

Digirock Pty Ltd On behalf of Rox Resources Limited

Exploration Potential of the Marqua Phosphate, Base Metals and Uranium Prospect

Georgina Basin Northern Territory

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TABLE OF CONTENTS

DISCLAIMER	4
SUMMARY	5
INTRODUCTION	6
MARQUA EXPLORATION HISTORY	9
1960 – 1961 - BUREAU OF MINERAL RESOURCES	9
1971 – 1972 - FIMISTON MINERALS NL	
1976 - 1977 - CARPENTARIA EXPLORATION PTY LTD (CR1977-0108)	
1977 – 1978, 1983 - BUREAU OF MINERAL RESOURCES	11
1980 – 1981 – BHP	13
1981 – 1984 - AGIP AUSTRALIA PTY LTD (CR1984-0191)	13
Abandoned Ground Geophysics	15
1986 - 1987 - GEOPEKO (EL 5054)	15
1987 – 1988 - SARACEN MINERALS (EL 5145)	15
1987 – EZ	15
1991 - CRA EXPLORATION PTY LTD (EL 7311 TOOMBA RANGE)	16
1991 - 1992 - MIM EXPLORATION PTT LTD (EL7299, TOBERMORET)	
Geophysics	
Geophysics Drilling and Sampling	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes	17 18 18
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling	17 18
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling	17 18
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 – 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157)	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 – 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157) Geophysics	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 – 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157) Geophysics Aeromagnetics.	
Geophysics Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 – 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157) Geophysics Aeromagnetics Ground Magnetic Surveying	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 - 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157) Geophysics Aeromagnetics Ground Magnetic Surveying Drilling	
Geophysics Drilling and Sampling Re-assays of Saracen Minerals Percussion Holes Reconnaissance Sampling Diamond Drilling Lead Isotope Analysis Petrology 1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY 2002 – 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157) Geophysics Aeromagnetics Ground Magnetic Surveying Drilling Re-sampling of Saracen Drillholes	
Image: Superior Sector Sect	

2006 – 2010 - URAMET MINERALS LTD	23
Geophysics	24
Reprocessing of Regional Geophysics	24
Helicopter-borne VTEM Derived Magnetic Survey	26
Infill Ground Gravity Surveys	26
Ground Magnetics	27
Re-assays of Historical Drill Holes	27
Surface Sampling	27
Drilling	28
Aircore	28
RC/Diamond Drilling (M1 Anomaly)	29
Conclusions	29
EVALUATION OF PROSPHATE PROJECTS	30
Review of Previous Work	
Exploration Targets and Recommended Work	
EVALUATION OF BASE METAL TARGETS	33
Review of Previous Work	33
FIMISTON MINERALS NL	35
CARPENTARIA EXPLORATION PTY LTD	35
BUREAU OF MINERAL RESOURCES	35
AGIP AUSTRALIA PTY LTD	35
CRA EXPLORATION PTY LTD	36
MIM EXPLORATION PTY LTD	
NORTHERN TERRITORY GEOLOGICAL SURVEY	
ELKEDRA DIAMONDS NL	37
URAMET MINERALS LTD	37
NORTHERN TERRITORY GEOLOGICAL SURVEY	
BUREAU OF MINERAL RESOURCES	37
Exploration Targets and Recommended Work	37
Geophysics	
Additional Sampling Data to Compile	
EVALUATION OF POTENTIAL FOR OTHER MINERALS	40
URANIUM	40
GOLD	41
PLATINUM GROUP ELEMENTS	41
RARE EARTH ELEMENTS	42
REFERENCES	43

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SUMMARY

EL's 28275, 28276, 28611 and 28612, held by Rox Resources, fall within the Tobermorey* (SF53-12) and Hay River (SF53-16) 1:250,000 sheets, and cover the Marqua Project, on the south western edge of the Georgina Basin (Figure 1) in the Northern Territory.

Prior to 2006, the Marqua area was initially targeted for base metal and diamond exploration. Between 2006-2010 Uramet Minerals Limited held the Marqua project area and focussed their efforts on phosphate exploration.

This report outlines the previous exploration carried out on the Marqua tenements currently held by Rox Resources. This is followed by a brief overview of the potential for base metals, phosphate, uranium, gold, PGE's and REE's within these tenements, together with recommendations for further work, primarily taken from historical reports.

** The name of the Tobermorey 1:250 000 sheet was changed from Tobermory to Tobermorey in January 2002 to agree with the spelling of the name of the homestead and the 1:100 000 sheet name. Drillhole names in the database and in this report retain their original spelling.



Figure 1: Location of the Georgina Basin and Marqua Project. Approximate location of Rox Resources tenements marked by red star. Inset shows map of Texas for aerial comparison. (*From Ambrose and Putnam, 2006, p1.*)

INTRODUCTION

The Marqua Project lies on the south western edge of the Georgina Basin in the Northern Territory, and straddles the northern northwest-trending portion of the regionally significant Toomba Fault Zone, a major crustal structure which juxtaposes a north-eastern sequence of Palaeozoic sediments of the Georgina Basin with Proterozoic rocks of the Arunta Complex (Figure 2). The regional and tenement geology has been discussed in detail in previous reports and will not be repeated here. Uramet Minerals Ltd's final report for SEL 24769 (Penna, 2010) provides a thorough summary of the geology of the Marqua project. The regional stratigraphy of the Georgina Basin is best described in Kruse *et al*, 2002 (Tobermorey 1:250 000 explanatory notes, pp.9-36). The generalised stratigraphy of the Georgina Basin is shown in Figure 3.

It should be noted that historical reports on the Marqua area referred to the "Marqua Formation" and "Hay River Formation". These have now been correlated with other regional units; the Marqua Formation is now the "Steamboat Sandstone", and the Hay River Formation has become the "Arthur Creek Formation" and "Thorntonia Limestone".



Figure 2: Simplified regional geological map for previously held Uramet tenements (which overlap completely with Rox Resources tenements). (*From Taylor and Townrow, 2007, p6*).

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Figure 3: Stratigraphy of the Southern Georgina Basin. (*From Ambrose and Putnam 2006, p3*).

Since the 1960's, the Georgina Basin has been considered prospective mainly for Mississippi Valley Type (MVT) lead-zinc mineralisation. More recently, the potential for other commodities in a variety of geological settings has been investigated, and the basin is now regarded as prospective for several styles of mineralisation, including MVT, carbonate-hosted Pb-Zn (Irish Type), stratiform shale-hosted base metals and hosted Cambrian limestone-hosted phosphate.

New seismic data from the 2009 *Onshore Energy Security Program* conducted by Geoscience Australia and the Northern Territory Geological Survey (NTGS) was recently presented, with some interesting and exciting findings. The Georgina-Arunta seismic reflection and magnetotelluric line (09GA-GA1), in combination with the regional gravity and magnetic data (Huston *et al*, 2011), has enabled the extrapolation of the Willowra suture to extend along strike to the east. Figure 4 shows the location of the Georgina-Arunta seismic line with respect to the regional geological provinces in the area.

