

# Saka Indonesia Pangkah Improves On-Bottom ROP by 130% While Drilling High-Angle S-Type Well

PowerDrive vorteX RSS enables safer drilling in environment known for stick/slip and erratic torque risks, Ujung Pangkah field, offshore Indonesia

## CHALLENGE

Drill an S-type well to TD in a drilling environment with known high-erratic torque and stick/slip risks.

## SOLUTION

Use the PowerDrive vorteX\* powered rotary steerable system, comprising a PowerDrive Xceed\* ruggedized rotary steerable system and a PowerPak\* steerable motor, to mitigate known risks while improving ROP.

## RESULTS

- Increased ROP by 130% compared with ROP of previous runs and 154% compared with the well plan.
- Improved drilling efficiency, nearly doubling feet per circulating hour.



**“The PowerDrive vorteX system is a proven technology that benefits the drilling process while encountering high torque in high-angle, S-type wells.”**

Indan Handono  
Drilling Manager  
Saka Indonesia Pangkah

## Improve ROP while drilling an S-type well through a high-risk environment

Saka Indonesia Pangkah needed to drill an S-type well offshore Indonesia in a difficult environment. The well (UPB-12) was planned to be the first S-type well to drill to 9,618-ft TVD (Ngimbang carbonate formation) with a 61° inclination in Ujung Pangkah field. It was also going to be the field's deepest well—nearly double the depth at TD. However, the drilling environment posed high erratic torque and stick/slip risks.

## Mitigate risks using a customised PDC bit and an RSS

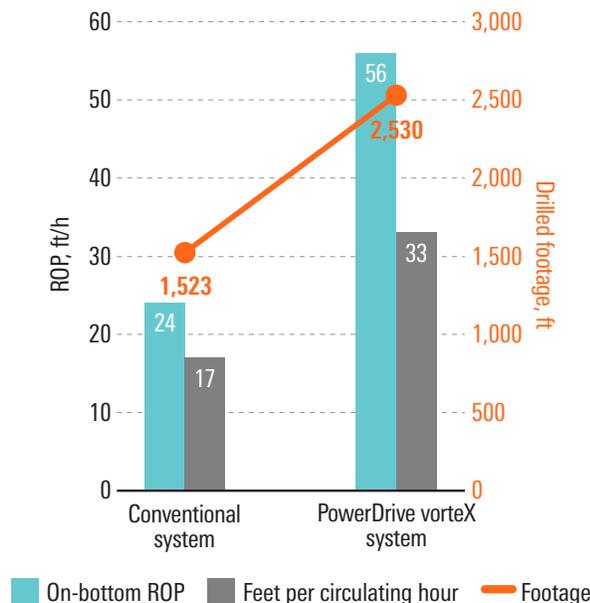
Schlumberger suggested using the PowerDrive vorteX system to mitigate these risks while improving ROP and reducing the friction factor. The PowerDrive vorteX system is made up of a PowerDrive Xceed RSS and a PowerPak motor and is extremely reliable in abrasive, hot, and high-shock environments.

Saka Indonesia Pangkah planned to use the PowerDrive vorteX system, combined with a customized PDC bit as torque risk prevention, to drill the 8½-in section of the well. The plan entailed dropping the angle from 43° at 7,944-ft MD (5,685-ft TVD) to vertical with a 2.6° dogleg severity until planned TD at 11,900-ft MD (9,618-ft TVD).

## Increased ROP 130% compared to the ROP achieved by the previous BHA

Drilling torque ranged from 5,000 to 7,000 ft.lbf with a consistent WOB throughout the process. The stick/slip ratio was reduced to a maximum of 100%, which enables the operator to mitigate stick/slip even when using a more aggressive bit. The average friction factor during rotation was reduced by 18% from 0.28 to 0.23.

By using the PowerDrive vorteX system, Saka Indonesia Pangkah was able to increase ROP by 130% compared with ROP from a standalone BHA and 154% compared with the well plan. The PowerDrive vorteX system significantly improved drilling efficiency, saving rig time and reducing overall cost.



*The PowerDrive vorteX system increased ROP 130% and feet per circulating hour 194% compared with conventional systems, even over a longer distance.*

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