

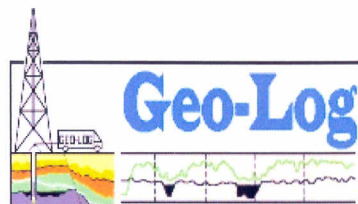
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Study of the rare earth element enrichment of the uranium ore deposit at Cserkút, Mecsek Mts.

Ivett Kovács, Gabriella Kiss

Department of Mineralogy, Eötvös University, Budapest
Poster

The most important sedimentary uranium deposits are found in sandstones, similarly to the deposit of the Mecsek Mts., which belongs to the tabular subtype. The ore is found in a greenish coloured sequence, between the underlying grey and the overlying red sandstone series. The underlying sequence is composed of carbonized plant remnant bearing sandstone, gritstone and siltstone beds of fluvial origin, and the overlying beds formed in continental, fluvial environment.

The rare earth element (REE) content of the uranium deposit of the Mecsek Mts. was studied since the 1960s. Those studies have drawn the attention to the anomaly of the REE. Their focus was on the general context, thus they did not explain the possible relationship of the REE content and the uranium content. Since then, the studies did not aim to deal with the REE enrichment, though almost all of them mentioned their anomaly.

The Wildhorse Energy Hungary Ltd. has prepared new drillings in Cserkút. Two of them were studied in details in the frame of this research. The studied drillings have headed through the Permian sandstone, in which siltstone, fine-, medium-, coarse-grained and brecciated sandstone beds can be distinguished. The overlying succession is generally red, though in case of the medium grained sandstone, greenish beds or patches occur. The productive zone is composed of green and greenish grey, medium to coarse grained sandstone. Geochemical analyses were done to determine the uranium content, and in some cases, the REE content of this zone. It can be concluded, that the more incompatible light-REE are more enriched, then the heavy-REE. However, in some well determinable zones, the uranium content correlates with the REE content, which supports the earlier assumption, that not only placer minerals of alluvial origin contain REE, but they can also occur in minerals precipitated from the uranium-bearing fluid.

Construction and Simulation of Sparse 3D Seismic Acquisition and Comparison with Conventional 3D Measurement Results

Dorottya Enikő Polgár

Department of Geophysics and Space Sciences, Eötvös Loránd University
Poster

One of the most important and widely used techniques of hydrocarbon exploration is 3D seismic acquisition although its high cost and logistical effort. So called 'sparse' 3D seismic acquisition was developed to reduce acquisition costs while keep the resolution in the appropriate level. The overall quality of the seismic data decreases with lower fold while the measurement cost is reduced compared to conventional 3D measurements.

In this case study a conventional 3D survey was processed and several decimations of source and receiver lines on surface were constructed. These decimation tests allow us to compare the results and costs of the original field acquisition with simulated low fold seismic surveys. Simulated survey result with relatively good resolution and lower cost (compared to conventional measurement) can be used for further investigation in an extended area.

Chemical reactivity aspect of carbon dioxide geological storage - preliminary results of a case study in potential Lower Pannonian storage and sealing lithologies

Eszter Sendula

Litosphere Fluid Research Lab, Department of Petrology and Geochemistry,
Eötvös University, Budapest
Poster

After the period of Europe-wide actions in CO₂ storage capacity assessment we are experiencing a significant change in the national activity related to carbon dioxide geological sequestration. This is mainly the consequence of the successful implementation of the carbon dioxide geological storage directive (2009/31/EC) into national legislation by many of the member states. Among these, Hungary has successfully finished its harmonization procedure in May 2012.

The national regulation obligates the competent authority to collect and regularly update all geological complexes that are potential

for CO₂ geological storage. Moreover, the regulation lays down a rigorous procedure of data collection and interpretation.

In my presentation I will point out some of the activities required by national regulation that are closely related to petrology and expected reactivity of potential storage and sealing lithologies. I will focus on the most potential storage rock candidate, namely the Lower Pannonian sandstone formation and its siltstone caprock from one of the most perspective future storage areas studied earlier. I will give a detailed mineralogical description of the referred lithologies and focus on the most reactive mineral components (e.g., carbonates, feldspars). Applying the PHREEQC code, available in the public domain, and using realistic pore water compositions, I will show preliminary results of modeling basic mineral reactions, their rate implying that supercritical CO₂ is added to the system. It is expected that these basic models even in their preliminary stage will help to focus on the critical lithologies that may possess additional risk to long term safe storage of industrial carbon dioxide.

Acknowledgements supervisors Csaba Szabó PhD. and Dr. György Falus. This work is collaboration between Eötvös University and Geological and Geophysical Institute of Hungary.

The first result of well-log re-interpretation of a Hungarian natural CO₂ reservoir

Ágnes Szamosfalvi

Geological and Geophysical Institute of Hungary

Poster

One of the most direct ways to obtain physical and geometric information about subsurface formations is using well bores. Information provided by the well-boring is indispensable in processing and interpretation of seismic data, determination of the real formation boundaries and of the exact geological setup of a formation. Therefore, well-log data of a given study area are of prime importance.

During the development of our well-log re-interpretation methodology I have used old paper-based well-logs from the Mihályi-Répcelak natural CO₂ site that is lying in the northwestern part of Hungary, in the Little Hungarian Plain. The CO₂ is mainly contained

by the Pannonian sedimentary sequence (mainly sandstone, siltstone, and clay), in a depth of about 1400 m. I have investigated 13 wells from the area of Répcelak and 18 wells from Mihályi area. The CO₂ reservoirs are situated in the lower and upper Pannonian layers.

The available paper-based well-logs were scanned, digitized and imported in the WellCAD software. After making the corrections, trouble shooting, intercalibration and temperature correction of the well logs, I have indicated the lower Pannonian sedimentary sequence and discovered large differences between my interpretation of formation boundaries and the widely accepted model of lower Pannonian sedimentary thickness in the study area.

In my presentation I will point out some of the new evidences, coming from the re-interpreted well-logs that are inconsistent with the recent widely accepted model of the Pannonian delta progradation. My aim is to provide novel information on the basin-filling sediments from the Mihályi-Répcelak area, which could inspire a new discussion and a more thorough understanding about the development of the Pannonian Basin.

Well log Interpretation of 'old logs' for further 3D geological modelling & simulation

Kaszvinszki Renáta, Spitzmüller Ádám

MOL Plc. E&P, IFA, GA&M.

Poster

In our poster we will show a workflow for calculation of reservoir parameters based on 'old logs'. Sometimes we have only SP and some resistivity logs. The exploration of the first area was started in 1940's and followed in 1950's. In these wells the following log combinations were available:

- macro resistivity measurements, BKZ and Golf Coast System – gradient and potential sonde combinations,
- micro resistivity measurements (microlog-ML).

After the 60's the log choice of the wells increased with nuclear and acoustic methods:

- neutron gamma (NG),
- gamma ray (GR),
- acoustic travel time.