The Willowra suture extension is likely to pass through the Toomba Fault Zone within the Marqua Project (Figure 5). This is important in so far as the age of this major structure is similar to the age of the Tennant Creek Supersuite mineralisation. There are also granites immediately north of the suture from the Tanami in the northwest to near the Queensland border (and Rox Resources tenements). According to Huston *et al* (2011), collectively, these findings raise the potential for iron-oxide-copper-gold deposits associated with ca. 1850-1845 Ma granites to the north of the suture, along an extensive strike length.

Huston *et al* (2011) also comments on the capacity of seismic surveys, in combination with geological studies, for pointing to significant crustal-penetrating shear zones as important, regional-scale controls on lode gold mineralisation. The Georgina-Arunta seismic survey has imaged two crustal-penetrating shear systems, one of which, the Atnarta Imbricate Fault Zone (Figure 5 in Korsch *et al* 2011) is believed to be the more favourable structure, as it was not the major inversion structure and therefore upper crustal rocks that could host lode gold deposits are more likely to be preserved (Huston *et al* 2011, p91).



Figure 4: Geological map showing location of Georgina-Arunta seismic line and regional geological provinces. (*From Korsch et al, 2011*).

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Figure 5: Bouguer gravity image of North Australian Craton showing geological provinces, interpreted extension of Willowra suture and location of seismic lines 05GA-T1 and 09GA-GA1. Approximate location of Rox Resources tenements marked by red star. (*From Korsch et al 2011*).

MARQUA EXPLORATION HISTORY

Specific information pertaining to each exploration company that has held tenements over the current Rox Resources ground can be found in *Summary_previous_work_Rox_ELs_2011.xls*, located under R:\Mapinfo Project Data\Marqua. Information in the spreadsheet includes number and type of drillholes, number of samples, what was assayed for, geophysics undertaken and mapinfo tables created to display the information.

1960 - 1961 - BUREAU OF MINERAL RESOURCES

The Bureau of Mineral Resources (BMR, now Geoscience Australia) carried out a regional gravity survey during 1960-1961 and a regional aero-magnetic survey during 1963, both over the Tobermorey and Hay River 1:250 000 map sheets.

1971 - 1972 - FIMISTON MINERALS NL

Fimiston Minerals NL held Prospects 2875 and 3262 and targeted the Upper Cambrian formations (particularly the Arrinthrunga Formation) as potential hosts for Mississippi Valley Type mineralisation. Most of their work consisted of regional stratigraphic mapping and rock identification. They located minor lead-zinc mineralisation in one rock chip sample of the carbonate facies of the Arrinthrunga Formation immediately below the Ninmaroo Formation north of Craigie Dam (max. 1350 ppm Zn, 154 ppm Pb), and concluded that the Arrinthrunga Fm was the most favourable host for the MVT style lead and zinc mineralisation. No sample locations or assay results have been located.

1976 - 1977 - CARPENTARIA EXPLORATION PTY LTD (CR1977-0108)

Carpentaria Exploration Pty Ltd (CEC) held six large exploration licences covering the edge of the Georgina Basin, over the same area held previously by Fimiston. The northern half was covered by EL 1228 "Marqua". They targeted MVT-style Cu-Pb-Zn in the dolomitic units of the Cambrian and Lower Ordovician, and carried out soil, stream sediment and rock chip sampling as well as geological mapping. Figure 6 shows locations of all surface sampling except those in the Boat Hill area, which have not been georeferenced.

The results of previous orientation work at known mineralised areas within the Georgina Basin indicated that coarse-fraction stream-sediment samples have a greater downstream dispersion and a higher anomaly to background ratio and hence are the more suitable for stream sediment geochemistry in this environment (Murray 1977, p16).

A total of 228 coarse fraction (-10, +80#) stream sediment samples were taken over the Ninmaroo Formation and adjacent sections of the Arrinthrunga and Kelly Creek Formations west to Gories Bore. From 44 of the sample locations a corresponding -80# sample was also collected. All samples were assayed for Cu, Pb and Zn. The -80# and corresponding coarse fraction samples were also assayed for Mn.

Anomalous Pb-Zn stream sediment values were obtained (max. 651ppm Pb and 760 ppm Zn in -10+80# samples) from creeks draining carbonate facies of the Ninmaroo Formation, but no outcropping Pb-Zn mineralisation was located. These anomalies were attributed to iron-manganese oxide scavenging during weathering. Apart from one assay of 975 ppm Cu associated with a remnant of Triassic cover, no significant copper values were received.

44 rock chip samples were collected over the dolomitic sequences of what was formerly called the Field River Beds (Late Proterozoic (Adelaidean) units e.g. Yackah Beds, Wonnadinna Dolomite and Grant Bluff Fm) and 16 samples across the Palaeozoic sediments and coarse fraction anomalies from the stream sediment sampling. In addition, 258 rock chip samples were collected across mainly the dolomite horizons of the Field River Beds in the Boat Hill area. Here, the dolomitic units of the Wonnadinna Dolomite were found to be anomalous with up to 1.15% Zn over 2m in a channel chip sample. An anomalous horizon was defined with a strike length of 1.5km on the northern limb of an anticline just north of Boat Hill.



Figure 6: Location of rock chip and stream sediment samples by Carpentaria Exploration Company Pty Ltd with respect to Rox Resources Marqua Project tenements.

Using a sample interval of 25m, 80 soil samples were collected along 5 lines over the unconformable contact between the Arrinthrunga and Ninmaroo Formations. The samples were assayed for Cu, Pb and Zn. No anomalous results were obtained with all assays less than 17 ppm Cu, 39 ppm Pb and 60 ppm Zn.

The area was relinquished as no surface mineralisation could be found. The zinc mineralisation was thought to be tied up in dolomite lattices in the Boat Hill area and all the anomalous rock chip assay results obtained were believed to result from the accumulation of base metals on iron and manganese oxides during lateritic weathering. Ferruginous lag assayed up to 1.31% Pb and 834 ppm Zn. Elevated Zn in subsurface and unweathered carbonate was thought to be due to cation substitution in the dolomite lattice.

The greatest anomaly of 1.15% Zn over 2m, which was from channel chip samples of fresh rock in the Marqua area, became what is known as the Boat Hill Prospect.

1977 – 1978, 1983 - BUREAU OF MINERAL RESOURCES

The BMR drilled twelve stratigraphic diamond holes within the current Rox Resources tenements (Hayriver5-11B, Tobermory13-15 – Figures 7 and 8) during the 1977-1978 and 1983 stratigraphic drilling program in the Georgina Basin. Assays were acquired for Hayriver10, 11, 11A, and 11B, as well as Tobermory14. Slightly anomalous Zn levels of between 0.06 and 0.14% were found in all four assayed Hayriver coreholes, and 0.16% in Tobermory14.



Figure 7: Location of drillholes by company within Rox Resources Marqua Project tenements.





