NEW APPROACH TO EXPLORING THE TUMAS PALAEOCHANNEL IDENTIFYING NEW POTENTIAL AND RESOURCES, ERONGO, NAMIBIA

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The Erongo district of Namibia is well endowed with uranium, contained in alaskite-type deposits such as Rossing and Husab and in palaeochannel-type deposits such as Langer Heinrich, Trekkopje and Tumas. The Tumas, Tubas and Oryx deposits were discovered during the nineteen seventies and eighties by Anglo-American Prospecting Services and Falconbridge of South-West Africa. These companies failed to identify economic resources, however, and exploration was discontinued. No further work was carried out for over twenty years, until Deep Yellow Ltd. acquired tenure through its subsidiary Reptile Uranium Namibia (now Reptile Mineral Resources).

The nineteen seventies exploration was driven by radiometric and radon gas surveys and typically involved shallow drilling. Over-reliance on these methods and reluctance to drill beyond anomalous areas substantially limited resource potential.

Deep Yellow Ltd flew an AEROTEM airborne magnetic and EM (AEM) survey with a view to mapping palaeochannels in their entirety. AEM has proved effective except where channels are relatively shallow and/or unusually heavily cemented by carbonate minerals. Systematic drilling of these palaeochannels has lead to the definition of resources in several discrete bodies termed Tumas 1, 2, 3 and Tumas 1 East. Drilling is ongoing. The current JORC-compliant resource comprises 95.5 million tonnes for 63 Mlb U_3O_8 which does not include the Tumas 1 East mineralisation.

The company has carried out a variety of trial geophysical and geochemical surveys for targeting mineralised palaeochannels including: ground-penetrating radar (GPR), gravity, ground magnetic, horizontal loop EM, passive seismic and partial extraction soil surveys. Euler deconvolution of airborne magnetic data shows promise in mapping palaeochannels at the regional scale (Chudasama et al., in press) while GPR has been successful in mapping channels less than 10m deep. The other techniques have not succeeded in mapping the basement interface, although passive seismic and HLEM reveal structure within the channels.

Recent drilling has allowed significant refinements to the genetic model for palaeochannel-hosted uranium deposits (aka calcrete-type or surficial type) and these are discussed.

KEY WORDS: Palaeochannel uranium, geophysical methods, resources