

Birth and Development of Oil and Gas Industry in the Northern Carpathians (Until 1939)

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ABSTRACT

Northern segment of the Carpathians stretching between Limanowa (Poland) and Kosów (Ukraine) belonged in late XIX and in early XX centuries to the most prolific hydrocarbon provinces in the world. Oil and gas fields and commercial accumulations of earth wax (ozokerite) are located within the Outer Carpathian thrust sheets and their foredeep basin that has been also partly incorporated into the Carpathian fold-and-thrust belt. Cretaceous – Paleogene Outer Carpathian thrust sheets are predominantly built of the deep water turbidites. Fine-grained clastics, rich in organic matter (e.g. Spas, Verovice, variegated and Menilite shales) form source rocks, and coarse-grained sandstones (e.g. Grodziszczce, Lgota, Godula, Istebna, Ciezkowice and Kliwa sandstones) form reservoirs. Traps are mostly structural, related to various folds formed during emplacement of the Carpathian fold-and-thrust belt. The earliest written accounts of natural occurrences of hydrocarbon in the Carpathians date back to the XVI century. In XVII and early XIX centuries Rzaczynski, Kluk, Hacquest and Staszic provided accounts on methods of practical use of oil. Staszic's geological map dated 1806 shows numerous oil seeps and different rock types containing hydrocarbons. The development of oil industry was triggered by Ignacy Lukasiewicz's discovery of effective oil distillation process and construction of kerosene lamp. Following this, oil industry flourished in the Northern Carpathians. Oil production peaked in 1909 with 2076000 tonnes. In the subsequent years, level of oil production was steadily decreasing due to turbulent economy. Companies active in this region included, between others, Standard Oil Company of New Jersey. Overproduction of oil in years 1902-1909 was caused by too many operating companies and lack of effective techniques for oil storage. Exploration for oil, gas and ozokerite resulted in development modern micropaleontology and geological mapping, with prime example of regional coverage of almost entire northern Carpathians provided by Geological Atlas of Galicia consisting of 99 high quality geological maps in scale 1:75 000. Geophysical surveying techniques applied by "Pionier" company such as refraction and reflection seismics, and gravity and resistivity surveying were used for subsurface mapping. Several research (e.g. Karpacka Stacja Geologiczna in Boryslaw) and higher education institutions in Lwów and Kraków were established in order to support exploration efforts.