# Automatic Rig Technology, Remote Operations

## Combine for Unmatched Drilling Performance, Set New Benchmark in Horizontal Romanian Well

By pioneering Romania's first horizontal well with an automatic rig, supported through RTOC remote operations, Weatherford demonstrated how digitalization directly accelerates performance and reduces operational risk. The success underscores the commitment to partnering with customers on their digital transformation journey, delivering faster, safer, and more cost-effective drilling outcomes worldwide.

## Objectives

- Drill both sections, shoe-to-shoe, with zero nonproductive time (NPT) and flawless service quality.
- Deliver a demanding 3D trajectory including build-to-horizontal, high turn, and a tight 32-ft (10-m) target intercept.
- Execute operations with reduced on-site crew via Romania's Real-Time Operations Centre (RTOC).
- Mitigate borehole geometry risks for a stable, in-gauge wellbore.

## Our Approach

- Weatherford partnered with the operator from the early planning stages, creating a robust Front-End Engineering Design (FEED) based on offset well analysis and field experience. The FEED and planning process included several key elements.
- The two teams systematically analyzed the previous offset well learnings and integrated the results into the technical proposal, ensuring that lessons from prior operations were fully captured.
- A comprehensive drilling strategy was developed, identifying key risks such as trajectory control in unconsolidated formations, and defining the basis of design for each hole section.

**LOCATION**
Romania

**WELL TYPE**
Horizontal

**FORMATION**
Sands, calcareous claystone, sandstone

**HOLE SIZE AND ANGLE**
8-1/2 and 6 in., 90°

**DEPTH**
984 to 6,007 ft (300 to 1,831 m)

**PRODUCTS/SERVICES**
- Magnus™ RSS with turbine generator
- HEL™ hostile-environment-logging measurement-while-drilling system
- HAGR™ high-temperature azimuthal gamma ray sensor
- MFR™ multi-frequency resistivity tool
- AZD™ azimuthal density/thermal neutron porosity tool
- BAP™ bore and annular pressure sensor

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### Our Approach

- Bottomhole assembly (BHA) designs and rotary steerable system (RSS) operational procedures were customized to the automatic rig's specific characteristics and operational envelope, with a clear focus on maximizing drilling efficiency.
- The teams selected specific fit-for-purpose technology, with both RSS and mud motor options available, to ensure trajectory delivery and complete logging requirements, including triple-combo acquisition in the reservoir section.
- The RTOC provided 24/7 remote support in Romania, delivering real-time drilling monitoring, intervention, and optimization. The RTOC reduced on-site crew requirements, optimized personnel deployment, and maintained continuous performance oversight.
- Leveraging the latest global satellite data transmission, high-bandwidth connectivity enabled two-way communication between the rig and the RTOC. This ensured an uninterrupted data flow, rapid decision-making, and efficient service delivery throughout the operation.

### Value to Customer

- This collaborative approach accelerated well delivery by 2.8 days, generating significant time and cost savings.
- The well was placed with pinpoint accuracy along a demanding 3D trajectory, successfully intercepting a tight target with only 1.3 ft (0.4 m) distance from the center.
- This innovative solution marked several key milestones:
  - Delivered flawless shoe-to-shoe drilling with zero NPT, ensuring reliability and service quality.
  - Relied on remote operations with a reduced on-site crew, lowering HSE exposure while maintaining full performance oversight.
  - Demonstrated digitally enabled service delivery with continuous data flow, proactive intervention, and precise well placement.
  - Marked a landmark achievement as Romania's first horizontal well drilled with an automatic rig, setting a new performance benchmark for future projects.

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