

# KOC Accurately Tests Wells with Challenging Multiphase Flow Using Diligens Spectra Unit

Wells with slug flow and emulsions accurately characterized with repeatable flow rate measurements, Kuwait

## CHALLENGE

Conduct successful multiphase flowmeter tests on wells with low production as well as slug flow and strong emulsions.

## SOLUTION

Deploy the Diligens Spectra\* mobile multiphase production testing unit for an expanded operating envelope and superior metrology.

## RESULTS

Acquired key information for production allocation and well production optimization despite the challenging flow conditions that had previously prevented testing the wells.

**“We were able to test challenging wells with low flow rates and emulsions. The objective was to accurately measure the well productivity in extreme conditions. With dual-leg unit, we were able to maximize the number of accurate and representable well tests performed in a given amount of time.”**

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## Numerous flow challenges experienced

Several Kuwait Oil Company (KOC) wells in this field needing well tests were experiencing low production at 100 bbl/d of liquid and 10 Mscf/d of gas, which made the wells difficult to test using conventional multiphase flowmeter technology. Slug flow conditions and the presence of strong emulsions compounded the challenge, and the true flowing nature of the wells could not be assessed because of rapid and sizeable flow variations.

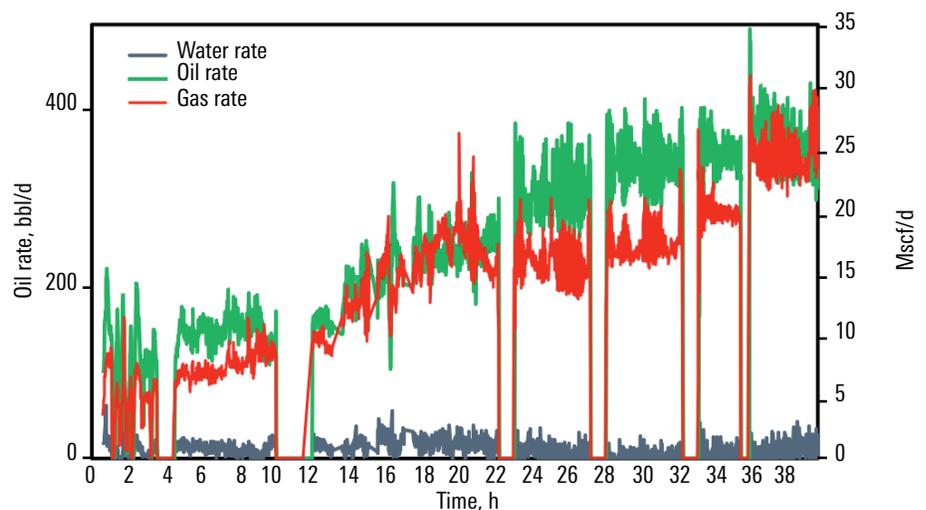
These conditions present a challenge for production well testing when backpressure applied results in noncritical flow and wells producing below potential. In addition, the water-cut could not be accurately measured due to the presence of emulsions and gas partially trapped in the viscous fluids.

## Diligens Spectra unit expands the operating envelope

Schlumberger recommended KOC deploy the Diligens Spectra unit, which features two multiphase flowmeters mounted on the same skid, to expand the operating envelope and offer speed and accuracy. The two Vx Spectra\* surface multiphase flowmeters—19-mm and 40-mm venturi throat sizes—provide repeatable flow rate measurements in any multiphase flow regime, including low producers.

## Obtained superior measurements for production allocation and optimization

The versatility and high mobility of the Diligens Spectra unit enabled KOC to accurately test many previously untestable wells. With dual-leg metering capabilities, individual wells could be continuously evaluated, despite the water cut and presence of strong emulsion and slug flow. With only minimal backpressure applied, the wells were successfully tested to yield truly representative results for production allocation and well production optimization.



Using the Diligens Spectra mobile multiphase production testing unit, KOC obtained accurate, repeatable measurements under slug flow conditions and low flow rates at various flow periods.

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Mobile Production Testing