Interpretation Using Synthetic Core from Conventional Logs

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Abstract

Synthetic core in the absence of actual core can provide very useful reservoir information. A unique method of transferring geological attributes, such as sedimentary current structures and associated lithofacies from core data to facies templates via a single curve has been introduced. This single curve for certain depositional environments, such as those found in heavy oil sands can convert the geological features to create a synthetic core with all the reservoir attributes including porosity, permeability and seismic properties. The single curve named as the Fine Particle Volume (FPV) curve is built based on the wireline log interpretation and offset cores of the same depositional environment, which in this case is a tidally-dominated fluvial environment. The challenges of bringing the small scale (centimeter-level) heterogeneous geological information and facies distribution in a 3D geo-cellular model or reservoir simulator are huge. It becomes convenient to represent this information by facies templates and synthetic core via only one curve.