GeoConvention 2014
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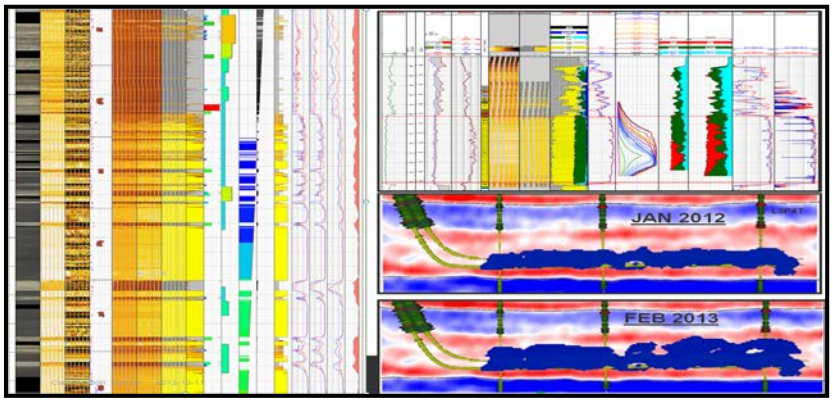
Characterization of fine scale geological heterogeneities using borehole images and their impact on steam chamber growth of oilsands reservoirs. A case study from Leismer's LDP oilsands project.

Nader Gerges - Statoil ASA

Introduction and Summary

The Lower Cretaceous McMurray Formation in north-eastern Alberta contains a substantial fraction of the world's proven extra heavy oil resources. It has been estimated that over 40 billion barrels are potentially recoverable using the in-situ Steam Assisted Gravity Drainage (SAGD) process. Predicting the performance of the in-situ SAGD process in the McMurray formation is required to optimize development planning and resource management. The vertical permeability is perhaps the most critical geological parameter in predicting the growth of the steam chamber during the SAGD process. Capturing the effects of the fine scale geological heterogeneities in the reservoir models is crucial to accurately predict the rate of the steam rise and the oil/water drainage towards the horizontal producer. An innovative technique was developed to incorporate the quantitative interpretations of the borehole image logs with the horizontal and vertical permeability curves to accurately characterize the small scale variations within the pay interval. This presentation will demonstrate the integration of the core data, conventional logs, temperature logs, borehole images, reservoir saturation logs and the time lapse 4D seismic to optimize the production strategy.

Example:



A Figure showing the effects of fine scale heterogeneities on steam rise within the reservoir