Case Study Comparison

Planned vs Actual Drilling Results Of Mapping & Characterization of a Horizontal Injector Well in Lower Halfway Sand Oil Reservoir, AEC West's Clair Field, Alberta (72-5W6)

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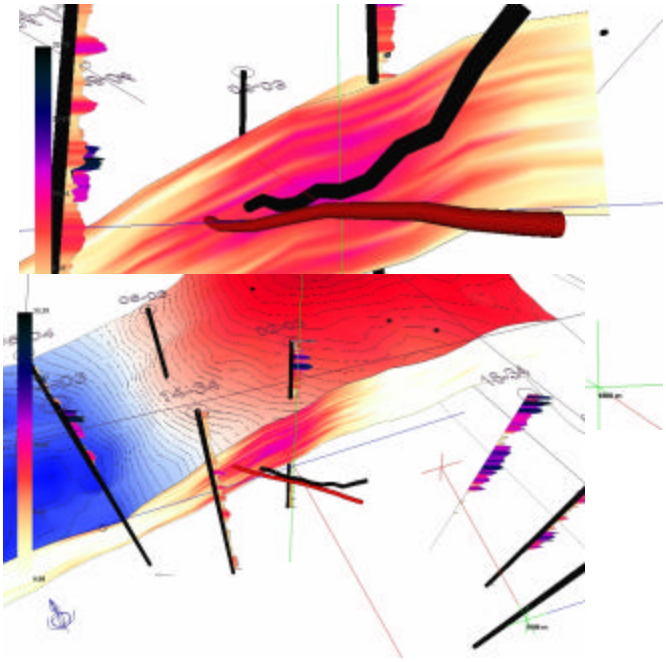
The drilling of the horizontal well at location 16-34-72-5W6M has confirmed the successful 3D mapping and characterization of the subject reservoir. Using geostatistical interpolation of log data, the subject reservoir was mapped and interpreted within a couple of weeks. Several models were constructed using the following log attributes imported from LAS data. These include Porosity, Gamma Ray, Permeability and Water Saturation. The images here are using 3D seismic structure.

Extracted results from the model were used in flow simulation (Eclipse). Other maps such as net pay and structure maps and extracted flow simulation data are presented here as well.

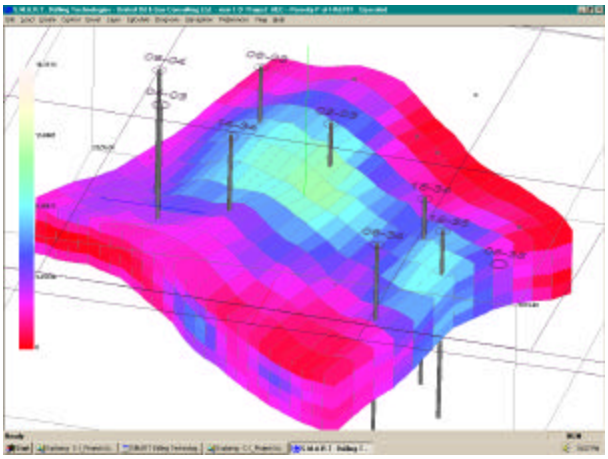
The pre-drill vs. post drill results were compared. Results show excellent correlation between the pre and post well models. We note that while the model can be updated using the new data after drilling, it can also be updated while drilling. Both the well planning capability (prognosis) and the "just in time" mapping would allow for geo-steering.

Due to the advances in interpolation methods, visualization hardware and software running on PC's we are now able to make the most of the available information. While Drilling mapping and characterization is now a reality.

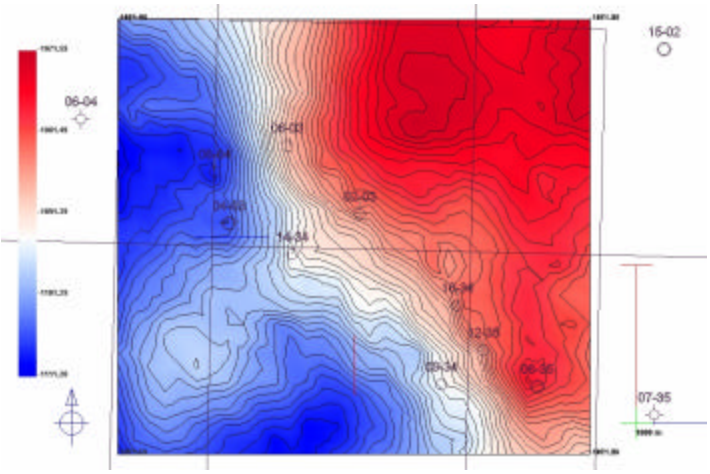
3D perspective view of porosity showing the higher porosity in red and tighter rock in yellow. The Proposed(Red) and actual (Black) trajectories are quite close.