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Seven surface samples were also assayed from near the collars of Hayriver10 and 11 (Shergold & Walter 1979, p8). Both locations assayed between 0.1 - 0.2% Zn.

Much of the following is taken from BMR Report 251 (Shergold, 1985). Fairly high P_2O_5 values are found throughout Hayriver11, 11A and Tobermory14 coreholes, particularly in the Thorntonia Limestone. In the basal layers of this unit in Hayriver11A, P_2O_5 values are as high as 2.6%, and in the same interval in Tobermory14 values range between 1 and 5% P_2O_5 . These latter values seem to reflect the enormous quantity of phosphatic shelled inarticulate brachiopods in this part of the sequence.

In the Ordian black shale interval of the medial interval of the Thorntonia Limestone in Hayriver11A, assay results indicate appreciable values of Ni, Zn, V, Mo, Th, and U, as well as Au (up to 0.3ppm), Pd (up to 0.8ppm) and Pt (to 1.5ppm). Such values are not evident in the equivalent interval in Tobermory14, and are now considered to be spurious.

In Hayriver11, relatively high Cr, Cu, Zn, Ni, V, U and Mo also occur at the disconformity between the Arthur Ck Formation and the grainstone layer which separates it from the Thorntonia Limestone. At this level in both the Marqua Monocline (Tobermory14) and Desert Syncline (Hayriver11) coreholes, Ba levels are consistently high, reaching 8100ppm in Tobermory14 at 82.6m. Otherwise the geochemistry of the Arthur Creek Formation was not considered to be remarkable.

The Red Heart Dolomite, which underlies the Thorntonia Limestone, is mineralised, postulated to be due to a hydrothermal event associated with the Alice Springs Orogeny. Relatively high Ag values (to 7ppm in Hayriver11B) may also be a product of this hydrothermal event (Shergold and Walter, 1979).

Complete lithology, hole depth and assay information for coreholes Tobermory13-15 have not been obtained.

1980 – 1981 – BHP

Although not within the current Rox Resources Marqua tenements, BHP prospected immediately to the south-east of EL28276 and EL28612 in the southern Toomba Ranges for diamonds and, to a lesser extent, base metals. They undertook a detailed airborne magnetic and radiometric survey with follow-up ground magnetics, and drilled twelve percussion holes to test the magnetic anomalies. No mineralisation was located.

1981 - 1984 - AGIP AUSTRALIA PTY LTD (CR1984-0191)

Agip Australia Pty Ltd targeted MVT mineralisation over EL3142. They re-evaluated the drainage anomalies defined by Carpentaria with further rock chip sampling (156 samples; 142 within the Boat Hill Prospect and 14 reconnaissance samples within the EL), geological mapping, and 16 percussion holes (XC1, M1P – M12P, M13PD-M15PD – Figure 7).

Mapping at 1:5000 scale defined three units (Wonnadinna Dolomite, Red Heart Dolomite and Thorntonia Limestone) which from rock chip assays showed consistent anomalous lead, zinc and silver values. Note that all assay results from surface sampling are located in report CR1982-0376, SECT08GC.tif, however the geological maps on which the sample locations are annotated (SECT10.tif and SECT11.tif) are very poor resolution only a small number of the samples can be accurately identified and georeferenced. Thus, these samples and assays have not been included in the list of historical surface sampling.

Hole	From(m)	To(m)	Ave Pb ppm	Ave Zn ppm	Ave Ag g/t			
MP1	5	13	90	5950	< 1			
M3P	23	30	166	2443	0.14			
M7P	84	91	699	9052	< 1			
M8P	11	36	467	2235	1.45			
M11P	30	36	1210	1567	2.0			
M11P	46	59	1515	3109	2.72			
M13PD	45	74	318	2042	1.1			
M14PD	36	42	755	1100	2.5			
M14PD	46	53	1145	3225	3.5			

Table 1: Most significant results from 1982 Agip drilling program.

Twelve shallow percussion drillholes were drilled in 1982 to test these units over a strike length of 8km. Three extra percussion holes with diamond tails were then drilled to test the structure and lithologies below MP9 and MP11. Table 1 details the most significant results.

The results demonstrated that lead and zinc anomalism with minor, erratic silver values could be traced over nearly ten kilometres of strike immediately to the north of Boat Hill; from the Wonnadinna dolomite, Red Heart Dolomite, Thorntonia Limestone and Arrinthrunga Formation. The highest base metal values occurred in close proximity to faults in drillholes M9P and M13PD, where values increase toward the fault zone. The best drilling intercept was between 55.5–56m in M13PD at 1.9% Zn.

The Wonnadinna Dolomite was shown to be enriched in base metals within close proximity to the unconformity at the top of the unit and seems to be even more enriched in dolarenites with little or no terrigenous component (CR1983-0328, p2). Petrological studies indicate that sphalerite is associated with the chalcedonic silicification.

The basal cherts and interbedded shales of the Thorntonia Limestone are anomalous in Pb, Zn, and Ag wherever intersected in drilling. The unit is more enriched in lead than the Wonnadinna Dolomite and the highest base metal values occur where the unit has been brecciated.

The Arrinthrunga Formation has not been tested by drilling but anomalous values occur within the formation at the eastern end of the prospect, in close proximity to the Toomba Fault Zone.

No further work was undertaken by Agip on this area although an extensive IP survey with follow-up ground gravity and magnetics had been planned (details below). The area was dropped in 1984 when Agip ceased all base metal exploration in Australia.

Agip concluded that the anomalous lead, zinc and silver values obtained from the carbonate facies of the Arrinthrunga and Ninmaroo Formations represent carbonate-replacement style mineralisation associated with thrust-faulting along the Toomba fault zone. This mineralisation was not considered to be of economic significance.

Abandoned Ground Geophysics

An I.P survey with associated backup detailed gravity surveys, where warranted, were planned for 1983 but abandoned due to flooding. In addition, a ground magnetic survey was planned to cover areas of interest delineated in the electrical survey.

The I.P. survey was designed to test approximately 18km of strike length along the unconformity between the Adelaidean units and the Middle Cambrian Steamboat Formation, westwards from the Boat Hill Prospect, by a sequence of survey lines 500-1000m long. Some of the lines were also positioned to cross the major thrust fault zones e.g. Craigie Fault and Marqua Monocline, as well as lesser faults predicted by the interpreted geology. At least one additional line was proposed to test across known faults in the vicinity of the Desert Syncline in the southward extension of the licence. None of the planned geophysics was ultimately carried out and the tenement was relinquished soon after. The location of the planned lines has not been located in the available reports.

1986 - 1987 - GEOPEKO (EL 5054)

Geopeko briefly held ground to explore for platinum group elements in Georgina Basin shales. The company reviewed BMR magnetic data and reprocessed some in-house airborne magnetic and radiometric data from 1978. After discussions with the BMR, Geopeko concluded that the elevated PGE's (1.5ppm Pt result from drillhole BMR Hayriver11A) reported by Shergold (1985) were analytically incorrect and that there were no magnetic anomalies worthy of follow up.

