CASE STUDY

HALLIBURTON

North Dakota, United States

SpyGlass® software identifies ESP motor performance issue, accelerates pull decision

Digital analysis confirms root cause and reduces deferred production

CHALLENGE

- ESP fails to lift fluid at 48 Hz and 60 hp
- Limited surface data prevents root cause identification
- Continued restarts increase thermal damage risk
- Extended troubleshooting increases deferred production

SOLUTION

- Integrate SCADA data into SpyGlass software
- Perform performance match with SpyGlass software
- Validate real-time current within 0.5 A
- Identify single motor operation and likely shaft failure

RESULT

- Saved approximately 2,380 bbl deferred production
- Reduced troubleshooting time and field visits
- Avoided equipment damage from thermal cycling
- Preserved power cable for potential reuse
- Accelerated return to production

Overview

An operator in North Dakota installed a slimline electric submersible pump (ESP) system with tandem motors to support production from an unconventional well. Within three months, the system lost performance and failed to lift fluid to surface. Field personnel attempted restarts and flushes, but performance continued to decline. Downtime increased, and the well produced below target rates.

The operator required a faster method to diagnose the issues, confirm the root cause, and support a high-confidence decision on whether to pull the ESP. The operator used SpyGlass® pump sizing software to evaluate system performance and guide the next action.

SpyGlass® pump sizing software speeds up troubleshooting

Challenge

The ESP system operated at maximum load of 48 Hz and 60 hp but failed to lift fluid to surface. Field personnel could not increase speed. Surface data did not provide enough detail to confirm the root cause.

The operator faced a critical decision. Teams could continue troubleshooting with multiple field visits, or they could pull the ESP without certainty about the underlying problem. Continued restarts introduced the risk of thermal cycling,

SUMMIT ESP
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which could damage downhole equipment and power cables. Extended troubleshooting also increased deferred production. The operator required a reliable method to diagnose the issues, confirm performance mismatch, and support a timely and economic decision.

Solution

Halliburton field service personnel collaborated with the engineering teams to run a performance match using SpyGlass® pump sizing software. The team integrated customer production data, SCADA telemetry, and expected operating parameters into the model. The software matched real-time current within 0.5 A and replicated system behavior under operating conditions. The analysis confirmed that one of the two motors supplied power to the pump string. This result indicated a likely shaft break between the tandem motors. The team compared modeled performance with real-time field data and provided the operator with clear, data-backed insight. This evaluation removed uncertainty and supported an informed decision to pull the ESP before further damage occurred.

Result

The team used SpyGlass pump sizing software insight to make a faster and more confident decision. The earlier pull eliminated unnecessary troubleshooting time and reduced operational risk. The operator avoided additional field visits and prevented repeated high-temperature events that could damage cable insulation. The shorter low-performance operating period preserved cable integrity for potential reuse and reduced overall intervention cost. The decision also protected production. The operator avoided approximately 2,380 bbl of deferred oil production that would have occurred amid an additional week of troubleshooting. SpyGlass pump sizing software delivered clear diagnoistic insight that allowed for faster resolution and supported a return to optimal production.

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