

Testing, logging, coiled tubing in Downhole Tools

TESTING WHILE DRILLING

A new formation testing while drilling (FTWD) service was introduced to the Valhall flank drilling campaign in May 2003. Introduction of this service was anticipated to be the most cost effective solution for gathering pressure data on these long horizontal wells. The equipment was modified after the first well and the rate of success increased from 20% to 90%. As of June 2004, the service had been run in six wells. The authors will review the value the service has added to the drilling campaign and also review the experience gained with the service during its first year.

Conclusions are drawn regarding FTWD technology and its future for the Valhall Flank drilling campaign in particular.

Experience Using the First Commercial Pad and Probe Style Formation Tester While Drilling Service Has Led to Value Creation at the Valhall Flank Development (SPE/IADC 92712) **M A Proett, Halliburton; I S Roberts, BP; P Heavey, BP Amoco Norge; C P Siess, Numar.**

FORMATION PRESSURE

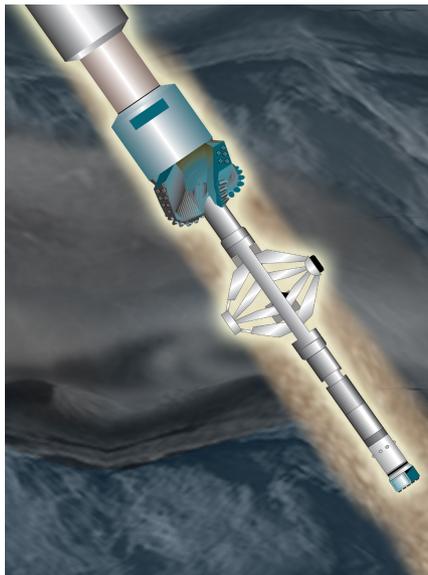
The authors present several formation pressure while drilling case studies conducted in the North Sea. Formation pressure measurements were repeatedly performed under different well conditions and at different times after the bit penetrated the formation. The impact on the measurement of various parameters will be analyzed, most notably the effect of mud circulation rate, type and condition of the drilling mud, formation mobility, time after drilling and changes in the measurement sequence (in particular, the test volume and rate of drawdown).

Operational Aspects of Formation Pressure Measurements While Drilling: A Case Study (SPE/IADC 92494) **K O Eriksen, H Laastad, Statoil; M O'Keefe, J Pop, J M Follini, Schlumberger.**

DATA COMPARISON

In this paper, the application of a formation pressure testing while drilling (FPWD) tool in conjunction with a mud motor is described within a dynamic environment due to motor rotation and associated drillstring vibrations, as no circulation bypass valve was used. The

Baker Hughes INTEQ TesTrak tool was capable of performing accurate formation pressure and mobility measurements with an overall success rate of over 80% in an extreme pressure and vibration environment. Pressure test results will be shown and compared to conventional wireline logging results from nearby wells.



Through bit logging uses the drill string as a conduit to the wellbore to create low-cost, low-risk data acquisition. SPE/IADC 92556.

Comparison of Formation Pressure and Mobility Data Derived During Formation Testing While Drilling with a Mud Motor with Production Data and Core Analysis (SPE/IADC 92492) **M Meister, Baker Hughes INTEQ; J Strobel, RWE DE.**

THROUGH BIT LOGGING

Through bit logging (TBL) is a data acquisition method that uses the drill string and bit as conduit to the well bore. TBL opens up new low cost, low risk options for data acquisition (and other through bore operations) during well construction, providing the driller and petroleum engineers new (and low cost) options to choose from to optimize well construction.

The author will present two in-depth case studies showing the unique capabilities of this technology to obtain data in difficult well situations. Both cases were recent (early 2004) wells in the North Sea. The author will also will present the new Side Entry Sub System which enables rapid easy fishing in the case the

logging tools were to get stuck during TBL operations.

Through bit Logging: Applications in Difficult Wells, Offshore North Sea (SPE/IADC 92256) **D J Runia, Shell International E&P.**

SUPERCHARGING

The authors will describe a method to predict the drilling fluid filtrate loss rate and the corresponding changes in near-well formation pressures. The model takes into account static and dynamic filtration, cake growth and erosion and filtrate flow within the formation. It differs from previously published work in that it is formulated closely around quantities that are directly experimentally measurable, using standard apparatus. Besides bringing certain simplifications, this enables it to be more easily used in practice. Comparisons with laboratory filtration and sequential filtration results will be shown.

When Should We Worry About Supercharging in Formation Pressure While Drilling Measurements? (SPE/IADC 92380) **P S Hammond, Y Chang, Schlumberger.**

DRILLING THROUGH SALT

The presence of evaporitic sections in prospects for oil or gas exploration is, in itself, a factor that increases the probabilities of success in the area due to favorable conditions for the hydrocarbons generation and trapping. On the other hand, many operational problems such as stuck pipe and casing collapse have been reported by the industry when drilling through those salt layers, related to the its mobile characteristic.

Historically, in the Campos Basin - Brazil, several deep wells have been drilled through thick salt intervals. Up to the 1990s, the lack of reliable ways to predict salt behavior at high temperatures and high differential stresses led to very high drilling costs and even loss of wells. The authors will present a methodology employed to optimize mud weight and casing design and to define a drilling strategy for drilling at great depths through thick salt layers.

Drilling Through Thick Salt Layers in Campos Basin-Brazil (SPE/IADC 92629) **A M Cost, E Polate, Jr, J L Falcao, Petrobras.**