1987 - 1988 - SARACEN MINERALS (EL 5145)

As with Geopeko, Saracen Minerals were encouraged by the elevated PGE assays. Using a "red bed" model similar to the Zechstein Shales (Permian) in Poland, Saracen targeted shales in the Thorntonia Limestone near the Boat Hill prospect for platinum mineralisation and Carlin-style Au.

Nineteen shallow percussion holes totalling 550m were drilled (locations shown in Figure 7), designed to intersect the Thorntonia Limestone, and 491 samples were analysed for Pt, Pd and Au. All assays came back below 0.01 ppm Au, 10 ppb Pt and 10 ppb Pd (a number of these samples were re-assayed for base metals by MIM and the results reported in CR1992 0235). The area was then relinquished.

1987 – EZ

In 1987 EZ evaluated the southern Toomba Ranges area (again, south-east of EL28276 and EL28612) for Carlinstyle precious metal replacement deposits associated with the Toomba Fault zone. They surveyed 29 one kilometre-spaced, east-west oriented soil lines across the trace of the Toomba Fault Zone. These soil lines were approximately 500m long and were soil sampled at 50m intervals. The sampling failed to return any anomalous results.

1991 - CRA EXPLORATION PTY LTD (EL 7311 TOOMBA RANGE)

CRA Exploration Pty Ltd (CRAE) prospected the north-western portion of the Toomba Fault Zone for gold and base metal mineralisation where no drainage geochemical surveys had been undertaken prior to CRAE's application. CRAE carried out a helicopter-supported reconnaissance, stream-sediment sampling program, acquiring a total of 107 stream sediment samples and six rock chip samples (Figure 9). Stream sediment sampling was hindered by poor drainage development and the presence of widespread aeolian sand deposits in the drainages.



Figure 9: Location of rock chip and stream sediment samples by CRAE with respect to Rox Resources Marqua Project tenements.

Three anomalous drainage areas were delineated from the assay results. These were not validated on re-assay of several samples, suggesting to CRAE they were a product of laboratory errors or contamination. The six rock chip samples of goethitic-jasperoidal breccia collected from the vicinity of the Toomba Range Fault were weakly anomalous in base metals (max 120ppm Pb and 560ppm Zn).

CRAE relinquished the title as they deemed that the assay results failed to indicate the presence of any significant gold-base metal mineralisation.

1991 - 1992 - MIM EXPLORATION PTY LTD (EL7299, TOBERMOREY)

MIM Exploration tested the potential for Pb, Zn, Pt, and Carlin style Au associated with low angle reverse faults on the edge of the Georgina Basin (as postulated in Shergold, 1985).

Assays up to 1.8 % Pb and 7090 ppm Zn in the Thorntonia Limestone in the Boat Hill area led MIM to conclude that mineralisation at the Boat Hill prospect is structurally controlled.

Geophysics

Seventeen 200 m loop 16-channel SIROTEM traverses approximately 500m apart were completed at the Boat Hill Prospect and seven kilometres to the west across the strike of both the prospective Hay River Formation (now called the Thorntonia Limestone and Arthur Creek Formation) and the Wonnadinna Dolomite. The survey was designed to test for stratiform lead and zinc mineralisation with associated pyrite in the Hay River Formation below the depth of weathering (see Figure 10 for SIROTEM line locations), as well as the more anomalous horizons of the Wonnadinna Dolomite. A number of deep conductive layers were modelled in generally highly resistive ground, which appeared to correlate with the basal Hay River Formation and lower Wonnadinna Dolomite.

Downhole SIROTEM was completed on drillhole BHD2, and showed a very weak conductor from about 210-370m which could have explained the modelled conductor at about 290m. All holes except for BHD6 were also logged for natural gamma, self potential and resistivity. No major conductors were established from the downhole logs although minor differences in lithology could be easily identified.



Figure 10: Location of SIROTEM lines, rock chip and stream sediment samples and drillholes by MIM Exploration with respect to Rox Resources Marqua Project tenements.

Further modelling using alternative parameters indicated that the original, thin, highly-conductive layers may have been due to surface "loop effects" and wider less conductive layers. This modelling did not, however, adequately explain the anomalies on Lines 1 and 4.

Drilling and Sampling

Re-assays of Saracen Minerals Percussion Holes

Samples from fourteen of the Saracen Minerals 1987 drillholes were collected and re-assayed for Cu, Pb, Zn, Co, Mn, Fe, As and Ag. Most of the samples came from shallow depths where the Hay River Formation had been logged. Locations of these drillholes are shown in Figure 11.

The majority of the holes showed moderate lead and zinc anomalism where the holes intersected the basal Hay River Formation. Values for lead range from 4-1950ppm, for copper from 8-230 ppm and for zinc from 36-7090ppm, with the higher values close to the complex thrusting and folding around Boat Hill. Although the highest zinc value was obtained from the Boat Hill Prospect, assays from this area in general were not significantly higher than those from drillholes further west.



Figure 11: Location of diamond holes drilled by MIM (BHD1-9), Saracen percussion holes reassayed by MIM (MQ1-6, MQ11-15 and MQ17-19), and surface sampling undertaken by MIM within the Boat Hill prospect and 20km to the west.

Reconnaissance Sampling

All stream and rock chip samples taken over the Marqua tenements currently held by Rox Resources are shown in Figures 10 and 11. Note that there are more assay results than there are samples that have been georeferenced. Reports CR1992-0235 and CR1992-0506 refer to drawings on which samples are shown; however they are not actually displayed there.

Ten rock chip samples located in the west of Rox Resources EL28612 were collected from prominent quartz veins outcropping within, and adjacent to, the Mount Dobbie Granite. Minor malachite and galena were both observed at one of these quartz vein systems with QP98621 reporting 1660ppm Cu. Sixteen rock channel samples were collected across the Hay River Formation about 7km to the west of the main Boat Hill Prospect. Anomalous zinc and lead assays came back at up to 2450ppm Pb and 2160ppm Zn.

Three rock chip samples were collected from an iron rich phosphatic unit which marks the boundary of the upper Hay River Formation. All three reported high zinc values with a maximum of 7830ppm Zn (Sample QP98748) and 220ppm Pb. Locations of these samples could not be established from the available reports.

MIM concluded that rock chip and limited stream sediment sampling failed to find evidence of a gold mineralising system, although the two stream sediment samples located within Rox Resources EL28275 and a single rock chip sample in the west of EL28612 received assays between 0.11 and 0.35ppm Au.

Diamond Drilling

Nine diamond drillholes (Figure 10) including a water bore (BHP1) were drilled within the Boat Hill Prospect. Four of these were to test SIROTEM anomalies (BHD2, 4, 5 and 9), and four shallow HQ holes (BHD3, 6, 7 and 8) were to assist in the understanding of the "loop effect" in the SIROTEM surveys.

