

Paper Number: 2218

## Pseudo mega ring structure in Waterberg sandstone

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The aim of this project is to investigate the cause of a pseudo mega ring structure found in the Waterberg sandstone. The location of the study area is in the Waterberg region situated between Modimolle (Nylstroom) and Vaalwater. The geology of this area consists of the Waterberg Group that lies unconformably on the Rooiberg Group. Waterberg Group sediments consist of three subgroups of which the Nylstroom Subgroup is the first subgroup. Ring structures are situated in the Swaershoek Formation of the Nylstroom Subgroup [1]. Arenites and rudites form a large part of the formation and have a distinctive red-purple colour, this is an indication of an oxygen-rich environment at the time of its formation. Diabase, trachyte and quartz porphyry lavas have been discovered in Swaershoek formation [1]. Waterberg Mountain Bushveld and Central Sandy Bushveld dominate the vegetation structure [2].



*Figure 1: Pseudo Ring Structure on Waterberg, Limpopo, South Africa*

A field visit to the site was conducted to gather plant, soil, and rock samples. Magnetometer surveys were done on the boundaries of the sandstone and the ring structures. Igneous rock intrusions were found on the bottom arc of the ring as well as signs of faulting on the western arc of the ring, with quartz veins forming within the fault zones. ICP-MS and XRF analyses were conducted on the plant, soil, and rock samples with microscope slides made from the rock samples.

From the analysis it showed that the igneous rock intrusions were an extrusive intermediate rock containing magnetite and plagioclase feldspar. The feldspar minerals have profound hydrothermal alterations and also contains calcite minerals. Quartz veins are abundant with striation marks and specularite on them which proved that fault activities reoccurred in the area. The discovery of pseudo ring structure in the Waterberg region is new and unknown to the area and thus requires further investigation.

### References:

[1] Barker, O.B. et al. (2006) The Southpansberg and Waterberg Groups and Blouberg Formation. In: *The Geol of SA: GSSA JHB/Council of Geosc PTA*, 309-312

[2] Mucina, L. & Rutherford, M.C. (Eds) (2006) In: *The Veg of SA, LSO & SWA. Strelitzia 19*. SANBI PTA, 468-469, 472-473

