Digital and Automated Offset Well Analysis with Focus on the NCS

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Abstract

The Norwegian Continental Shelf (NCS) consists of more than 6000 wells, where a great portion of the data is publicly available. In addition each and every operator holds its private data. When planning a new well, obtaining high quality reference data from comparable projects in the nearby area often becomes an issue of vital importance and part of the modern Well Delivery Process (WDP), named the offset analysis. Our work has been focusing on improving and on streamlining this part of the WDP.

Up until recently, offset well reference data analyses for wells drilled on NCS could only be performed by “manual” search in the Diskos or internal databases. With this work we attempted to bring to the fore how to increase efficiency by having all relevant data directly available to the end user. Combining different data formats, public and private, was the major challenge allowing quick and automated analyses. By developing a digital tool, the aim was to achieve significant savings in engineering man-hours not jeopardizing, but increasing an overall quality of the well delivery process. Additionally, the target was to measure how much time an engineer could save by skipping the manual part of the data gathering but rather using data that is logged and recorded during a standardized process.

Increased efficiency, cost reduction, proper contingency planning, and accurate consideration of uncertainties and project specific risks, not least the safety aspect, are among the key indicators of successful offset well analysis. The data has to be thoroughly calibrated and further analyzed to benefit the knowledge of the area, adjacent wells, equipment, casing design and previous experiences. Previous data and experiences should first increase an overall understanding of upcoming project and secondly, fill the gaps in offset analysis. Having a system where all previous wells are quickly accessible and data as well as experiences saved and grouped by standardized formats, users' defined criteria will automatically allocate the most comparable and appropriate wells, thus not overseeing the most relevant data. Time is thus saved by eliminating manual search and the data quality is increased by incorporating quality check procedures.

Right decision making, given time constraints, cannot afford overseeing important information, thus data need to be quickly available, trustable and easily accessible for the user. By implementing automated quality check functionality, the data integrity is taken care of. By simultaneously gathering the data from several sources in one place, the user has improved access to all the information needed to make the right decision, the first time, and in a timely manner. With relevant and properly selected data, we can
at last afford adequate analysis including stochastic modeling, thus finally approaching proper decision making with focus on uncertainty and randomness.