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High Resolution Stratigraphy in Fluvio—Deltaic Settings; An Outcrop Analogue Study

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ABSTRACT

In fluvio-deltaic reservoirs, accurate reservoir models and production strategy is often hampered by inaccurate prediction of reservoir unit connectivity. High resolution biostratigraphy can be applied toIncrease the level of accuracy but especially in terrestrial systems the classic biostratigraphical approach by developing zonations does not reach a sufficient resolution to solve these issues. To test new biostratigraphic techniques we carried out an outcrop analogue study in the Carboniferous of Kentucky (USA) were incised valley-fill deposits are excellent exposed due to numerous road-cuts and open-cast mines (van den Belt et al., 2015). The large amounts of borehole data made it possible that channel belts could be mapped in 3D and hence a very good grip on local sandbody connectivity was present. In this setting tested a new biostratigraphical proxy approach for well correlation in such settings which increased the resolution of correlation. We discovered that in these settings there exists a link between reservoir architecture and glacio-eustasy and hence the developed base-level proxy can be used to predict reservoir architecture in the areas with less data-coverage. The presented study shows that a multidisciplinary approach and innovative biostratigraphy can increase stratigraphic control in complex settings and such an approach could be the key to understand reservoir connectivity in complex fluvio-deltaic settings in the Middle-East.