BHD2, 4, 5 and 9 failed to intersect a conductive layer at the predicted depths. Minor occurrences of galena, sphalerite and pyrite up to 2cm across were observed in the Hay River Formation and Red Heart Dolomite in BHD4, 5 and 9. The highest assays from the drilling were 770 ppm Pb, 1.05% Zn and 2g/t Ag from 500.54m – 501.35m in BHD5, and 0.83% Pb, 2.24% Zn and 2g/t Ag from 530.9 – 531.36m in BHD9.

Assays for platinum in all drill core samples were below the limit of detection. The highest Au assay in drill core was 0.005ppm (BHD5), although it should be noted that of the 251 drillcore samples, only 11 were assayed for gold.

Lead Isotope Analysis

The following is taken from Simpson, 1992 (CR1992-0506). Five samples of core with visible galena had lead isotope analysis undertaken on them. The results gave a broad range of radiogenic Pb isotope ratios which discounts a large hydrothermal system and therefore a major sediment-hosted ore deposit. They show some affinity to MVT style deposits but the wide range of results is much greater than other similar style deposits in Australia.

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The results suggest a mineralising age of about 315Ma with a source age of about 1700 Ma. This is consistent with thrust faulting and hydrothermal events during the Alice Springs Orogeny. Shergold (1985) quotes an age of 1719 Ma for a pegmatite vein in the granite just to the south west of the prospect.

Petrology

Petrological investigations suggested that the mineralisation is similar to MVT. There appear to have been two phases of mineralisation, with galena the last mineral to form, filling vughs in saddle dolomites. Pyrite and sphalerite are intimately associated.

Drill results, lead isotope analysis and petrological work indicated to MIM that it was most unlikely that any significant ore grade mineralisation exists at the Boat Hill Prospect.

1999 - NORTHERN TERRITORY GEOLOGICAL SURVEY

In 1999 the Northern Territory Geological Survey (NTGS) undertook the 'Georgina Project' in which a thorough overview of all existing geological, geochemical and geophysical data was undertaken, as well as additional drilling of four stratigraphic diamond holes to fill in the missing blanks. Of this drilling program, NTGS99/1 (608.6m) is the only hole that lies within the Rox Resources Marqua Project tenements (Figure 7, north-west corner of EL28275). The "Georgina Basin stratigraphic drilling and petrography, 1999-2002" report by PD Kruse (2003) provides extensive information on the project.

Thirty-nine samples were assayed from representative intervals of the Arrinthrunga Formation, Arthur Creek Formation and Thorntonia Limestone including intervals with visible galena within the lower and medial Thorntonia Limestone. Samples with visible galena returned assays of >2000ppm Pb and the interval 585.75-586.0m averaged 1.02% Zn. This significantly increased the area of Thorntonia Limestone known to be anomalous in base metals in the Tobermorey area.

2002 - 2006 - ELKEDRA DIAMONDS NL (CR2004-0614, CR2006-0157)

Elkedra Diamonds explored mainly for diamonds, but also manganese and base metals over Elkedra's EL23202 between 2002-2006, and over SEL24769 from August 2006. The following is a summary of the work undertaken by Elkedra that overlaps with the Rox Resources Marqua Project tenements and has been taken from Leadbeatter and Tompkins, 2004 and Leadbeatter, 2006.

Geophysics

Aeromagnetics

Elkedra Diamonds reprocessed and interpreted relevant portions of the Huckitta East aeromagnetic survey in combination with the 1999 NTGS aeromagnetic survey data and available radiometric and DTM data. From this work they identified five discrete aeromagnetic anomalies of interest with respect to kimberlite exploration within a portion of EL23202 (Leadbeatter and Tompkins, 2004). Two of these (CWN-168 and CWN-189) were further screened by ground magnetic surveying. Figure 12 displays the five aeromagnetic anomalies and the ground magnetic lines.

Ground Magnetic Surveying

Seven programs of ground magnetic surveying were carried out to test air photo and aeromagnetic anomalies and thus generate drill targets. A single line was conducted over the Gravehole Creek Palaeochannel but did not yield any useful information with regards further defining the channel (Leadbeatter, 2006).

Drilling

Of a total of 46 RAB and 5 RC drillholes were drilled by Elkedra over the Rox Resources tenements (Figure 13). Two RAB holes (ERB0216 and ERB0217, circled on Figure 13) were designed to investigate base metal anomalous strata across the Neoproterozoic-Cambrian contact. All others were designed to test for diamonds and diamond indicator minerals. Full results are discussed in Leadbeatter 2006. RC samples were submitted for multi-element analysis and RAB samples were submitted for gold and base metal analysis.

Two RC holes testing aeromagnetic anomaly CWN-168 (ERC0041 and 0042) drilled into magnetic granitoid basement.

The highest zinc values of 2195-6577ppm were found in ERB0220 (just north of ERB0217 as shown in Figure 13). A lead value of 2.47% was returned from ERB0218, again just north of ERB0217. All other lead values were less than 701 ppm. No other base metal assays were significant.

Re-sampling of Saracen Drillholes

Three Saracen Minerals drillholes (MQ4, MQ11 and MQ13) were submitted for multi-element analysis and Au. No significant assays were returned.

Surface Geochemistry

19 rock chip and 69 stream sediment samples were collected over the current Rox Resources Marqua Project tenements. The locations of these are displayed in Figure 13. Stream sediments were generally collected as pairs of samples, with one submitted for heavy mineral analysis and the other for geochemical analysis. Samples were analysed for multi-element analysis and Au.

Stream sediment sample TK01WT002 returned 29 chromites. A small number of chromites and two niobium rutiles were recovered from the remainder of the paired stream sediment sampling program.







Figure 13: Elkedra Diamonds RC and RAB drillholes, surface geochemistry and interpreted aeromagnetic anomalies – overlaid on current Rox Resourcs Marqua Project tenements.

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Conclusions

The higher priority diamond-targeted anomalies within EL23202 were considered to have been suitably tested. Although some encouraging results were received, these were of a low tenor compared with target areas within other Elkedra tenements and therefore downgraded the perceived exploration potential of this area.

Results from a helicopter reconnaissance survey in order to identify surficial manganese oxide accumulations indicated that the volume of ore material was unlikely to be economic and no further exploration for manganese was deemed warranted.

2006 - 2010 - URAMET MINERALS LTD

Between 2006 and 2010 Uramet Minerals Ltd undertook an exploration campaign targeting phosphate within the Middle Cambrian limestone units and stratiform shale-hosted base metals. They used a combination of 81 aircore, RC and diamond drillholes, resampling of previous drillholes for phosphate, acquisition and interpretation of VTEM and gravity data, field mapping and surface sampling. The location of Uramet's tenements with respect to the tenements currently held by Rox Resources over the Marqua Project is shown in Figure 14.

The following is taken from Schmid, 2009. Several distinctive phosphate prospects were identified by Uramet, each of which is separated by basement highs or aeolian/alluvial cover. These were delineated through a combination of outcropping and drill-intersected Thorntonia Limestone and a characteristic VTEM anomaly. These prospects were named Mauretania, Red Heart, White Hill, Xmas Creek, Foss Hill, Coquina Creek, Library Ridge, H11 and Syncline.

