

FRACTURE PATTERN, CONNECTIVITY AND FLUID MIGRATION IN THE METAMORPHIC CARBONATE COMPLEX OF ESTREMOZ (PORTUGAL)

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The Estremoz anticline is one of the major Variscan macrostructures of the Ossa Morena zone (southern Portugal). In this domain a lower Paleozoic carbonate complex (marbles and secondary dolomites) is preserved. In order to a better understanding of fluid migration in these impermeable rocks, the connectivity of fracture patterns have been investigated. We have used three different approaches: 1/1 scale- several 30 cm square sized areas have been mapped in the marbles and in the dolomites. The data show, not only the importance of the dolomitization process in the increasing of connectivity, but also a close relation between the fracture density and connectivity. It was also emphasized the length of major fractures as a mean of increasing connectivity. 1/25000 scale- the connectivity of these fracture patterns have been estimated considering, not only the trace of the discontinuities, but also some wider domains around them; these domains simulate the minor fracture systems identified in the field induced by the main fractures. These domains prove to be very efficient in the fluid migration process. numerical simulation- the study of the obtained fracture patterns indicates a rapid increase of connectivity with fracture density and fracture length. Acknowledgements: REDIBER project - PBICT/P/CTA/2113/95 TEKTONIKOS 7/99