SIPA EXPLORATION NL

CO-FUNDED DRILLING REPORT

For the Period

1 March 2018 to 1 March 2019

Co-funded EIS Final Drilling Report 2018 (R#17)

PREPARED BY:	Peter NEUMAYR
AUTHOR:	Peter NEUMAYR
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DISTRIBUTION:	

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1. Bibliographic Data Sheet

Project Name:	Paterson North
Combined Reporting Number:	C105/2017
Tenement Numbers:	E45/03599
Tenement Operator(s):	SIPA EXPLORATION NL
Report Type:	Co-Funded Drilling
Report Title:	Co-funded EIS Final Drilling Report 2018 (R#17)
Report Period:	1 March 2018 to 1 March 2019
Author:	Peter NEUMAYR
Submitted By:	Peter NEUMAYR
Report Date:	20 March 2019
Map Sheets:	*1:250,000 Map Sheet*: SF51-02 (ANKETELL); *1:100,000 Map Sheet*: 3256 (WEENOO)
Target Commodity:	COPPER, GOLD
Prospects Drilled:	Obelisk
PoW Number:	74780
Geophysical Survey Reg No:	
Assays:	Au, Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr;

Abstract

Location: The Paterson North Project is located in the North Paterson Province of Western Australia 290km south of Broome and 300km east of Port Hedland.

Geology: The geology of the project area is dominated by Quaternary sand dunes overlying Phanerozoic sediments and volcanic rocks of the Canning Basin. Prospective Proterozoic lithologies are buried beneath 70-150m of the cover sequence. Known large deposits of Au, Cu, W and U occur in the region.

Work Done: A single diamond hole was drilled to a final depth of 510.5m. Selected sections of the core were cut to half core and typically single metres submitted to ALS laboratory for multi-element analysis. Typically about every fifth metre was sampled to generate a down hole chemical profile. The oxidized hematite altered granite and quartz vein was continuously sampled on a single metre or less basis.

Results: The drill hole identified a previously not seen hematite altered, very oxidized granitic intrusion which was brecciated. The breccia contained fine-grained chalcopyrite mineralization in the fine-grained silica matrix. Anomalous copper, gold and tungsten in the brecciated oxidized granitic dykes indicate that this alteration style is part of the mineralized system. This alteration and mineralization is likely the oxidized end-member to more reduced pyrrhotite-pyrite-chalcopyrite mineralization seen in previous diamond drill holes.

Conclusion: Diamond drill hole PND005 failed to intersect significant mineralization, but contained a previously not observed alteration style of very oxidized, haematitized granitic dykes. These dykes have been brecciated with a dark grey quartz matrix which contains fine grained chalcopyrite. The diamond drill hole also did not explain the chargeability anomaly in the pole-dipole survey which is now interpreted to have likely been caused by off-section sulphides. Further pole-dipole section surveys are required to map the anomalous chargeability zone prior to further drill testing.

Drilling Summary:

Hole Type	No. of Holes	Total Drilled (m)
DD	1	511

2. Introduction

This report summarizes the results of an EIS co-funded drilling programme by Sipa Exploration NL on Ming Gold's tenement E45/3599. This tenement is part of Sipa's Paterson North Project.
This drilling programme was designed to follow up and expand a copper-gold-bismuth-molybdenum-tungsten-tellurium anomaly in metamorphosed Proterozoic rocks underneath about 70 to 100m of semi-consolidated largely Permian sands and sandstones in previous, wide-spaced drilling programmes by Ming Gold and Sipa Exploration NL. The programme targeted to sample the Proterozoic sequences.

3. Location and Access Details

The Paterson North Project is located 290 km south of Broome and 250 km east of Port Hedland in the Paterson Province of northwest Australia (Fig. 1).
The area is accessed initially via sealed highway, from either Broome or Port Hedland and then using dirt tracks – locally known as the "WAPET" and "Citadel" tracks – to the site. Access via the dirt roads is not afforded all year round due to seasonally high rainfall over the cyclone season which typically prevails from December to March.

4. Tenement Details

Tenement Information

Tenement	Grant Date	Expiry Date	Holder	Expenditure ($)	Area Size (KM2)	Area Size (BLK)
E 45/3599	19/04/2011	18/04/2021	MING GOLD PTY LTD,SIPA EXPLORATION NL	300000	280	100

The tenement was granted on the 19th of April 2011 and is held by Sipa Exploration NL (51%) and Ming Gold Limited (49%; Fig. 2). The first five years of term expired and a renewal for a further five years was granted on the 25th of May 2016 to 18th of April 2021. On the 4th of April 2017 40% of the tenement were relinquished as part of the compulsory 6th year surrender.
Sipa Resources Limited has entered a Farm-In and Joint Venture Agreement with Ming Gold Limited to earn up to 80% of interest in the tenement and Sipa Exploration NL is currently operating the project.

