Second Annual Report

SEL 24769 - Marqua

Marqua Project

Reporting Period: 09.08.2007 – 08.08.2008

Date: 25 August 2008
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Keywords: Phosphate, Base Metals, Geochemistry, Marqua, Boat Hill, Cambrian, Georgina Basin, Northern Territory, VTEM
Map Sheets: 1:250,000 Tobermorey
1:250,000 Hay River –Mount Whelan Area
1:250,000 Hay River
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Appendix - digital data files
Surface sampling XRF – EL24769_2008_A_02_SurfaceXRFChem.txt
VTEM data – EL24769_2008_A_03_VTEM.zip
Historical Drill hole collar – EL24769_2008_A_04_HistDrillCollar.txt
Summary

Uramet Minerals Ltd previously identified the potential for base metals and phosphorite in the Marqua tenement located approximately 550km east of Alice Springs, NT.

This report details exploration work carried out by Uramet Minerals Ltd within the Marqua tenement (SEL24769, Fig. 1) in the Northern Territory for the 2007-2008 field season. The tenement was transferred from Elkedra Diamonds NL during the 2007 season and covers an area of 971km².

Exploration consisted of regional reconnaissance work and detailed mapping and geochemical analysis of rock chip and drill spoil samples. A helicopter-borne electromagnetic (EM) survey took place over the southeast part of the tenement in October 2007 with final data products supplied in early 2008.

Regional field reconnaissance and detailed mapping was carried out between May and July 2008 with extensive outcrops of phosphatic rocks being located and several gossans being identified.

Historical drill core and drill chip samples were examined and re-assayed for base metals and phosphate.

Figure 1. Location plan for SEL24769.
1. **Introduction**

Exploration License EL24769 covers the Uramet Mineral Ltd’s Marqua base metal project and Marqua phosphate project. This report details all work carried out on the tenement up until 08 August 2008 by Uramet Minerals Ltd.

The Marqua project area is located approximately 550km east of Alice Springs, NT, with good road access 40km off the Plenty Highway and a network of established minor roads and station tracks. The tenement is approximately 39km in length and 24km in width.

An Aboriginal Areas Protection Authority (AAPA) clearance survey was conducted over the tenement prior to field work and any area of cultural significance was avoided.
2. Geology

2.1 Regional Geology

The project area is part of the southern Georgina Basin, comprising Neoproterozoic to Cambro-Ordovician platform cover of sedimentary rocks (dominantly sandstone, shale, limestone, dolostone) overlying the Precambrian basement of the Northern Australian Craton. This Precambrian basement is exposed along major fault systems on the southern margin of the basin.

The Northern Territory Geological Survey (NTGS) has recognised the mineral potential of the southern Georgina Basin and recently prepared a comprehensive review of both government and private exploration undertaken, and has now developed from various authoritative sources applicable ore genesis models (Dunster et al., 2007).

Since the 1960's, the basin has been considered prospective mainly for Mississippi Valley Type (MVT) lead-zinc mineralisation. More recently, however, the potential for other commodities in a variety of geological settings has been investigated, and the basin is now regarded as having potential for several styles of mineralisation. For example:

- Mississippi Valley Type Pb-Zn (MVT),
- Carbonate-Hosted Pb-Zn (Irish Type),
- Stratiform Shale-Hosted Base Metals,

The area is also envisaged as having potential for phosphate hosted Cambrian limestone. In 1969 exploration in the southern Georgina Basin identified locally phosphatic intervals in the Arthur Creek Formation and the Thorntonia Limestone in the Ammaroo area. In the NT part of the Georgina basin the Wonarah deposit was discovered in the early 1970's.

Prospective ground for phosphate rock within Middle Cambrian units can be defined along the margin of the basin and on basement highs within the basin.

2.2 Tenement Geology

The Marqua project area is located in the structurally complex south-eastern portion of the Georgina Basin, which is comprised of basement granitoids, Neoproterozoic tillites and arkosic sedimentary rocks, overlain by Cambrian and Cambro-Ordovician limestone, dolostone, shale and clastic sedimentary rocks of the Toko Syncline (Fig.2). These units have been disrupted by multiple folding and faulting events. Faulting in the project area generally trends northwest and individual faults have been locally offset by later northeast trending faults.

Part of the regionally significant Toomba Fault Zone lies east of the Marqua tenement and segregates a structurally complex zone dominated by arkosic sediments to the southwest from limestone, dolostone and sandstone of the Toko Syncline to the north. The Toomba
Fault Zone is a reverse fault which dips ~45° towards the southwest and lies in close proximity to a number of parallel folds and faults including the Field River Anticline. A northwest trending fault zone in the Christmas Dam area represents a structural divide between gently north dipping sedimentary rocks to the west and vertical dipping sediments to the east.

