

Study provides improved decision-making tools for oil well construction

December 6 2013, by Mohamad Ali Rajaieyamchee

Decision-makers in well-construction have traditionally relied on intuitive decision-making. Rarely are the key decisions and their underlying uncertainties identified and quantified, nor is there consideration of whether the acquired information might pertain to these uncertainties or decisions.

Yet, a good decision must be consistent with the decision-maker's objectives, information, and alternatives.

In a recent dissertation, the PhD candidate Mohamad Ali Rajaieyamchee applied decision analytic framework to well-construction decision situations such as casing-setting-depth, wellbore trajectory correction, and mud type and weight design.

Decision analysis

Decision analysis offers an insightful way of organizing and communicating decision situations. The researcher used decision diagrams, also known as Bayesian networks, to frame, analyse, and support well-construction decision situations.

Decision diagrams are compact graphical representations of decision situations and are based on decision theory and probability theory.

They rigorously represent the relationships among decision variables, yet

in an intuitive way that facilitates communication among experts and decision-makers. They allow incorporating various sources of information, enabling probabilistic inference and decision support.

Common understanding

The developed decision taxonomy for well-construction in this study allows us to identify the most appropriate decision-making method and information structure for various types of decisions.

It also develops a common understanding of different well-construction decision types and their key characteristics to facilitate communication in the decision-making processes.

Good decisions quicker

In addition, this dissertation has introduced a decision analytic framework for framing and analysing complex well-construction decision situations.

Specifically, it applies decision diagram to well construction to enable making good decisions quicker which is the central hypothesis in the concept of digital oil field or integrated operations.

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