Clastic Deposition of Chlorides from Marginal Basins – Examples from the Neogene of Poland and Slovakia

Krzysztof Bukowski [1] and Grzegorz Czapowski [2]
[1] AGH University of Sciences and Technology, Mickiewicza 30, 30-056 Cracow, Poland
[2] Polish Geological Institute, Rakowiecka 4, 00-975 Warsaw, Poland

The studied salt-bearing succession was deposited in the Central Paratethys seaway. The Paratethys was an enclosed sea that existed from the Oligocene to the Middle Miocene times as an interrelated chain of basins of diverse tectonic origin. Evaporites of the Middle-Upper Badenian age (the period equivalent to the upper Langhian-lower Serravalian stages) were accumulated in the foredeep area stretching from Poland to Romania. Contemporaneous evaporites also were deposited in the Transylvanian Basin in Romania, the Trans- Carpathian Basin of the Ukraine and the East-Slovakian Basin.

The evaporite series were formed at the boundary of nannoplankton zones NN5/NN6 and/or to the lower part of NN6 zone. Its absolute age was defined by K-A dating of tuffite interbed (Bochnia Salt Mine, Poland) as 13.6+/- 0.2 Ma.

Deposition of these clastic-evaporite deposits both in the East Slovakian Basin (called Zbudza Formation) and in the Polish Carpathian Foredeep (Wieliczka Formation) was controlled by frequent tectonic and seismic phenomena and a high continental clastic supply. The effect was the repeated slump sediments with dominant proximal mass flow and distal flow (turbidites) facies, evidenced by diverse salt types (salt/clay rhythmites, finer halite-arenites, coarse halite-rudites, with relatively limited lateral continuity). These slump deposits are separated by primary salt units (halite) precipitated in situ from bottom brines during calm periods. The observed cyclicity (I-V cycles) reflected varied tectonic activity of the basin margins, that mechanically remobilised the sediments from marginal salt pans, flats and adjacent uplifts, and could be correlable in profiles of both studied basins.

Key words: salts, Neogene, Carpathian area