5. Geology

5.1 Regional Geology

The project area is located in the Paterson Orogen, a 2000km arcuate belt of Proterozoic sediments and intrusions that was affected by two periods of deformation (ca. 650 Ma Miles orogeny and ca. 550 Ma Paterson and Peterman orogenies). The Proterozoic basement rocks are exposed at surface in the broader Telfer Dome area, but are in turn unconformably overlain by Phanerozoic (Permian to Cretaceous) sediments of the Canning Basin which obscure 60-70% of the Proterozoic basement to the northeast of Telfer (Fig. 3). In the project area, the younger cover sediments are about 70 to 100m thick (maximum of 130m in the north).
The oldest Proterozoic rocks in the region comprise deformed and metamorphosed Palaeo-/early Mesoproterozoic sedimentary and igneous units of the Rudall Complex which in turn are overlain by late Proterozoic sediments of the Yeneena and Officer Basins.
The Yeneena sediments are subdivided into the lower Yeneena Group (Coolbro Sandstone, carbonaceous siltstone to pelitic schist of the Broadhurst Formation), and the upper Yeneena Group (dolomitic to calcareous rocks of the Isdell Formation, Malu Quartzite, quartzite, siltstone, and shale of the Telfer Formation, carbonate rich Puntpunta Formation, Wilki Quartzite).
The Yeneena and Officer sediments have been intruded by several phases of felsic plutons and mafic sills and dykes. The I type granitoids of the Mt. Crofton suite (oxidized, magnetic) and the O'Callaghan suite (reduced, non-magnetic), which potentially relate to mineralization, were emplaced about 650 Ma during the Miles Orogeny.

5.2 Local Geology

Due to the younger cover, local geology in the project is poorly known. Interpretation of airborne magnetic data and detailed gravity data (Figs 3 and 4) map a series of magnetic and non-magnetic granites as well as interbedded mafic sills and late northnorthwest trending dolerite dykes. Wide spaced drilling by Ming, Sipa and BHP has identified quartzite, psammite, mica schist, gneiss, granite and a mafic unit. A dominant north northwest trend of major structures is sub-parallel to the orogeny defining Vines-Mac Kay fault system. Later northeast trending faults truncate the structural grain.

6. Previous Exploration

Previous work on the tenement (Fig. 5) is limited to BHP (1993-1998), Ming Gold (2011 to 2015) and Sipa Exploration NL (2016 to present). BHP explored with aeromagnetic surveys, surface sampling and drilling. However, no geophysical surveys or surface sampling were carried out on E45/3599. The only exploration activities by BHP on the tenement were 4 drill holes (RAB/AC) which constrained the depth to basement to 50-80m at the southern part of the tenement. Several other RAB/AC holes by BHP on the tenement at a nominal spacing of 10km did not reach basement at the nominal final hole depth of 75m.
Ming conducted a detailed gravity survey and drilled 31 AC holes on the tenement which identified the Cu-Au-Bi anomaly of the Obelisk prospect and the Ni-Cu anomaly 6.5km to the east of the Obelisk Prospect (Fig. 5).
In 2016, Sipa Exploration NL conducted further detailed gravity surveys and drilled 45 AC holes in and around the Obelisk Prospect (Fig. 5). The AirCore drilling extended the previous one hole copper-gold-bismuth anomaly to about 2.9km strike length and demonstrated that the anomaly is multi-element anomalism of gold-copper-bismuth-silver-molybdenum-tungsten-tellurium.
In 2017, following a gradient array IP survey, an AMT survey and a small ground EM survey at the Obelisk prospect, Sipa Exploration NL drilled 27 AC holes in and around the Obelisk prospect and 4 diamond drill holes at the Obelisk prospect (Figs 5, 6). The drilling identified a large alteration system with disseminated chalcopyrite, pyrite and pyrrhotite overprinted by a quartz vein system which hosts gold, copper, bismuth, molybdenum and tungsten.
Other companies to work in the vicinity of E45/3599 include Western Mining Corporation and Croesus Mining. Venus Metal drilled to the north and reported basement depths of greater than 200m.

7. Current Exploration

Drilling program

The current drilling programme comprised one diamond drill hole for 510.5m (Figs 6, 8). The hole was designed to test a Pole-Dipole IP chargeability anomaly in the metamorphosed Proterozoic sequences at the Obelisk prospect. The cover sands were drilled using mud rotary and the sample consequently lost. Once consolidated rock was reached in the Proterozoic sequence, HQ core drilling was employed and the hole was reduced to NQ2 in fresh rock to end of hole.
The Collar, survey, assay and logging information is attached to this report in electronic files.

