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CASE STUDY · MARLUC SYNOPSIS

BP wells AI: kick detection, automated drilling and a wells assistant

IMPLEMENTED 2025–2026 · ENERGY AND UTILITIES · UNITED KINGDOM · BAND C · CLAIMED ONLY

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BP uses machine learning to predict well kicks, ran autonomous drilling on a deepwater well in 2025 and gives drilling staff an AI assistant over its wells documents, by its wells chief's account.

ABOUT THIS SYNOPSIS

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NOTICE WORDING LAST UPDATED 16 NOVEMBER 2026

AT A GLANCE

AI and automation used: Machine learning prediction of well kicks, automated drilling control, and an AI assistant over wells documents and standards.

Implemented: 2025–2026. Grade: band C, Process change, Claimed only.

Headline result, as reported: Early-kick detection algorithms about 90% accurate and now used globally, by BP's senior vice president for wells, February 2026

1 · The case

The facts, as reported by the 3 sources listed at the end. Where a source is silent, the field says "Not reported".

Organisation

BP. UK oil major, per Reuters. Separately, BP has used Palantir software in production operations since 2014, including a digital twin fed by data from over 2 million sensors, and in 2024 agreed to add Palantir's AIP; that deployment is not assessed here because no results were found in sources that could be opened. Canvas block: 4. Operations and process. Also 6. Data and technology, 5. People and skills.

Business challenge

The challenge. Not reported in BP's own words beyond safety and efficiency. JPT describes automation, with a smoother wellbore, consistent and efficient drilling and improved safety, as a cornerstone of BP's drilling strategy. Davies said early-kick detection has made drilling more proactive than reactive.

How it was addressed. BP has invested over the years in early-kick-detection algorithms. Training them to predict kicks during managed pressure drilling took longer because of the number of variables, and the technology is now used globally, by Davies's account. In October 2025 BP deployed autonomous drilling through managed pressure drilling on a well in the deepwater Atlantis field in the Gulf of America, optimising on the go from downhole data. Drilling staff also use a Wells AI assistant that gives access within seconds to documents, standards and procedures. BP says it is upskilling people for the new way of drilling. [1] [2] [3]

Who implemented it

Not reported. BP's separate Palantir digital twin and AIP agreement is not linked to these wells tools in the sources.

Technology (SEAM pillar E)

SEAM types: T8 Predictive / ML models, T4 RAG / vector search over your own data. Deployment: Not reported. Vendors and products: Wells AI assistant.

Where it was built in: Kick-detection algorithms run on drilling data, including during managed pressure drilling; automated drilling optimises from downhole data on the Atlantis platform; the Wells AI assistant gives the drilling team access to documents, standards and procedures.

What changed

Before: kicks handled more reactively, by Davies's account. After: algorithms predict kicks, which she said helped BP drill wells it could not drill before, especially on the Na Kika field, and automated drilling ran on one Atlantis well with stable, consistent drilling on its first run. In March 2025 she said BP was able to drill more wells per year and allocate capital better. [1] [2] [3]

What it cost

Not reported

What it saved

Not reported in money. Davies said BP can drill more wells per year and the technology is helping it access barrels it could not access before. A BP spokesperson said AI cut Gulf of Mexico seismic evaluation from six to 12 months to eight to 12 weeks. [1] [2] [3]

Governance and control

Not reported. Davies reported high uptime and strong crew acceptance on the first automated run, and described full closed-loop automation as the eventual destination. Validation of the kick algorithms, the safety case for autonomous drilling and an accountable owner: Not reported.

S2 · Accountable owner · Not reported
Not reported. The senior vice president for wells speaks for the programme, but no accountable owner is named. [1]

A1 · Safe use · Not reported
Not reported.

A2 · Human in the loop · Not reported
Not reported. BP describes full closed-loop automation as the eventual destination, which suggests people remain in the loop today, but the sources do not say how. [1]

A3 · Monitoring and assurance · Not reported
Not reported beyond the stated accuracy of about 90% and the first run's uptime. [1]

A4 · Vendor AI · Not reported
Not reported.

A5 · Agent controls · Not reported
Not reported for the autonomous drilling system.

A6 · Standards and regulation · Not reported
Not reported.

What worked, what did not, what is unproven

WORKED

– Kick prediction accuracy of about 90%, by BP's account.

– A first automated drilling run with stable drilling and no operational surprises, by BP's account.

– High use of the Wells AI assistant by offshore staff, by BP's account.

DID NOT

– Not reported

UNPROVEN

– How the 90% accuracy figure was measured, and the rates of missed kicks and false alarms.

– Effect on well costs, drilling time and safety incidents.

– Whether autonomous drilling scales beyond the first Atlantis well.

Timeline

Sept 2024 BP and Palantir announce an enterprise agreement adding AIP to the production digital twin (separate deployment, context only) [3]

Mar 2025 BP's senior vice president for wells tells Reuters BP uses AI to steer drill bits and predict well problems [2]

Oct 2025 Autonomous drilling through managed pressure drilling deployed on a well in the Atlantis field [1]

Feb 2026 BP says early-kick detection is about 90% accurate and used globally, and that it is confident to scale automated drilling [1]

2 · Grade and SEAM assessment

MarLuc's opinion, made on the evidence above. How cases are graded: marluc.co.uk/case-studies/how-we-rate

Level of change and impact

Claimed: Not applicable. Grade: C, Process change. Proof: Claimed only. Level of change: Process change.

Process change (Level 2, band C): drilling now draws on kick prediction and, on one well so far, automated control, by BP's account. No cost or safety outcomes are published.

A process change in drilling: kick prediction and, on one well so far, automated control now shape how wells are drilled, by BP's account. No cost, time or safety figures are published.

The SEAM view and lessons learnt

BP links the results to years of investment in kick detection, drilling automation, upskilling and alliances with rig and service companies, so the AI's part cannot be separated from those changes. All figures come from BP executives. Before copying, a leadership team should ask how a prediction model in a safety-critical process is validated and what crews do when it is wrong, and which decisions stay with people as automation moves towards closed loop.

1. Publish how accuracy is measured before relying on a safety prediction.
2. Start automation on one asset and scale only on recorded results.
3. Train crews for the new way of working as the technology changes.

Evidence

Score 1 of 4. Self-reported: BP executives quoted in JPT and Reuters; no independent evaluation.

Evaluation method. Self-reported company figures: executive interviews in JPT and Reuters.

Status. Ongoing: in February 2026 BP said it uses kick detection globally and is confident to scale up automated drilling.

3 · Original sources

Read these in full. To challenge a fact or a grade, use the contact form at marluc.co.uk or the link on https://marluc.co.uk/case-studies/bp-wells-ai-drilling-automation

[1] Journal of Petroleum Technology: BP optimizes 'on the go' using automated drilling through MPD (February 2026)
https://jpt.spe.org/bp-optimizing-on-the-go-using-automated-drilling-through-mpd

[2] Business Reporter (Reuters): AI leading to faster, cheaper oil production, executives say (March 2025)
https://www.business-reporter.co.uk/news/ai-leading-to-faster-cheaper-oil-production-executives-say-12350

[3] World Oil: bp to deploy Palantir Technologies' AI, digital twin software to support oil and gas operations (September 2024)
https://worldoil.com/news/2024/9/9/bp-to-deploy-palantir-technologies-ai-digital-twin-software-to-support-oil-and-gas-operations

BP website: https://www.bp.com

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