

## **Carbonate Facies Prediction Using Seismic Inversion Technique: An Integrated Reservoir Characterization Approach**

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### **ABSTRACT**

The hydrocarbon exploration for Jurassic carbonate reservoirs is of main interest to the oil companies working in the Arabian Plate. Different seismic attributes including inversion are used to characterize these reservoirs. The integration of geological information in the interpretation of these seismic driven attributes are always challenging. In this example, all different datasets e.g., facies from core, facies from elastic logs are integrated into final ‘geological model’, which were later used in reservoir simulation. The significance of this study is the integrated workflow, which utilizes the facies interpretation from cores and elastic facies mapping, into seismic inversion. In the seismic inversion procedure, seismic facies and porosity volume were calculated simultaneously using stochastic engine. In this inversion engine, post stack seismic and its wavelet along with first and second order statistics were used as input. Defining seismic facies are key to this whole procedure. The produced static geological models with the aid from seismic facies analysis and porosity volume calculation were used in the reservoir simulation as one possible ‘scenario’.