

TECTONO-VOLCANIC ACTIVITY OF THE MID-ATLANTIC RIDGE BETWEEN THE FIFTEENTWENTY AND MERCURIUS FRACTURE ZONES

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Most of the basalts this MAR segment recovered during the R/V Akademik Nikolai Strakhov Cruises 9 and 15, including those obtained from far outside the rift, are typical oceanic tholeiites, which can be subdivided into the following varieties: depleted N-MORB, intermediate, and enriched P-MORB. The enriched basalts are localized within regions with elevated lithospheric permeability: at zones where the rift segment is transected by the fracture zones and at uplift of the rift valley floor between the fracture zones, where the floor is cut by a system of northwest-trending structures. These areas display traces of the cyclic character of volcanism. Within each cycle, the composition of the basalt melts varies from depleted to enriched, and each of the cycles lasted for 2-2.5 m.y.. In addition to the main group of basalts, there are two groups that have a lower silicity but are richer K₂O, TiO₂, P₂O₅, L- and MREE than the enriched tholeiites. These low-silicity basalts compose structures that can be assigned to central volcanoes that developed beyond the limits of the rift. The rest of the low-silicic basalts affiliates with depleted varieties. These rocks are the products of tholeiitic magma differentiation in large intermediate chambers with the participation of OPx and Fe-Ti minerals. The distinctive features of volcanism in the MAR segment may probably be explained by ascent of a mantle plume near the Fifteen Twenty fracture zone and the melting of restites that occurred tectonically in the active magma generation zone.