The Offshore Technology Conference (OTC), held each year in Houston, is one of the world’s leading upstream oil and gas events.

*Oilfield Technology* contacted a range of key players in the upstream industry and asked for their insight on the latest technologies and applications being showcased at this year’s OTC.
New services are providing operators with advanced knowledge of untapped reservoirs during exploration and de-risking fluid analysis and sampling in highly deviated development wells.

Following its recent OTC Asia Spotlight on Technology Award win, Schlumberger will be showcasing the SpectraSphere* fluid mapping-while-drilling service at OTC 2018 in Houston. The new service enables ‘productivity drilling’ by maximising reservoir contact – hence maximising reservoir production potential while drilling. This creates new possibilities in well placement and reservoir characterisation, while reducing costs.

The SpectraSphere service enhances well placement and reservoir understanding, by enabling early time detection of potential reservoir complexities, such as lack of horizontal or vertical connectivity. The technology is the first in the industry to deliver downhole fluid composition in real time while drilling. The service also detects untapped reservoirs during exploration, appraisal, and development, while mitigating risk during fluid analysis and sampling in highly deviated, horizontal, and extended-reach drilling (ERD) wells. In addition, the technology provides precise formation pressure measurements, performs downhole fluid analysis, and acquires high-quality samples while drilling.

The SpectraSphere service consists of three modules. First, a pretest module that performs precise formation pressure-while-drilling measurements, including time-optimised and pumps-off pretesting. Second, a fluid mapping module comprised of two downhole fluid analysers for real time, while-drilling reservoir fluid contamination estimation, compositional analysis, and in situ gas-oil ratio, formation volume factor and asphaltene content measurements. The third module is the sample carrier module (SCM) for collecting high-quality formation fluid samples. Up to four SCMs may be combined in a single BHA, enabling collection of up to 12 samples in a single run.

In the Gulf of Mexico, Eni US Operating Co. selected the SpectraSphere service to measure formation pressure, analyse formation fluid, and collect representative samples from a wildcat exploratory Mississippi Canyon well. Typically, sampling occurs days after drilling – frequently resulting in either high drilling fluid filtrate contamination or long pumping times to obtain a high-quality, low contaminated sample.

The technology analysed formation fluid at six depths in real time – an industry-first for the transmission of detailed in situ fluid properties. The service estimated contamination and time to clean up, performed fluid identification and typing, and measured the GOR and fluid composition.

The results were verified ten weeks later by laboratory testing, which confirmed agreement with every measure. Contamination was estimated in real time to within 2% of the laboratory-determined values. Pretests, pressure measurements, and fluid gradients were also successfully taken during the operation. A total of 28 pretests were completed, providing the operator with an accurate description of the reservoir pressure distribution and fluid contacts. In addition, the service provided a time saving of approximately 10 weeks compared to traditional lab analyses.

Figure 1. By taking high-quality fluid samples and accurate pressure measurements while drilling, the SpectraSphere service enables real time decisions that help improve geosteering outcomes, guide wells to the ideal trajectory and access more reserves.

Note
*Mark of Schlumberger.