

# EC-Drill® Case Study – Gulf of Mexico



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## EC-Drill® instant kick detection demonstrated on deepwater well

**PROJECT** *Enhanced Drilling provided EC-Drill® Managed Pressure Drilling services to a multi-national operator in the Gulf of Mexico. EC-Drill® proved that it is capable of detecting influx far more quickly and reliably than conventional well control methods.*

**CHALLENGE** Deepwater exploration in unconfirmed pore pressure regime

**SOLUTION** Selective placement and monitoring of EC-Drill® riser pressure sensors combined with revolutionary use of fingerprinting base line recording

**RESULTS** EC-Drill® provides two new kick detection tools that complement and enhance conventional methods of detecting flow anomalies while drilling and during connections



**EARLY WARNING**  
EC-Drill®'s 'instant kick detection' service enables preventative action to be taken much more quickly than with conventional methods. Photo shows Office Tool Container with Control System

### EC-Drill® service the answer to kick-detection challenges

A multi-national operator recently used EC-Drill®'s instant kick detection service to complement and enhance conventional kick detection methods during deep-water exploratory drilling in the Gulf of Mexico.

It is well known in the industry that deep-water drilling with oil based or synthetic oil-based muds presents distinct challenges to timely detection of influx or losses.

### Limitations of conventional kick methods

Although effective, conventional methods of kick detection have limitations and can allow influxes into the wellbore at a rate and volume that make well control more difficult. Normal drilling in deepwater environments

presents its own set of challenges, including the potential for an influx while making a connection. Statistically, 70 per cent of kicks occur during connections (Fraser et. al., 2014)\*.

### EC-Drill® detects influx 40 seconds faster than flow-out measurements

To improve kick detection response times, the operator used EC-Drill®'s optional 'instant kick detection' service. During kick drills and while drilling, EC-Drill® demonstrated that it is capable of detecting kicks with both its pump performance and riser pressure sensors. These sensors are the first indicators and are capable of detecting flow anomalies at least 40 -60 seconds faster than conventional flow-out methods and a full 20 seconds earlier than mud pit volume totalizer methods (see Figure 1, overleaf).

\*Fraser, D., R. Lindley, D. D. Moore, M. Vander Staak, *Early Kick Detection Methods and Technologies*, SPE-170756, SPE ATCE, Amsterdam, 2014.

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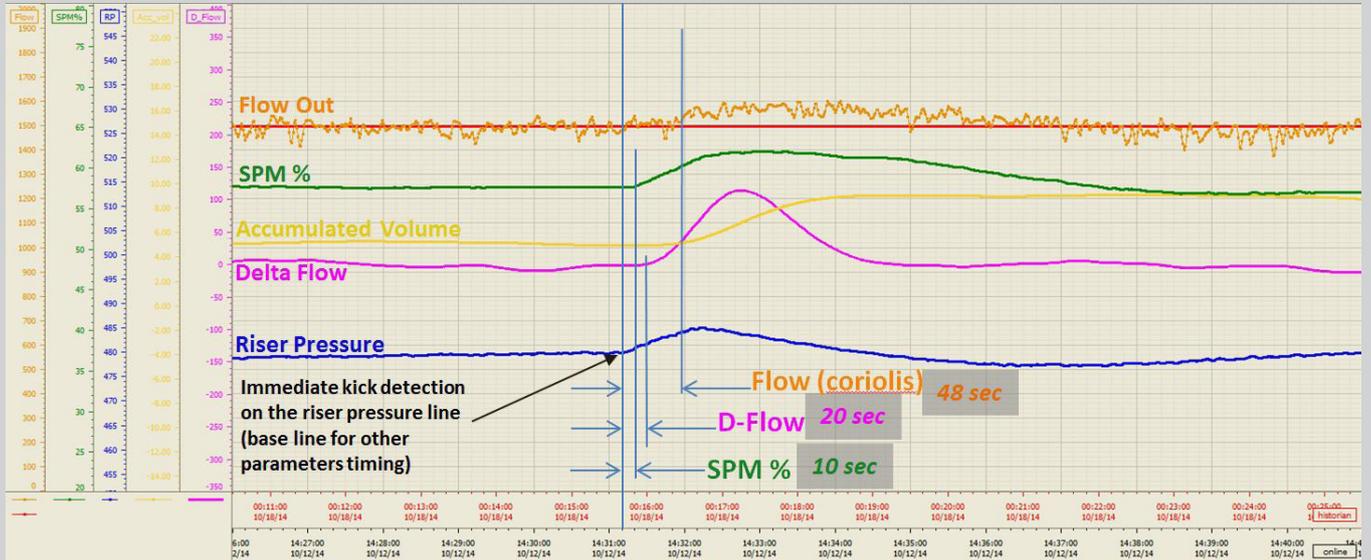


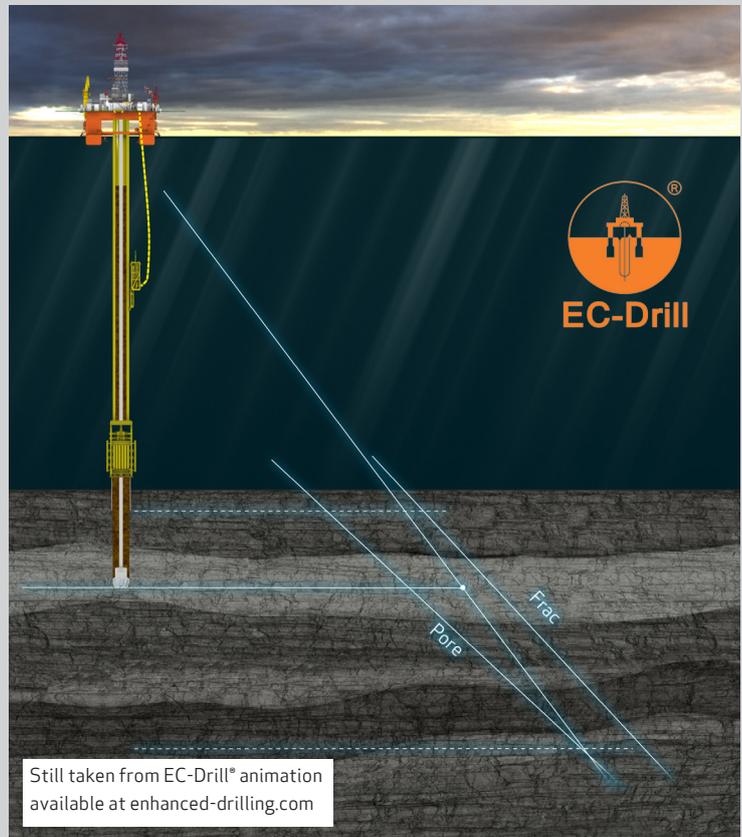
Fig 1 shows how an influx is detected immediately by the riser pressure sensor (blue) followed by the EC-Drill® pump speed (green) 10 seconds later. After 48 seconds the flow increase is detected by the flow measurements from the coriolis.

The drill crews using the system concluded that the EC-Drill® method of making the riser above the pump a new and 'first in-line' trip tank is more accurate and more reliable than conventional kick detection methods.

## Instant kick detection - reduce risk, enhance safety

The implications of being able to detect kicks and losses far ahead of conventional methods are significant, from overall safety and reduced risk to equipment and personnel, to drastically improved ability of crews to manage and control an influx that has been minimised by early detection and early response.

The operator gains a 'step change' in kick detection with this technology.



Still taken from EC-Drill® animation available at [enhanced-drilling.com](http://enhanced-drilling.com)

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