
AVG. SLIDE % TIME	36%	21%

BHA reduction represents one less trip in the lateral that was taking place approx. 1k ft from TD on three wells before the DrillScan® technology study, this trip took an average of 1.75 days. On 5 wells following the study, there wasn't a single trip in curve/lateral for motor failure.



VIEW THE CASE STUDY

OPERATOR CHALLENGE: AVOID UNPLANNED BHA TRIPS WHILE DRILLING IN AN EXTREME ENVIRONMENT

Technology & Services Selection
Recommended use of Bit Guidance System and AutoSlide® technology

Tubular Integrity
T&D&B analysis identified the cause of higher drag – well tortuosity



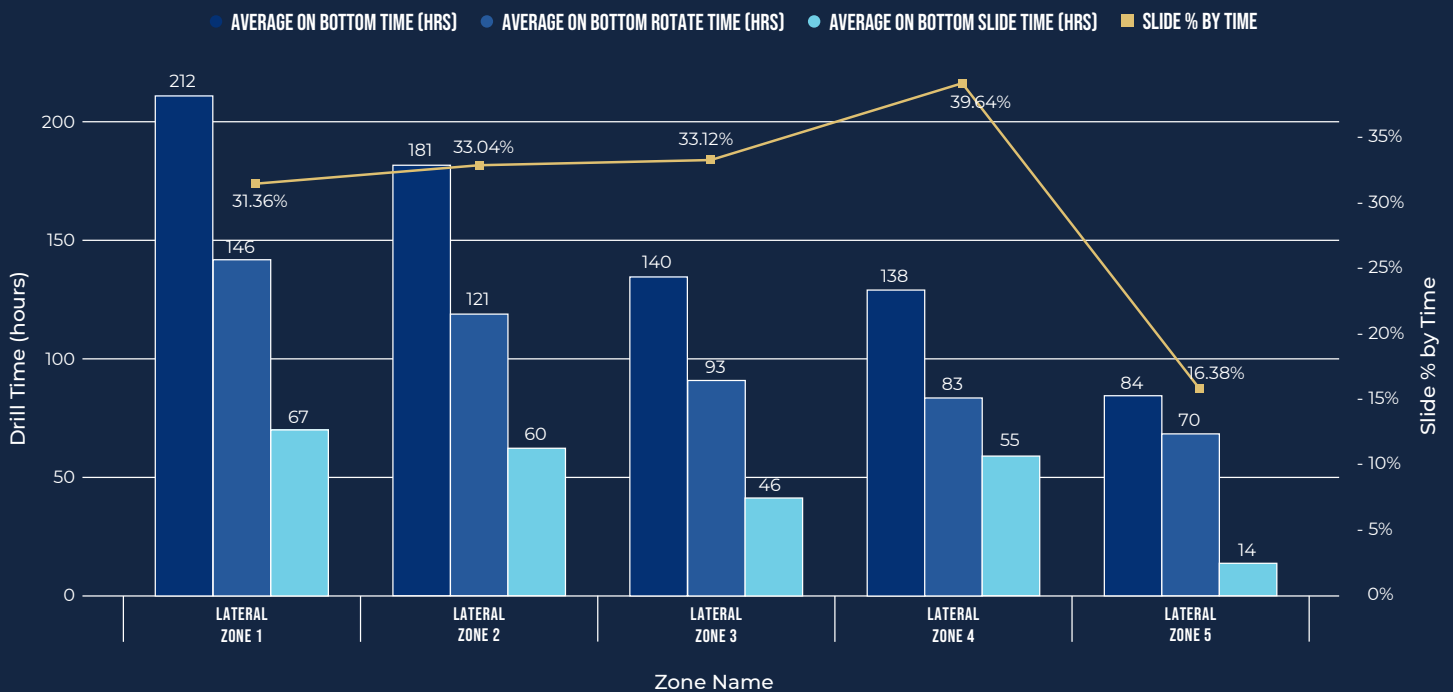
Drilling Engineering Advisory
Followed implementation of the curves executed with suggestions



OUTCOME: Wells 3 and 4, drilled using H&P's integrated solutions, reduced the average bottom drilling hours from 196 to 139 hours compared to the manually operated wells 1 and 2 - resulting in a savings of 57 hours.

[VIEW THE CASE STUDY](#)

ON-BOTTOM HOURS



OPERATOR CHALLENGE: DEPLOY A LIGHTER WELL ARCHITECTURE FOR UPCOMING DRILLING CAMPAIGN

Technology & Services Selection
Define requirements for surface casing and centralizers



Tubular Integrity
Downhole equipment integrity assessment of new surface casing

Feasibility Assessment
Risk analysis for deployment of new architecture



Well Integrity
Assess the impact of new architecture on cement placement

OUTCOME:

Even a change as small as proper selection of centralizers can lead to the added cost of oversized well architecture. H&P's Advanced Well Engineering team using DrillScan® technology was able to help Tullow Oil, an operator in West Africa:

- Increase reliability & profitability
- Reduce human variability
- Reduce CO2e emissions

Operator projected to save roughly \$4M per well, a total savings in the region of \$12-24M USD



CONTACT US

For more information on how Helmerich & Payne can help you achieve better drilling outcomes, contact an H&P sales representative today or contact us through our website at [helmerichpayne.com/contact](https://www.helmerichpayne.com/contact).

It's time to follow through on your drilling performance potential.