

# The contribution to the solution of the source of marine magnetic anomalies

O. Orlický

Geophysical Institute of the Slovak Academy of Sciences<sup>1</sup>

**Abstract:** The examples of possible source of intense marine magnetic anomalies have been presented on the basis of study of continental basalts from Slovak volcanic fields. According to experimental works when the oxidation of the titanomagnetites in basalts has taken place below 150°C with the presence of ambient magnetic field, basaltic rocks acquired low intensity CRM, mostly lower than their original RM. But when the oxidation (low, or high-temperature oxidation) takes place over 150°C, the VRM (the chemo-viscous RM) of basalts is several times more intense than the RM of rocks before their oxidation. This VRM is always of positive direction. Such model can be applied to the explanation of different intensities of marine magnetic anomalies. Basaltic magma of the central part of rift system preserved its temperatures at higher level and cooled a longer time than the thin lava flows on the flanks of the system. So, the alterations of the Ti-Mt-es took place at higher temperatures in the central sizable body comparing it with the thin lava flows when the temperatures are supposed to be expressively lower. These different temperature oxidation conditions resulted also in the acquisition of different intensity of VRM (or CRM) of basaltic rocks and thus resulted in the generation of different intensities of marine magnetic anomalies.

**Key words:** oxidized titanomagnetites, basalts, the sources of magnetic anomalies

---

<sup>1</sup> Dúbravská cesta 9, 845 28 Bratislava, Slovak Republic; e-mail: geoforky@savba.sk