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### **Facies Analysis and Prediction of Architecture in Deep-Water Clastic Reservoirs Using Borehole Image Logs**

This contribution explores innovative sedimentological applications of borehole image logs and distils lessons from a diverse series of case-studies in deep-water clastic ('turbidite') reservoirs. The use of borehole imaging tools for detailed reservoir description is well established but the sedimentological potential of these high-resolution logs is not always fully exploited. We emphasize the value of an integrated approach to the sedimentological, structural and petrophysical characterization of turbidite reservoirs from well data. In particular, we focus here on the perennial issue of predictability of 3-D sedimentary architecture from 1D data at the scale of bedsets and packages. At this critical subseismic scale, the dimensions, lateral variability and correlatability of reservoir units cannot be known in the subsurface. However, a deterministic approach to reducing uncertainty regarding external form, internal architecture and lateral variability is advocated where decisive stratal and sedimentary features are recognized in image logs or core. We outline key sedimentary characteristics, resolvable by image logs, which allow confident definition of medium-scale architectural elements from 1D borehole data (e.g. channel-fill elements, amalgamated sheets, layered sheets, clinothems, mass transport complexes). With reference to theoretical models and the characteristics of exceptional outcrop sections from around the world, we revisit the potential for, and limitations to, prediction of continuity and character of reservoir units away from the borehole.