

STOCHASTIC DRILL QUEUE SCHEDULING



Customer Success Story



“Using Crystal Ball software helped increase the accuracy of our drill queue forecast.”

David Meinert
Petroleum Engineer
Chevron

Oil & Gas exploration and production is very expensive and time-consuming. It deals with many unknowns, with high risk and uncertainty an inherent part of the industry. The more an Oil & Gas company can understand and plan for uncertainty, the better it will do at mitigating risks and achieving success.

The Situation

Chevron was working on a project developing a large, international deepwater field where close to 40 wells would be drilled over a span of nearly eight years. Chevron had created and revised numerous drill schedules to predict the number of wells producing oil and the date each well would start producing.

Initially, drilling was not thought of as causing delays in the total project schedule. However, due to unforeseen events that led to non-productive time (NPT) and date slippages, it became critically important to understand how drilling impacted the total project schedule. In addition, Chevron was also concerned with having an optimum number of wells producing at “first oil” which was vitally important to meeting production targets.

The Solution

David Meinert, a Petroleum Engineer assigned to the project needed an alternative method for estimating the drilling schedule to determine which actions to take and what would be the associated costs required to meet the total project first oil target date. Meinert developed a simple Crystal Ball

software model that stochastically estimated the drilling schedule, while also estimating the number of producers available at the project first oil date. This simulation model reflected the multiple rig mobilizations often necessary to drill deep water wells; while taking into account the base duration of events, such as batch top hole drilling, well drilling, upper completions and lower completions. The model also forecasted the possibility of unforeseen events or other NPT events.

The Results

The outcome of Meinert’s model was an easily maintained drill queue model that stochastically reflected the uncertainties associated with drilling highly complex wells in a deepwater environment. The methodology has applications in any field where a continuous drill schedule is being undertaken. The Crystal Ball model offers insight into scheduling difficulties and the resultant costs incurred when the company relies on business decisions based purely on deterministic (non-simulated) schedule forecasts.

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