The Neoproterozoic Yardida Tillite, which comprises diamictite, siltstone, sandstone, and arkose, is exposed within the Field River Anticline core and the younger Black Stump arkose crops out further to the east.

Younger rock units that typically form hill capping plateaus and mesas include the Tertiary Austral Downs limestone, a partly silicified lacustrine limestone underlain by a lateritic palaeosol, and Cretaceous clastic sedimentary rocks. The Cretaceous beds are commonly associated with zones of silicification both within beds and penetrating the underlying Cambro-Ordovician strata.

Figure 2. Geological map of the Marqua tenement area with the Christmas Dam Fault.
3. **Previous Exploration Work**

The Marqua project area has been subject to lead-zinc exploration for over 30 years. Mapping of the Marqua area (Tobermorey map sheet) was carried out by BMR 1959-1960 and subsequent re-mapping was done throughout the 1970’s and 1980’s. Exploration for base metals during that time was mainly focusing on rock chip and stream sampling. During 1977-1978 and 1983 BMR drilled four cored stratigraphic holes in the area. Anomalous zinc levels were found in these holes (BMR1979/36).

Subsequently Agip showed interest in base metal exploration in 1981 covering the tenement area (CR19830328). Reconnaissance mapping and rock chip sampling demonstrated that base metals are anomalous within the Late Proterozoic Wonnadinna Dolostone and Thorntonia Limestone. Sixteen holes were drilled during 1982 to test the zinc anomalies over a strike length of 8km.

Saracen Minerals drilled nineteen percussion holes in 1988 (CR19880057) with the aim of detecting possible platinum-group element mineralisation. No platinum group elements were detected.

MIM explored the area in the early 1990’s to test for Pb, Zn and Carlin-style Au and Pt (CR19920506). Re-assays of Saracen Minerals percussion drill holes and ten additional drill holes within the prospective units concluded that mineralisation is structurally controlled.

In conjunction with regional re-mapping of the Tobermorey map sheet, NTGS drilled cored stratigraphic hole NTGS99/1 within the current tenement area.

The NTGS re-evaluated the area as part of the southern Georgina Basin Geology and Resource Potential Report in 2007 and concluded that the Marqua area remains prospective for base metals since the lithostratigraphy of the area was not fully understood until recently (Dunster et al., 2007).
4. **Second Year Exploration Program**

4.1 **Desktop Review**

4.1.1 **Marqua Project - Base Metals**

The compilation of historical data focusing on base metal potential within the project area was continued during the reporting period.

Work by previous exploration companies has shown that base metal anomalies occur within the Cambrian Thorntonia Limestone, Red Heart Dolostone and Arthur Creek Formation and the Late Proterozoic Wonnadinna Dolomite. In the Marqua area, the prospective stratigraphy extends over 30km along strike and has an outcrop width of up to 700m. In addition, numerous polyphase hydrothermal quartz veins cross-cut mainly Neoproterozoic strata in the southeast part of the SEL and contain anomalous levels of Au and Cu. This data has been previously reported by Elkedra Diamonds NL.

4.1.2 **Marqua Project - Phosphate**

The Cambrian Thorntonia Limestone (Fig.3) was targeted for phosphate exploration within the tenement. The prospective limestone unit extends over 28km and has an outcrop width of up to 150m. The occurrence of phosphate in the tenement was previously reported by Elkedra Diamonds NL.

The formation of high-grade phosphate rock (known as phosphorite if it contains greater than 15% \( P_2O_5 \)) requires a generally shallow deposition and slow accumulation rate of sediment and the existence of a trap favouring accumulation of organic matter.

![Figure 3. Thorntonia Limestone outcrop that contains shelly beds (note an offset between Thorntonia outline (blue) taken from the Hay River-Mount Whelan map inset and the background Tobermorey digital map).](image-url)
Regions favourable to a large-scale phosphate deposition occur along an ocean margin where deep upwelling currents trap phosphate rich waters in lagoons and embayment. In this environment phosphate accumulates at the water-sediment interface in association with thick layers of organic sediment (black shales).

4.2 Reconnaissance Work and Field Mapping

Reconnaissance work and field mapping was carried between May and July 2007.

The Cambrian Thorntonia Limestone was re-mapped during the field season and several phosphatic, shell-rich zones have been identified and sampled for commercial laboratory assaying. Several prospects show high-grade phosphate in outcrop. Gossanous dolostone and limestone were identified throughout the area (Fig.4). A final map will be supplied once data compilation is completed later in the year.

