

PETROLOGY AND GEOCHEMISTRY STUDIES ON ROCKS FROM VITORIA-TRINDADE SEAMOUNT CHAIN AND MARTIN VAZ AND TRINDADE ISLANDS

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Lots of efforts have been done to research the Vitoria-Trindade seamount chain. Several authors suggest that this seamount chain shows no relationship to plume and only magmatism generation, through only a weakness zone. By other hand, other authors suggest the opposite that there is hotspot associated according to the geochemistry evidences to the Columbia seamount. In this research We aim to reach the understanding of this important issue about the plume existence, studying samples collected throughout the chain.

This work goal is to contribute to achieve the understanding for this controverse and add on geological data for this and future works as petrology, isotope geochemistry and Ar-Ar dating studies. On February 2011 was realized a rock dragging, a cooperating service between Brazilian Navy and a Russian company for sampling and dragging rocks of the following seamounts: Columbia, Dogaressa, Davis, Jaseur and Montague, all of them around 75m depth. At the same time a team made a field work in Trindade and Martin Vaz collecting samples for the studies and also another expedition on September 2011.

Summarizing the seamounts and islands samples, over 200 were collected and 120 thin sections were made besides 116 litogeochemistry analyses. The seamounts petrological and litogeochemistry analyses revealed the ankaramite as main rock for this seamount formation where clinopyroxene and olivine were observed. For Martin Vaz was also observed beyond ankaramite another rock containing amphibole named tannbuschite. Trindade Island showed an extensive variety of alkaline rocks containing plagioclase, clinopyroxenes, nephelines and accessories.

Lavas from seamounts, Trindade and Martin Vaz Islands situated on mature (70 Ma) oceanic crust form an alkaline volcanic suite that shows an evolution from parental nephelinites and basanites to derivative phonolites, being the seamounts uniquely composed of non-evolved rocks. The systematic variation in major and trace element concentrations observed between the nephelinites-basanites, intermediate rocks and phonolites are interpreted to be the result of fractional crystallization. Moreover, incompatible element concentrations in comparison with published data from other regions along the Trindade hotspot track (Abrolhos, Poxoreu, Alto Paranaíba, Serra do Mar) shows that this track can be explained by a conventional plume model reinforcing the hotspot track proposed to this area in the South American platform.

PALAVRAS CHAVE: Vitoria-Trindade Chain, Seamounts, Trindade and Martin Vaz Islands