Aircore and diamond drilling intersected phosphate-bearing Thorntonia mudstone and carbonaceous shale with P_2O_5 above 10% estimated to be approximately 14Mt (non-JORC). Laboratory results indicate rock phosphate concentration averages 7% throughout the Marqua area.



Figure 14: Location of Uramet Minerals tenements with respect to the tenements currently held by Rox Resources over the Marqua Project

Geophysics

Reprocessing of Regional Geophysics

During 2006 the regional NTGS aeromagnetic, radiometric and gravity survey data was stitched and reprocessed to highlight structural elements and identification of magnetic, gravity, U, Th and K anomalies in order to review the base metals potential of the project area. This work was commissioned together with Elkedra Diamonds.

Aeromagnetic anomalies identified were further refined by subsequent heli-borne VTEM (see below).

The radiometrics highlighted a number of interesting U anomalies (Figure 15). These included some in the Boat Hill area associated with phosphorites, and one to the south associated with ferruginised Cretaceous sandstones. Both these areas remain to be investigated.

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Figure 15: RGB (red = K, green = Th, blue = U) radiometrics draped over total count radiometrics. Zones high in Th and K are outlined and uranium anomalies of different intensity are identified. *(From Penna 2010, p12).*



Figure 16: Image of Marqua helimag anomalies identified by Uramet. (From Penna 2010, p.11).

Helicopter-borne VTEM Derived Magnetic Survey

A number of discrete magnetic anomalies were identified from the reprocessed regional aeromagnetic data and were further refined by a subsequent helicopter-borne VTEM survey undertaken in 2007 over SEL24769 (Figure 16).

Infill Ground Gravity Surveys

Two helicopter-supported infill gravity surveys were undertaken at 500m spacing over (a) magnetic anomaly CWN-148 (later renamed M1) and (b) the Xmas Dam area where anomalous mineralised granitoids outcrop (Figure 17). The infill surveys were undertaken in conjunction with the NTGS East Arunta Gravity Survey.

A more detailed ground gravity survey comprising 120 stations on a 50m by 200m grid was carried out in March 2009 over the M1 (CWN-148) VTEM anomaly. Full specifications and results of the survey are located in CR2010-0557.



Figure 17: Residual gravity image processed by Dr D.R. Cowan from the 2006 East Arunta Gravity Survey data. Areas of the infill gravity surveys are outlined in black. (*From Penna 2010, p.13*).

Ground Magnetics

M1 had previously been covered by a ground magnetic survey carried out by Elkedra Diamonds (Penna, 2010, p.10). Further modelling and interpretation of this data was commissioned by Uramet.

Re-assays of Historical Drill Holes

In 2008 drill chips from historical holes MQ3, 5, 7, 10, 12, 15, 16, and 19 (Saracen Minerals NL), from M10P, M8P, M9P, M7P, M6P and M5P (Agip Ltd) and from ERB0218-0221 (Elkedra Diamonds) were submitted for geochemical assays for phosphorus and other elements related to phosphate mineralisation. This work was conducted to follow-up the discovery of high-grade phosphorite in outcrop in the Boat Hill area and to assist in targeting particular areas for reconnaissance phosphate drilling in the 2008 field season. The Thorntonia Limestone was the principal target geological unit for this program.

High grade P_2O_5 values were noted in a number of holes. In particular, grades of between 16–28.8% over intervals of up to 21m in holes M15PD, M09P, M12P, M12PD, MQ06 and MQ15. Full results are tabulated in CR2008-0872 (Taylor, 2009).

Surface Sampling

A total of 73 rock chip and soil samples, most targeting phosphate, were collected by Uramet over the northern half of Rox Resources EL's 28275 and 28276 (Figure 18). Numerous samples were also taken for Niton XRF analyses over these areas. Laboratory geochemical analyses were carried out on 60 samples collected from 41 sites and tested for base metals and phosphorous.

Results from SEL24768 did not indicate any potential for economic phosphate deposits according to Uramet. Percent values for P were generally between 5-17%.

Lead values were generally below 300ppm, but several samples assayed between 618 and 2175ppm, all within the Boat Hill Prospect. 18 samples returned values of >1000ppm Zn, most of them located within the Boat Hill Prospect. The highest zinc assays were between 3000 – 8881ppm.



Figure 18: Location of Uramet drillholes, rock chip and soil samples with respect to Rox Resources Marqua Project tenements.

Drilling

Aircore

A total of 79 aircore holes were drilled for a total of 1993m in 2008 within Rox Resources' EL28275 and EL28611(Figure 18). Of these, 2 holes specifically targeted base metals whilst the remaining 77 were mainly assayed for phosphate (some targeted both base metals and phosphate).

The radiometric content of samples was detected using a scintillometer, uranium being an indicator element for phosphorous. Niton hand-held XRF measurements of P, Ca and U content were also acquired for all samples. Uranium was measured in 363 or 1269 samples, with up to 145ppm uranium encountered.

659 samples from 56 drill holes were assayed at the laboratory. Four drill holes were assayed for both phosphate and base metals, one of which (from the Granite Prospect) was assayed for Au as well.

Holes assayed for zinc and lead returned strongly anomalous values of up to 3.29% Pb in QDA077 and 1.53% Zn in QDA072 (both in the Boat hill Prospect). Anomalous values above 3000 ppm Pb and Zn were returned in ten separate holes across a strike of 15km.

Results from 32 of the 56 drill hole assayed for phosphate were above 10% P_2O_5 , with 12 of those holes returning values over 20%.

RC/Diamond Drilling (M1 Anomaly)

In 2009, Uramet drilled two holes, a 49m RC hole (QDR01) and an RC hole with a diamond tail (QDD01, 239.7m RC precollar, 262.4m total depth). QDR01 was drilled to test a shallow ground gravity anomaly coincident with the M1 anomaly whilst QDD01 tested the M1 magnetic anomaly.

QDD01 confirmed the M1 anomaly was a granite plug but no significant gold or base metal mineralisation was encountered in the ten samples submitted between 230-240m. With maximum values of 345ppm Zn and 80ppm Pb returned; all Au values were below the level of detection. No samples were assayed from QDR01. CR2009-0583 provides a comprehensive account on the drilling program and results (Penna, 2009).

Conclusions

A number of phosphate targets delimited by mapping, surface geochemistry and geophysics were tested, with significant phosphate results being returned in a number of individual holes. However the drilling did not indicate to Uramet that a resource of sufficient grade or tonnage would likely be established in the project area.

While anomalous base metals were detected in the surface sampling and drilling, the results from VTEM and drilling did not indicate to Uramet the presence of an economic base metal deposit. The ground was therefore relinquished.

EVALUATION OF PROSPHATE PROJECTS

Review of Previous Work

A thorough review of previous work and a summary of all work undertaken by Uramet Minerals is outlined in Schmidt, 2009. Only a brief summary is provided here.

