

The assessing of the quality of geothermal reservoirs on the example of the Lower Triassic aquifer in the Mogilno-Łódź Trough (Polish Lowlands)

Aleksandra Kasztelewicz^{1,*} and Barbara Tomaszewska²

¹AGH University of Science and Technology, Faculty of Geology Geophysics and Environmental Protection, Mickiewicza 30, 30-059 Kraków, Poland

²Mineral Energy Economy Research Institute PAS, Wybickiego 7A, 31-261 Kraków, Poland

Abstract. Petrographic and petrophysical investigations of the aquifers allow to estimate their productivity and infectivity, as well as allow for better recognition of the origin of the chemical composition of geothermal waters. Deep deposition of the Lower Triassic sediments in the analysed area (locally above 5000 m b.s.l.) is conducive to high temperatures (above 90°C) within the reservoir and causes deterioration of reservoir parameters. The Lower Triassic geothermal reservoir consists of fine and mixed grain-size sands and sandstones layers from 10 to 650 m thick; depending on the depth. The water within the reservoir exhibits mineralization ranging from 2 to over 100 g L⁻¹ and its temperature ranges from 30 to 100°C. The mineralization of waters varies from 140 g/dm³ (Warsaw basin) to over 350 g/dm³ in the deep zones of the basin (axial fragments of the Mogileńsko-Łódź trough). The average permeability of reservoir layers in the Polish Lowlands is 145.5 mD.

1 Introduction

In the last few decades there has been an increase in interest in geothermal energy in Poland. Nowadays, geothermal energy is mainly used for heating purposes in recreation and balneotherapy, what has been expressed by seven new centres open in recent years [1-5]. Despite this, it should be noted that the exploration of geothermal energy carries the risk of not finding suitable subsurface reservoirs. Success of the of the geothermal projects base on ability to understand and mitigate the uncertainties associated with subsurface environment. The paper focused on important aspect of geological identification of the structural characteristic of reservoir rocks as one of the most important elements of the geological research work.

* Corresponding author: akasztel@agh.edu.pl

