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A significant vanadiferous, titano-magnetite deposit in the Tete Suite, Mozambique

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The approximately 1025 Ma (Evans et al., 1999) old Tete Suite is a layered mafic-ultramafic intrusion comprising predominantly of gabbro and anorthosite layers, with lesser leucogabbro, norite and anorthosite and minor ultramafic rock types. The suite is located in the Tete Province, of western Mozambique. It has been suggested that the suite was emplaced during the Grenvillian Orogenic Cycle (1.0 Ga) in the mid-crustal Luia Terrain that accreted to the southern margin of the Central African Craton. During the Pan Africa Orogenic Cycle, rocks belonging to the Luia Terrane including the Tete Suite were over-thrusted onto the Kalahari Craton (Westerhof et al., 2008). Vanadium rich titano-magnetite and ilmenite occurs disseminated in the gabbro and norite and also as massive layers, irregular bodies, lenses and plugs. In the Tenge-Ruoni area, a significant magnetite deposit has been identified and delineated by Capitol Resources Lda, the wholly owned subsidiary of Baobab Resources Plc. The vanadiferous titano-magnetite mineralization occurs as a stack of thick (up to 20 m) and thinner massive layers, with intercalated anorthosite layers of variable thickness. The individual intercalated gangue layers tend to pinch out and reappear rapidly along strike. The hanging wall is formed by an anorthosite-dominated assemblage, whereas the footwall is composed predominantly of gabbro. The massive vanadiferous titano-magnetite mineralization is concentrated at the base of an anorthositic, lopolithic-shaped intrusive body that has been deformed into a synform plunging gently to the west-northwest. In the Tenge-Ruoni area, the Tete Suite has been intruded by a swarm of dolerite dykes, up to 20 m wide (but most are less than 10 m wide). The swam has an arcuate strike changing from approximately 40° north-west to 60° west north-west and dipping 75° south-east, postdating the folded structure. Because the dykes do not extend beyond the Tete Suite, it is assumed that they intruded prior to the Pan African thrusting.

The Tenge deposit was sampled using diamond core drilling, reverse circulation drilling methods and trench sampling. Drilling was carried out along a series of 60-80 m spaced section lines orientated from northeast to southeast in order to optimize intersections of mineralised zones around the east-west fold hinge. The northern and southern limbs of the fold comprise the Ruoni North and Ruoni South resource blocks, while the outcropping fold hinge comprises the Tenge resource block to the east. The buried central portion of the fold comprises the Ruoni Flats resource block. A Mineral Resource of 62 Mt grading at 38.81 % Fe, 0.43 % V₂O₅, and 14.71 % TiO₂ have been declared for the Tenge resource block, whereas a combined inventory of 759 Mt at 33.81 % Fe, 0.35 % V₂O₅, and 12.51 % TiO₂ has been estimated for all the resource blocks (Baobab Resources PLC, 2014).

References:

Baobab Resources PLC (2014): Measured Resource Estimation Exceeds Expectations. Press release of 27 March 2014.

Evans, R. J., Ashwal, L. D. & Hamilton, M. A. (1999): Mafic, ultramafic, and anorthositic rocks of the Tete Complex, Mozambique: petrology, age, and significance. *South African Journal of Geology* 102, 153–166.

Westerhof, A. B. Phil, Lehtonen, M. I., Mäkitie, H., Manninen, T., Pekkala, Y., Gustafsson, B. & Tahon, A. (2008): The Tete-Chipata Belt: a new multiple terrane element from western Mozambique and southern Zambia. *Geological Survey of Finland, Special Paper 48*, 145–166.

