

KingdomTM VelPAK

Advanced Depth Conversion
and Velocity Modeling



Kingdom VelPAK is an advanced velocity modeling and depth conversion software solution. It accurately determines depth to target while reducing the risk associated with reservoir structures and provides a robust quantification of reserves evaluation.

Suitable for a range of depth conversion measurements between E&P disciplines, it is designed to improve operational efficiency through faster uncertainty analysis, improved data visualization and management, and a host of features over and above what is possible within other depth conversion software, such as leveraging well and seismic velocities.

Benefits

- Gain lateral and vertical understanding of velocities for improved model reliability
- Confirm model robustness by concluding the optimal function per layer
- Understand uncertainty associated with the best technical case model
- Gain confidence of the areal extent of your reservoir and associated connectivity of structures
- Determine P10/50/90 ranges for reserves evaluation

Features

Analytics

Utilize cross-plots, histograms, curve mapping, numerical optimization, sonic log and seismic velocities to interrogate well and processing velocities in many ways, manually or by utilizing our predefined workflow system.

Reduce Risk Associated with Uncertainty

Analyse the range of depth conversion results for volumetric probability distribution functions (P10/P50/P90), spill point analysis and probability of closure maps. Additionally, sensitivity analysis can aid the user in determining the key levers that control reservoir structure.

Image from VelPAK's Analyse module.

Figure 1. Create hundreds/thousands of constrained stochastic simulations around your best technical case model and use Lever Analysis to further constrain the most sensitive layers that relate to the overall Gross Rock Volume, enabling you to accurately determine your P10/P50/P90 ranges for reserves evaluation purposes.



Create Wells from Seismic Velocities

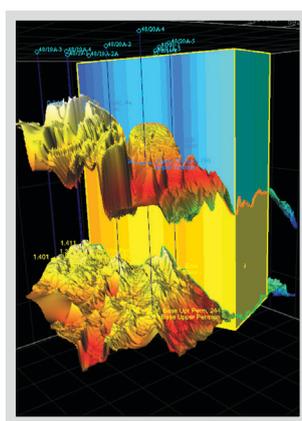
Processing velocities may be amalgamated to create pseudo wells, which can be created at the well or at user-defined locations for easy comparison to well log data. Increasing reliance is placed on processing velocities to provide the depth solution and the imaging solution. Being able to review these velocities and assess where they are geologically reasonable is essential if you want to rely on them for depth.

Hi-Def Volume Creation

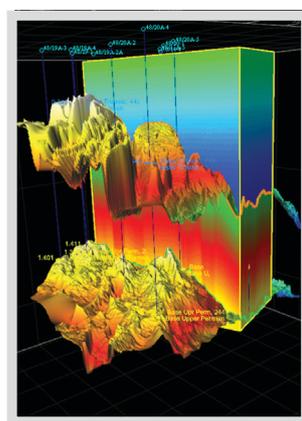
Whether you want an input for an inversion study or see the impact of intra-layer complexity on your layer-cake depth conversion, seeing all levels of velocity complexity is key to an accurate field assessment.

Images from Kingdom VuPAK module.

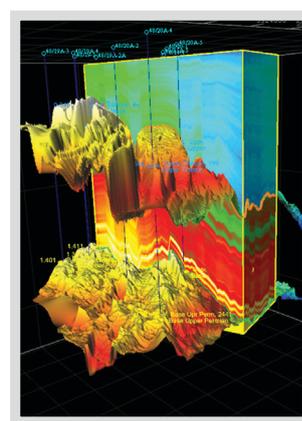
Figure 2. Kingdom VelPAK provides highly accurate velocity models that encompass vertical and lateral velocity changes that conform with the geology. These models can be upscaled using VelPAK's Hi-Def module to add log level velocity information throughout the volume for reservoir characterization, pore pressure prediction and additional quantitative interpretation (QI) work, for increased model confidence.



Kingdom Dynamic Depth Conversion Velocity Model



Typical VelPAK Velocity Model



VelPAK's Hi-Def Velocity Model

Multi-Z Depth Conversion

The profile mode handles complex structures that cannot be presented by a simple surface. Diapirs, reverse faulting, shallow gas, channels and intrusions can all be depth converted confidently.

Workflow Builder

With workflows to aid in repeatability, it provides users with audit trails and rapid updates to models when new data becomes available. Workflows are fully customizable and transparent, so you get a detailed technical understanding of how the software generated its results.

“IOG is a gas and infrastructure operator focused on becoming a material developer and producer in the Southern Gas Basin. Understanding depth conversion uncertainty and quantifying resource range is critical for our business. VelPAK was the best depth conversion tool we found that allowed us to identify the drilling locations carrying the least geophysical risk and quantify the range of possible outcomes.”

Mark Sawyers
Chief Geophysicist, IOG plc

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