Exploration Activity	Depth
1 Diamond Drill Hole	510.5m

Geochemical analyses

Within the Proterozoic sequence, unaltered and unmineralized rock was character sampled about every 5 metres. Altered rock was sampled every metre or less depending on geology and alteration. The drill core was cut in half and half core samples were submitted to the laboratory for geochemical analysis.
A total of 131 samples were analysed at ALS laboratories in Perth. Gold was analysed using a 30g charge fire assay, lead collection with an ICP-AES determination. All other elements were analysed using a mixed acid with hydrofluoric acid digestion and ICP-AES and ICP-MS determinations.
All laboratory analyses together with all other drill information are attached in the Appendix.

8. Current Exploration Summary

8.1 Drilling

Current exploration model

The current drilling programme aimed to explore the Proterozoic sediments under about 70-100m of younger cover rocks. Given the significantly higher exploration costs for under cover exploration as compared to projects amenable to surface sampling, a deposit model which honours known mineralization in the district and allows a reduction of search space with geophysical tools is chosen.
Telfer, Calibre and Magnum are interpreted as intrusion related Au-Cu deposits. The deposit model invokes a granitic intrusion which provides both heat and magmatic fluids which are focussed into structures above the intrusion. Fluids from the sedimentary basin, which are convected by the granite heat, are also focussed into these structures. Gold and copper mineralization is precipitated in favourable structural positions as breccia, stratabound reef or stockwork vein style mineralization above the intrusions. The granitic intrusions in the Paterson Orogen can be mapped using detailed gravity and aeromagnetic surveys as distinct gravity lows with a magnetic halo (Fig. 7). Gold deposits and prospects are typically either within or proximal to the magnetic halo of the granitic intrusions, presumably marking a critical distance above the intrusion. These patterns can be observed at the Calibre and Magnum deposits, but also at a number of deposits and prospects in the Tintina-Tombstone Province in Alaska. The Obelisk prospect in E45/3599, which is the target in this proposal, is located proximal to an interpreted granite and magnetic halo. The setting is remarkably similar to that of the Calibre and Magnum deposits and the recent discovery at Winu (Fig. 7).

Results

PND005 intersected granite and pegmatite from 96m to 174m down-hole before advancing into a zone of abundant pegmatitic dykes intruding fine-grained and hornfelsed metasediment and minor gneisses from 174m to 298m down-hole. The hole then intersected dolerite from 298m with very minor pegmatitic and granitic dykes to the end of hole at 510.5m.
A zone of intensely hematite altered, red and oxidized granitic dykes and grey quartz veins was intersected between 390m and 404m at the edge of the IP anomaly (section shown in Figure 8). The red granitic dykes are locally brecciated with red granitic clasts and a dark grey quartz matrix which contains fine chalcopyrite grains adjacent to the red granitic clasts (Figure 9).
This style of alteration, which has similarities to IOCG systems, has not been observed in previous drilling by Sipa and contrasts with the mineralization intersected in earlier drilling which is associated with biotite, quartz, pyrite, pyrrhotite and chalcopyrite.
These two distinct styles of alteration and associated mineralization suggest that Obelisk is a complex zoned system. Complexity and zonation of oxidized and reduced mineralization is regarded as an indicator of enhanced prospectivity as change in oxidation state often leads to precipitation of mineralization.
The large IP anomaly which was the target of PND005 has not been explained by the drill hole. Further pole-dipole IP will be necessary to provide sufficient 3D spatial resolution prior to further drill testing. A forward modelled magnetic plate was intersected by PND005 (Fig. 8). The location of the plate coincides with a spike in magnetic susceptibility in the core.
Even though the drill hole did not intersect significant mineralization, trace element analyses indicate that the hydrothermal alteration intersected between 390m and 404m and some quartz veins above this intersection are part of the alteration and mineralization system encountered in previous drilling. Copper and gold are anomalous in the quartz vein and oxidized altered system to 1600ppm and 0.083ppm, respectively. A quartz vein at 260m contained 356ppm bismuth and tungsten in the quartz vein and oxidized alteration system reached 670ppm. This alteration and mineralization is likely the oxidized end-member to more reduced pyrrhotite-pyrite-chalcopyrite mineralization seen in previous diamond drill holes.

9. Conclusion and Recommendations

Diamond drill hole PND005 failed to intersect significant mineralization, but contained a previously not observed alteration style of very oxidized, hematitized granitic dykes. These dykes have been brecciated with a dark grey quartz matrix which contains fine grained chalcopyrite. The diamond drill hole also did not explain the chargeability anomaly in the pole-dipole survey which is now interpreted to have likely been caused by off-section sulphides. Further pole-dipole section surveys are required to map the anomalous chargeability zone prior to further drill testing.

10. Appendices

No Appendices as text are available