

## **Simultaneous Inversion of Clastic Zubair Reservoir: Case Study from Sabiriyah Field, North Kuwait Alberta Exploration**

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### **Abstract**

The zone under study is Zubair formation of Cretaceous age in Sabiriyah Field. This formation is broadly divided into upper, middle and lower units, where the lower unit has commercial hydrocarbon accumulation. The objective of this study is to characterize the hydrocarbon bearing sands at the base of Zubair using simultaneous inversion. Reservoir characterization using post stack deterministic inversion method to estimate acoustic impedance (P-impedance) was unable to differentiate the reservoir and non-reservoir lithologies in this formation due to the low contrast in P-impedance between sand and shale. A feasibility study was conducted and the results show that prediction of hydrocarbon bearing sands in Zubair formation is feasible using P-impedance and  $V_p/V_s$ . Consequently, the simultaneous inversion method was carried out to derive these rock properties from the 3D seismic data integrated with well log data. The results from simultaneous inversion show that the sand bodies at the base of Zubair can be discriminated using the combination of P-impedance and  $V_p/V_s$  elastic properties that allowed refining the planning and placement of wells with higher confidence.