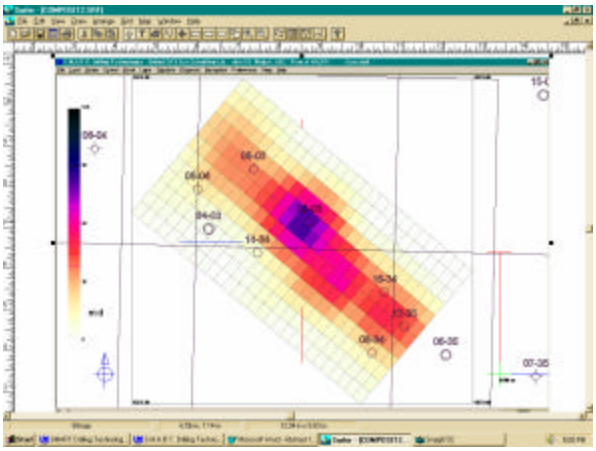
Close-up view of Porosity and the proposed vs. actual well trajectories.



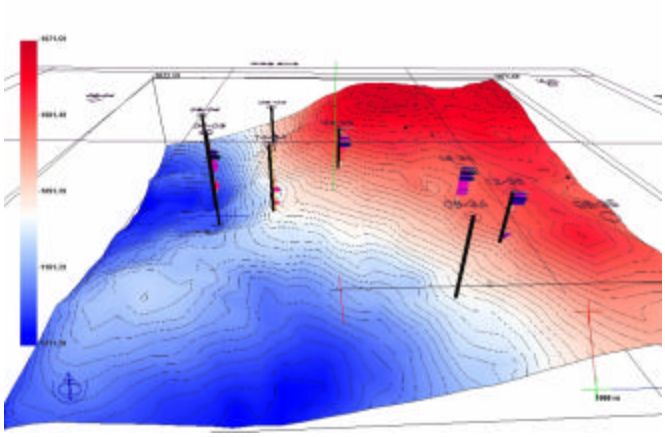
Up-scaled Porosity Ready for Simulation



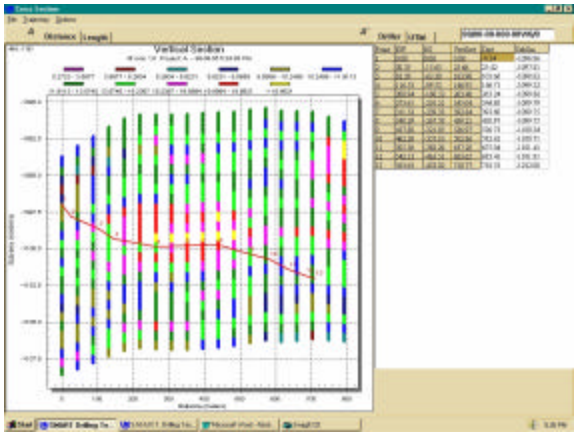
3D Seismic Structure Base of Lower Halfway



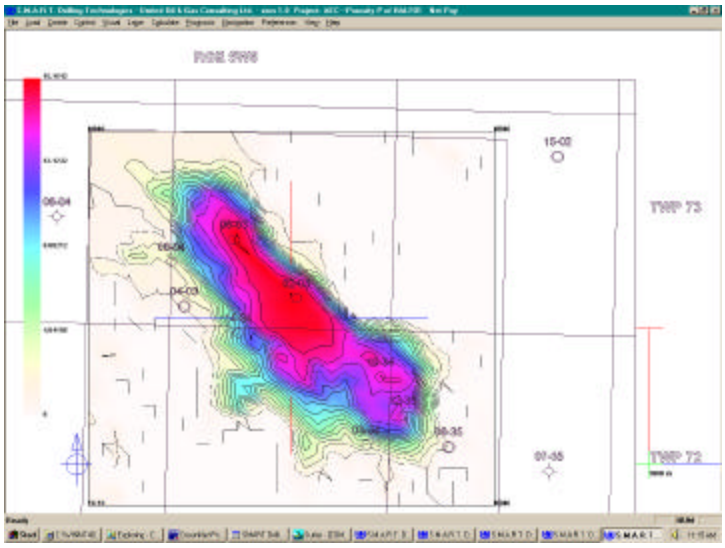
Up-scaled Lower Halfway



Perspective view of 3D Seismic Structure Base of Lower Halfway



Horizontal Well Planning



Net Pay Map Generated from 3D Fractal interpolation of Porosity