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 (approximately 200km to the west of the Marqua Project). In the central part of the Georgina Basin the Wonarah deposit was discovered in the early 1970s, and since then several world-class phosphorate deposits have also been discovered.

Minor occurrences in Middle Cambrian carbonate shelf areas in the Southern Georgina basin indicate that this area is also prospective. The only phosphate exploration undertaken specifically in the Marqua area is that carried out by Uramet Minerals between 2006 and 2010. Their exploration program consisted of:

- VTEM survey and interpretation
- Field mapping
- Fossil identification
- Surface sampling
- XRD on phosphate
- Review of historical data including re-sampling of holes
- Aircore, RC and diamond drilling.

Uramet's drilling program of 79 aircore holes and 2 RC/Diamond holes successfully intersected sub-surface phosphate-bearing Thorntonia mudstone and carbonaceous shale, which occur stratigraphically below the Arthur Creek Formation. P_2O_5 above 10% is estimated by Uramet to be approximately 14Mt (non-JORC). Laboratory results indicated an average rock phosphate concentration of 7% throughout the Marqua area.

Exploration Targets and Recommended Work

Prospective ground for phosphate rock within the Middle Cambrian units can be defined along the margin of the basin and on basement highs within the basin using a combination of outcropping Thorntonia Limestone, historical drill holes containing Thorntonia and a characteristic VTEM anomaly (Schmid, 2009). Uramet identified seven discrete prospects (Figure 19), the outer edges defined by their drilling program.

Red Heart and White Hill Prospects have identical geometry, with phosphatic rocks occurring in the same horizons in both areas. Each has similar dimensions and an approximate tonnage of 3MT each (non-JORC). There is a noticeable halo effect of phosphatic rocks surrounding the high abundance of carbonaceous shale. Both prospects have the potential for additional phosphate-bearing intervals within the black carbonaceous shale and interbedded mudstones (estimated depths more than 30m).

High grade surface mineralisation (more than 25% P_2O_5) at Foss Hill was found to extend with depth. An average of 11% P_2O_5 in a total of 20m true thickness of Thorntonia mudstones represent the thickest drilled section of Thorntonia mudstone (using a 10% P_2O_5 cut off). Infill drilling at this prospect will provide greater understanding of the thickness variations and structures.

The Syncline prospect has newly discovered Thorntonia carbonaceous shale that contains phosphorous that was previously not known of in this area. Drilling data over this area comprises just two aircore holes. This prospect is therefore an obvious area for follow-up drilling in order to define the geographic extension of the phosphatic Thorntonia and Red Heart Dolomite. Uramet estimated a tonnage at this prospect of more than $10\% P_2O_5$ to be approximately 6MT (non-JORC).

Additional recommendations include:

- Infill drilling at White Hill central around drill site QDA027.
- Infill drilling at Coquina Creek in order to find out if there are more phosphatic intervals as field data implies.
- Follow-up of possible Thorntonia carbonaceous shale under thin cover identified by Uramet through subsurface sampling using an auger in order to extend known prospective units and possibly define new prospects.
- Further surface mapping of exposed rock units (specific recommendations on useful strategies are outlined by Schmid, 2009, p27).

See Schmid, 2009 pp.25-27 for more detail on these recommendations.



Figure 19: Uramet 2008 Aircore drill holes and prospect names and locations. (From Penna, 2010)

EVALUATION OF BASE METAL TARGETS

Review of Previous Work

Since the 1960's the Georgina Basin was considered prospective for mainly Mississippi Valley Type (MVT) leadzinc 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 base metal mineralisation. Two examples are Carbonate-Hosted Pb-Zn (Irish Type) and Stratiform Shale-Hosted Base Metals.

Uramet Minerals undertook a thorough review of all previous base metals exploration in the Marqua area and concluded that because of the contrasting oxidised and reduced sedimentary rock packages present in the Marqua project area, together with the presence of major fault systems that could act as feeders for hydrothermal fluids, the area is prospective for shale-hosted Kupferschiefer style base metal mineralisation within both the Neoproterozoic and Cambrian strata (Penna, 2009).

Prospective units within the Georgina Basin for base metals include the Upper Cambrian Arrinthrunga Formation, the Middle Cambrian Arthur Creek Formation and Thorntonia Limestone and the Lower Cambrian Red Heart Dolomite, all of which show consistent lead, zinc and silver anomalism. Most of these units are of early to middle Cambrian age (about 520 million years old), a time recognised around the world for deposition of metal-rich black shales and phosphorite. The prospective units occur over large strike lengths. In the Boat Hill corridor within EL28275, the prospective stratigraphy is in excess of 33km in length and has an outcrop width of up to 1.5km. This zone is structurally repeated in the Desert Syncline to the south in the same EL. In addition, numerous polyphase hydrothermal quartz veins cross-cut mainly Neoproterozoic strata in the eastern part of the EL and contain anomalous levels of Au and Cu (Penna, 2009).

Lead Isotope Analysis conducted by MIM Exploration on five samples of core with visible galena gave a broad range of radiogenic Pb isotope ratios which led MIM to discount a large hydrothermal system and therefore a major sediment-hosted ore deposit (Simpson, 1992). They show some affinity to MVT style deposits but the wide range of results is much greater than other similar style deposits in Australia. The results suggest a mineralising age of about 315Ma with a source age of about 1700 Ma. This is consistent with thrust faulting and hydrothermal events during the Alice Springs Orogeny. Shergold (1985) quotes an age of 1719 Ma for a pegmatite vein in the granite just to the south west of the prospect.

Petrological investigations also carried out by MIM Exploration suggested that the mineralisation is similar to MVT mineralisation. There appears to have been two phases of mineralisation, with galena the last mineral to form filling vughs in saddle dolomites. Pyrite and sphalerite are intimately associated (Simpson, 1992).

The Marqua project area has been subject to lead-zinc exploration for over 30 years with **e**xploration for base metals initially centred around rock chip and stream sampling by the BMR whilst mapping the area in 1959-1960 and throughout the 19970's and 1980's. Figure 20 displays the outlined area in which surface sampling was carried out by different companies, note that not all companies assayed for base metals. Figure 21 shows outlined areas for drilling conducted by the various companies.



Figure 20: Outline of area's in which surface sampling was undertaken by each company, with respect to current Rox Resources Marqua Project tenements.





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A summary of the exploration undertaken for base metals within the Marqua Project follows.

FIMISTON MINERALS NL

During 1971-1972 Fimiston Minerals targeted the Upper Cambrian formations (particularly the Arrinthrunga Formation) as potential hosts for MVT mineralisation. They located minor lead-zinc mineralisation in one rock chip sample of the carbonate facies of the Arrinthrunga Formation immediately below the Ninmaroo Formation north of Craigie Dam (max. 1350 ppm Zn, 154 ppm Pb), and concluded that the Arrinthrunga Fm was the most favourable host for the MVT style lead and zinc mineralisation.

