

# Neural Network Applications to Porosity Prediction; Hebron Field Offshore Newfoundland, Canada

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## **Introduction**

The Hebron Field is located approx. 350 kilometers SSE of St. John's Newfoundland. The field has three pay zones and an estimated 2 billion barrels in-place. The advent of seismic attributes has allowed more information to be extracted from the seismic data. A method of determining which information to use is highly valuable. Neural networks can be employed to isolate the attributes, which in combination can best predict desired log responses. Neural networks were employed in an attempt to predict the porosity prediction in these three pay zones.

## **Methodology**

Porosity was predicted from five porosity curves in the field using linear regression and neural networks. Attributes were calculated from seismic data, impedance, coherency, and velocity cubes. Numerous iterations were made using predictive and multi-layered feed forward networks. A best fit solution was generated for each pay zone.

## **Conclusion**

A neural network application enhanced the porosity distribution prediction and increased the correlation by an average of 30 percent for all three pay zones. Comparisons to seismic inversions also showed a marked improvement using neural networks.