

Definition and Characterization of Deep Reservoirs in Complex Geological Settings Using a Portfolio of Subsurface Technologies

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We present several case studies illustrating Shell's approach to exploring deep HC reservoirs, using a portfolio of flexible fully integrated sub-surface techniques integrating 'traditional' geological and geophysical techniques with well engineering techniques. In many cases reservoirs at great depths pose structural definition problems in particular when they occur deep below salt or volcanic packages. Furthermore, as these reservoirs are often in older and harder formations, their expression on seismic data is more subtle and, for example, do not show 'straightforward' hydrocarbon indicators. De-risking these reservoirs calls for an approach involving multiple data sets based in different physical principles - seismic and non-seismic firmly integrated in a 3D regional geological context. Requiring consistency of all data is critical for successful for prospect de-risking and is increasingly important for optimal and safe drilling. In this paper a series of case studies will be shown illustrating this approach, some of the techniques involved and some of the challenges for the immediate future.
