

Detailed Reservoir Characterization and Facies Distribution of Upper Badenian Channel-Levee-Overbank Systems: Implications for Exploration Work in Between Mature Fields of the Northern Vienna Basin, Austria

Linda Lerchbaumer¹, Wolfgang Siedl¹, and Philipp Strauss¹

¹OMV Upstream, Vienna, Austria.

ABSTRACT

Hydrocarbon exploration within the Vienna Basin becomes more and more challenging as all obvious features and structures have been drilled. Still, classic exploration work is required due to technological advances like spectral decomposition that help to visualize even thin reservoir layers which usually are below seismic resolution. Resolution is the critical parameter for the understanding of fluvial and shallow marine sedimentary systems of the Upper Badenian: Despite the high density of wells in the area, a cross correlation between producing fields is difficult due to meandering channel belts, fast facies changes, and fault zones which impair the seismic signal. This local prospect study investigates the detailed extent of the channel-levee-overbank complex and its different facies to better characterize and trace the stacked reservoir strata. Furthermore, sedimentary features from this small area will be put into a regional context and compared with international analogues. For spectral decomposition, different 3D seismic cubes are used. An extensive amount of porosity and permeability data from offset wells is used for the categorization of the channel-levee-overbank complex. First results from a more regional study show that one of the major risks is channel amalgamation and the absence of intraformational seals. The very good porosities of up to 29% would remain unprospective if there is no proper top seal present. However, more detailed results will be presented. This new data could help to draw better conclusions about the evolution of the shallow marine depositional system. Furthermore, these results show that modern seismic visualization techniques and in-depth studies of reservoir properties make exploration economically worthwhile even within long standing producing fields.