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The Implication of Metamorphisim and Deformation of the Vioolsdrif Domain on the Haib Porphyry Copper-Molybdenum Deposit, Namibia

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The Haib Copper deposit, located in the south of Namibia in the ǁKaras Region,is hosted mainly by the high-K calc-alkaline intrusions of the Vioolsdrif Suite and sub- aerial volcanic rocks of the Orange River Group along the western part of the Paleoproterozoic Richtersveld Magmatic Arc (RMA) of Vioolsdrift Domain, Namaqualand Metamorphic Province. Porphyry-style copper mineralization is developed in and around a quartz-feldspar porphyry (hereafter QFP) intrusion, which is a minor phase of a large composite batholith formed by plutons of the Vioolsdrif Intrusive Suite (VIS). The QFP is a minor constituent of the VIS, the only other occurrences being the Tatasberg prospect in the northeast. Much of the Haib copper deposit area is inaccessible and not well studied thus leading to many outstanding questions with regard to whether the deposit was affected highly by subsequent deformation and metamorphism episodes experienced in the domain and the extend of the deposit erosion. In this study, we characterize the mineralization of ore types, grade of metamorphism and structural controls of the Haib deposit to understand the evolution of the deposit. We employed EPMA (electron microprobe analyzer), XRF, petrography and core and field observation. The study shows that the deposit experienced low grade metamorphism but is highly remobilised into preferred structurally controlled sites.