

## **GAS AND FLUID MIGRATION PATHWAYS IN SALT BODIES – IMPLICATIONS FROM THE KLODAWA SALT STRUCTURE, CENTRAL POLAND**

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### **Abstract**

Recognition of permeable zones in a salt structure is of key importance both for safe excavation of salt and for safe location of storage caverns and waste disposals. This paper presents results of studies carried within the Klodawa Salt Structure, central Poland, on geological setting and distribution of natural gas and fluid phenomena in the salt dome.

The distribution of three categories of gas and fluid phenomena was analyzed: (i) gas outburst and gas emanation zones, (ii) hydrocarbon-bearing zones, (iii) natural brine occurrence. The gas outburst and gas emanation zones occur along the boundary of PZ1 and PZ2 Zechstein cycles, as well as along contacts of large scale sheath folds. Hydrocarbon-bearing zones are less common; their geological occurrence is similar to the gas outburst zones. They also occur along fractures in rock salt. Natural brine occurs mostly in rock salt adjacent to the Main Anhydrite and the Older Potash beds and along shear zones and faults developed on large scale sheath folds.

Geochemical studies on hydrocarbons indicate that the contacts between rock salt of individual Zechstein cycles as well as between the sheath folds are permeable for fluids and gas. These tectonic contacts extend over a distance of tens to hundreds of meters and they may connect cap rock with deep portions of the salt structure. Similar large scale extent has been evidenced for fossil karstic systems that had developed adjacent to the Older Potash. Those system became reactivated during the salt structure evolution and they locally remain hydraulically open for relict brines at present.

**Key words:** Domal Salt, Geology, Rock Salt and Potash Mining, Safety, Poland