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## **Mineralogy of the pegmatoidal Pseudo reef in the western Bushveld Complex, South Africa**

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Pseudo reefs generally occur in the Swartklip facies north of the Pilanesberg Alkaline Complex. Several investigations have identified some of these units in the south western limb of the Bushveld Complex. The main aim of the study is to identify what the silicate mineralogy of the Pseudo package consist of at Styldrift 90 JQ. A second key objective is to establish whether this Styldrift reef, which is located between the Merensky and UG2 reefs, can be correlated with some of the regional facies.

In order to achieve the main aim, reef samples of four different cores were analysed that were extracted from the Styldrift 90 JQ farm. Analytical work performed on these reef intersection includes that of microscopy, scanning electron microscope (SEM) and chemical (XRF and LA-ICPMS). Stratigraphic correlations were applied from published literature, in order to establish what regional facies may be present.

From the analytical data, it showed that  $FO_{78}$ ,  $En_{78}$  and  $An_{73}$  are the major mineral phases present, in mixed proportions throughout. The olivine and primarily orthopyroxene over clinopyroxene grains appear in an orthocumulate texture. With plagioclase occurring interstitially between the cumulates. Sulphide phases of pentlandite and chalcopyrite were common in the reef and along with a variety of secondary alteration minerals.

These cumulates were proposed to form from fractional crystallization, whereby early forming minerals sink. Higher fluids in the base of the reef, determined by trace elements, suggested more time for these basal cumulates to grow. This model may be applicable only for this one Pseudo reef cycle and not a whole for the Critical Zone.

Regional facies may be evident on the Styldrift property. They include that of the Lower (P1) and Upper (P2) Pseudo units of the Swartklip facies. Differences in facies observed in the Styldrift reef may be attributed to potholes that slump the P2 through the P1. This stratigraphic approach is speculative and may require further geochemical data to assist it.

