

A Structural and Petrographical Study of the Peninsula Formation at Moregrove Quarry, Port Elizabeth

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ABSTRACT

A 100 metre section of quarry face in the Moregrove quarry in Port Elizabeth was mapped with the purpose of carrying out a detailed structural analysis of Peninsula Formation rocks. Along the quarry face primary sedimentary structures and deformation structures (faults, cleavages, joints) were measured in detail with a Brunton compass, and results plotted on an accurately constructed section, with accompanying stereogram data. Rock types are predominantly quartzites with lesser phyllite horizons. The latter occur as lense-shaped pods along faults zones and are highly sheared. Several thrust faults dipping shallowly towards the southwest have in places imbricate faults ramping up to join thrust planes, thus forming duplex structures. Normal faults are also present showing displacements of the order of only a few metres. A fracture cleavage, probably related to thrust development, is prominent in hangingwall blocks. At least two open joint sets are present in the quartzites which enhance the close-spaced fracture patterns in these rocks. In addition there are en echelon quartz filled fractures, which relate to the normal fault development probably during a post- thrusting episode. Structures formed as a result of compressional tectonism are interpreted as having developed during the Cape Orogeny, during the Late Palaeozoic, whereas normal faulting is probably related to the breakup of Gondwana, during the Mesozoic.

Key words: Thrust faults, imbricates, fracture cleavage, Cape Fold Belt.