![Figure 4. Geologist examining gossanous outcrop with a handheld XRF.](image)

4.2.1 Foss Hill Prospect

At the Foss Hill prospect, outcropping phosphorite was located over a strike length of 600m and maximum true width of 80m (approx. 120m of Thorntonia Limestone) tapering towards the W and E ends. The phosphorus is hosted in coquinite, mudstone, and wackestone of Cambrian Thorntonia Limestone unit.

The phosphorite beds at Foss Hill have been tilted steeply to the north (average 75 degrees) so that the outcrop width is close to true thickness. Rock outcrop and soil samples were taken at 2 metre intervals along a traverse across the phosphatic beds.
Four phosphorite intervals along this traverse (29m, 8m, 8m and 15m thickness, Fig.5) are separated by chert bands. These chert bands are mainly black shale beds that have been silicified on the surface, which is indicated by previous drilling at Foss Hill.

Figure 5. Profile of a traverse across the Thorntonia Limestone unit at Foss Hill.

4.2.2 Coquina Creek Prospect

Coquina Creek Prospect is located 1.2km along strike east of Foss Hill and extends over a strike length of 1.5km eastward. The sedimentary package and underlying Proterozoic units have been tilted steeply to the north (Fig.6). Contact to the overlying Arthur Creek Formation and underlying Proterozoic rocks is unconformable. The thickness of the Thorntonia Limestone units is approx. 100m in outcrop.

Figure 6. Coquina Creek phosphorite outcropping along creek bed, steeply dipping northward.
4.2.3 Library Ridge Prospect
Phosphate rock outcrop is located 5.5km along strike east of Foss Hill. Much of the area is covered by thin sand and rock scree which obscures outcrop. Strike and dip is varying throughout the area and controlled by local faults and fold structures.

4.2.4 White Hill Prospect
Phosphate rock outcrops 5km west of Christmas Dam have been located in shelly beds over a strike length of 400m, although encroaching sand cover has obscured much of the outcrop in this area. The basal chert (silicified black shale) was mapped along strike westward of White Hill and silicified coquinite was found 1.5km west of White Hill.

The Thorntonia Limestone and overlying Arthur Creek Formation is gently dipping towards the north in the White Hill Prospect.

4.2.5 Mauritania and Red Heart Prospect
The Mauritania and Red Heart Prospect are located 7km southwest and 3.5km south of Old Marqua Bore, respectively. Both areas have limited exposure of Thorntonia Limestone. However, the basal chert and silicified coquinite have been identified in various localised outcrops and suggest a continuation of the Thorntonia Limestone under cover throughout the western part of the tenement.

4.3 Core Examination
Forty-five previously drilled holes in the Marqua tenement have been re-located in the field and marked with a GPS (most of the existing GPS positions were inaccurate). More than 30 holes were inspected at the NTGS Alice Springs Core Library, the Geosciences Australia Core Library in Canberra and the MIM core stacks at Marqua (Fig.7). 13 holes were re-assayed for phosphate and lead-zinc.

Figure 7. MIM core stored near BHP1 drill hole at Marqua.
4.4 Geochemistry

Laboratory geochemical analyses were undertaken on 123 samples collected from 76 sites (Fig.8). Samples were analysed at Genalysis Laboratory in Perth, W.A. and results are pending.

Samples were analysed for lead and zinc with a portable Niton XRF analyser. More than 50 samples had zinc values higher than 500ppm. The peak zinc value was 1.2% and the peak lead value was 880ppm in Niton XRF surface rock samples (see appendix).

Figure 8. Niton XRF – Pb-Zn location map.

4.5 Helicopter-borne Electromagnetic Survey

A helicopter-borne EM (VTEM = versatile time domain electromagnetic) survey amounting to 1627 line-kilometres over the tenement was flown by Geotech Airborne Ltd (www.geotechairborne.com.au) in October 2007. The survey covered approx. 25% of the tenement (Fig.9). The data mainly represent conductivity features associated with different stratigraphic units and major structural lineaments. Black shales of the Thorntonia Limestone and some Cretaceous rock units give rise to most of the conductivity highs.
Figure 9. VTEM results – channel 16 conductivity map and geological boundaries of the digital Tobermorey map sheet data set (yellow markers are historical drill hole locations).
5. Conclusions and Future Work

The field work carried out in the Marqua tenement within the last year identified extensive phosphate rock outcrops associated with the Thorntonia Limestone. Additional phosphatic rock is likely to be present.

Field reconnaissance also identified several gossanous rocks that are potential base metal targets.

A drilling program to test the extent of phosphate-rich Thorntonia Limestone under cover is planned for September 2008.
6. References

Dunster JN, Kruse PD, Duffett ML and Ambrose GJ. 2007. Geology and resource potential of the southern Georgina Basin, Northern Territory, NTGS