Discovery of the Seuss Fault in the Suplejack Project

Matt Briggs1,2, Alwin Van Roij1, Peter Aldridge1 and Lara Bowlt1

The Suplejack Project is located approximately 800 km south of Darwin (Figure 1) in the Tanami Region. In 2016, it consisted of 1027 km² of granted exploration tenements held by ABM Resources NL (ABM). The Hyperion-Tethys Prospect within Suplejack contains a Mineral Resource of 4.51 Mt at 2.1 g/t containing 309 900 oz of gold above a 0.8 g/t cut-off and within 180 m of surface (ABM 2017).

The geology at the Hyperion-Tethys Prospect consists of a differentiated mafic sequence (dolerite to basalt) intruded by monzogranite dykes. Locally the area is covered by up to 8 m of quaternary alluvium with weathering down to approximately 100 m. A 20–30 m zone of gold depletion is interpreted within the upper to lower saprolite overlying primary mineralisation.

During 2015, ABM identified the Suplejack Project as a priority target and focus area for future exploration due to the following reasons:

1. 60 km trend of significant gold anomalism in cross-cutting structures
2. the large, contiguous under-explored land package
3. previous soil sampling and vacuum drilling did not penetrate below alluvial cover or leached oxide
4. the known Resource is blind to traditional techniques
5. the known Resource had only been drilled to a shallow depth and is open along strike.

Based on this rationale, ABM conducted field mapping, rock chip sampling, and three campaigns of drilling. The objective of the initial activity was to provide confirmation of bedrock anomalism in existing surface geochemical anomalies and targets, and to test for extensions of the Hyperion-Tethys Prospect Mineral Resources.

Reinvestigation of historical drillholes was undertaken through a pilot re-logging program and compilation of reported data from various sources; the objective was to ascertain the feasibility of obtaining a tenement-wide geochemical dataset for proposed lithogeochemical mapping without the need to redrill the entire tenement. An important aim of the program was assessing the accuracy of historical end of drillhole (EOH) values in the ABM drillhole database. Interrogation and assessment of the drillhole database also greatly assisted compilation of the basement interpretation map.

During 2016, 490 rock samples from EL9250 were collected from outcropping quartz veins, suitably preserved historical EOH drillhole material and any material showing quartz veining, fracturing, or any alteration mineral or mineral assemblage recognised to be associated with mineralisation at the Hyperion-Tethys Prospect. As the field mapping progressed and in conjunction with the 2016 Suplejack drilling program, rock chip sampling focussed on identifying areas of brecciated, silicified and haematite-sericite-epidote-chlorite-feldspar altered and sulfide-bearing mafic material.

The program results identified a north–south striking quartz breccia subcropping approximately 1 km to the east of the existing Hyperion-Tethys Resource (Figure 2). A best result of 6.3 g/t gold was returned from rock chip samples collected from this structure (ABM 2016a), which was mapped along 180 m strike length at surface. Quartz veining noted further along gives potential for the structure to be interpreted over 300 m. The structure was lost under scree to the south and shallow alluvium to the north.

Three campaigns of drilling were completed during the period consisting of 111 holes for a total of 11 353 m drilled. Significant results were returned from 7 prospects within the Suplejack Project, all located within EL9250.

Section 614180 m east had previously been interpreted as the east–west, south-dipping Tethys structure; however,
the discovery of the subcropping Seuss Fault resulted in the diamond drilling program being redesigned to intersect the structure perpendicular to the mapped strike. Drillhole TYRD100003 was drilled in November 2016 and intersected a 9 m wide, east-dipping (Figure 3) quartz breccia with 20–50% arsenopyrite within a wider zone of deformation. This zone was named the Seuss Prospect after the associated Seuss Fault.

Assaying results for this hole returned an interval of 13 m at 5.6 g/t gold from 184 m downhole (ABM 2016b). A broader interval of arsenic (As) anomalous has also been defined by handheld XRF analysis; the anomalous As results are typically above 500 ppm compared to background of less than 50 ppm within the host dolerite. Comprehensive XRF data has been collected from the drilling program to map zonations within the dolerites and alteration related to mineralisation.

The Suplejack Project is a key project and part of ABM’s focussed exploration strategy. Exploration will continue in 2017 with an aim to identify new structures analogous to Seuss and to grow the existing Mineral Resource at Hyperion-Tethys and other known prospects.

Figure 2. Prospect map showing the location of the Seuss Fault discovery.
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