

LBr-1 structure for pilot CCS in the Vienna basin: lithological and tectonic 3D model

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The LBr-1 is an abandoned oil and gas field Lanzhot – Brodske located at the Czech and Slovak border in the Vienna basin. The Lanžhot block forms a southern part of the Hodonín – Gbely horst in the Czech part of the Vienna Basin, adjacent to the Moravian Central Depression on the W and Kúty Depression on the SE. This area has been recently revisited with an effort to evaluate potential CO₂ storage (CCS) and EOR. The well log data along with the seismics, petrophysics and stratigraphy served as basis for construction of a new 3D/2D model of the Badenian to Pannonian and younger strata. The oil and gas field LBr-1 was explored and exploited from 1956 to 1976. The new well log correlations introduced marker horizons, sequence stratigraphic features, such as upward coarsening or fining, pinchouts and transgressive phenomena. The well log data are tied up with the 3D seismics and principal surfaces are interpreted with lithological patterns and petrophysical properties in maps and profiles in addition to the previous works (Prochac *et al.*, 2012). The key intervals include 4 partial sand horizons within the Lab reservoir, top of the Middle Badenian regional seal and base of the reservoir. Faults are mapped in the seismic lines and modeled in 3D. They are situated mainly outside the reservoir and do not represent a major risk for the storage integrity. The overburden model includes top of the Sarmatian, Pannonian coal seam strata, and the base of the Quaternary. Compartmentalization and reservoir continuity is shown in 3D and provides basis for improved understanding of the porosity and permeability distribution in the storage complex. The modeling results of the 3D structure within the geological context of the northern Vienna basin are used in the dynamic reservoir model simulating the CO₂ storage.

REFERENCES

Prochác, R., Pereszlényi, M. and Sopková, B. 2012. Tectono-sedimentary features in 3D seismic data from the Moravian part of the Vienna Basin. *First Break* 30 (4), 49–56.