CARPENTARIA EXPLORATION PTY LTD

Between 1976 and 1977 Carpentaria Exploration targeted MVT Cu-Pb-Zn in the dolomitic intervals of the Cambrian and Lower Ordovician units. Anomalous Pb-Zn stream sediment values were obtained (max. 651ppm Pb and 760ppm Zn) from creeks draining carbonate facies of the Ninmaroo Formation, but no outcropping Pb-Zn mineralisation was located. These anomalies were attributed to iron-manganese oxide scavenging during weathering. Apart from one assay of 975ppm Cu associated with a remnant of Triassic cover, no significant copper values were received.

The dolomitic units of the Wonnadinna Dolomite in the Boat Hill area were found to be anomalous with up to 1.15% Zn over 2m in a channel chip sample. An anomalous horizon was defined from rock chip samples with a strike length of 1.5km on the northern limb of an anticline just north of Boat Hill. All the anomalous rock chip assay results obtained were believed to result from the accumulation of base metals on iron and manganese oxides during lateritic weathering. Elevated Zn in subsurface and unweathered carbonate in the Boat Hill area was thought to be due to cation substitution in the dolomite lattice.

BUREAU OF MINERAL RESOURCES

During 1977-1978 and 1983 the BMR drilled twelve cored stratigraphic holes in the Marqua area. Anomalous zinc levels of up to 0.16% were found in the four holes assayed. Anomalous values were returned from the Ordian black shale interval of the medial interval of the Thorntonia Limestone and at the disconformity between the Arthur Creek Formation and the grainstone layer which separates it from the Thorntonia Limestone. Above the disconformity the geochemistry of the Arthur Creek Formation was not considered to be remarkable. The Red Heart Dolomite, which underlies the Thorntonia Limestone, is mineralised, postulated to be due to a hydrothermal event associated with the Alice Springs Orogeny. Relatively high Ag values (to 7ppm in Hayriver11B) may also be a product of this hydrothermal event (Shergold and Walter, 1979).

AGIP AUSTRALIA PTY LTD

Agip Australia targeted MVT mineralisation in the Marqua area during 1981. Reconnaissance mapping and rock chip sampling demonstrated that base metals are anomalous within the Wonnadinna Dolomite and Thorntonia Limestone. They re-evaluated the drainage anomalies defined by Carpentaria with further rock chip sampling, geological mapping, and 16 percussion holes drilled over a strike length of 8 km to test zinc anomalies. They defined three units – the Wonnadinna Dolomite, Red Heart Dolomite and Thorntonia Limestone, which from rock chip assays showed consistent anomalous lead, zinc and silver values.

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The results demonstrated that lead and zinc anomalism with minor, erratic, silver values could be traced over nearly ten kilometres of strike immediately to the north of Boat Hill; from the Wonnadinna Dolomite, Red Heart Dolomite, Thorntonia Limestone and Arrinthrunga Formation. Base metal values increase toward the fault zone. The best drilling intercept was between 55.5–56m in M13PD of 1.9% Zn.

The Wonnadinna Dolomite was shown to be enriched in base metals within close proximity to the unconformity at the top of the unit.

The basal cherts and interbedded shales of the Thorntonia Limestone are anomalous in Pb, Zn, and Ag wherever intersected in drilling. The unit is more enriched in lead than the Wonnadinna Dolomite and the highest base metal values occur where the unit has been brecciated.

The Arrinthrunga Formation was not tested by drilling but anomalous values occur within the formation at the eastern end of the prospect in close proximity to the Toomba Fault Zone.

Agip concluded that the anomalous lead, zinc and silver values obtained from the carbonate facies of the Arrinthrunga and Ninmaroo Formations represent carbonate-replacement style mineralisation associated with thrust-faulting along the Toomba fault zone.

CRA EXPLORATION PTY LTD

In 1991 CRAE prospected the north-western portion of the Toomba Fault Zone for gold and base metal mineralisation through rock chip and stream sediment sampling. They identified three slightly anomalous drainage areas from the assay results, however as these were not validated on reassay of several samples, the sample or assay quality was deemed questionable.

MIM EXPLORATION PTY LTD

MIM explored the area in the early 1990's to test for Pb and Zn, reassaying Saracen Minerals drillholes and drilling ten additional holes. The majority of Saracen drillholes showed moderate lead and zinc anomalism where the holes intersected the basal Hay River Formation, with the higher values close to the complex thrusting and folding around Boat Hill. The MIM drilling program intersected minor occurrences of galena, sphalerite and pyrite up to 2cm across in the Hay River Formation and Red Heart Dolomite in BHD4, 5 and 9. The highest assays from the drilling were 770 ppm Pb, 1.05% Zn and 2g/t Ag from 500.54m – 501.35m in BHD5, and 0.83% Pb, 2.24% Zn and 2g/t Ag from 530.9 – 531.36m in BHD9.

Assays up to 1.8% Pb and 7090ppm Zn in the Thorntonia Limestone in the Boat Hill area led MIM to conclude that mineralisation at the Boat Hill Prospect is structurally controlled.

NORTHERN TERRITORY GEOLOGICAL SURVEY

Rock chip sampling of a fault breccia at the Boat Hill Prospect returned two intervals with percent levels of Zn. NTGS drilling (NTGS99/1) also intersected percent levels of Zn and visible galena in the Thorntonia Limestone to the north west of this area, considerably extending the area known to be anomalous in base metals in the region.

ELKEDRA DIAMONDS NL

Between 2002-2006 Elkedra Diamonds drilled two RAB holes specifically to investigate base metal anomalous strata across the Neoproterozoic-Cambrian contact, with other holes designed for diamond exploration also assayed for base metals. Anomalous zinc and lead values (2195-6577ppm Zn, 2.47% Pb) were found in ERB0220 and ERB0218, in the far northern western portion of Rox Resources' current EL28275.

URAMET MINERALS LTD

Between 2006 and 2010 Uramet Minerals explored for stratiform shale-hosted base metals through a combination of geophysics, surface sampling and drilling. Lead values from surface sampling were generally below 300ppm, but several samples assayed between 618 and 2175ppm, all within the Boat Hill Prospect. 18 samples returned values of >1000ppm Zn, most of them located within the Boat Hill Prospect. The highest zinc assays were between 3000 – 8881ppm.

Two drill holes specifically targeted base metals, whilst of the remaining 77 drillholes targeting phosphate, some were also assayed for base metals. Holes assayed for zinc and lead returned strongly anomalous values of up to 3.29% Pb in QDA077 and 1.53% Zn in QDA072 (both in the Boat hill Prospect). Anomalous values above 3000ppm Pb and Zn were returned in ten separate holes across a strike of 15km. Anomalous but sub-economic concentrations of Pb and Ag were intersected by a shallow hole at the Granite Prospect.

NORTHERN TERRITORY GEOLOGICAL SURVEY

The NTGS re-evaluated the area as part of a report on the geology and resources potential of the southern Georgina (Dunster et al, 2007) and concluded that the Marqua area remains prospective for base metals since the lithostratigraphy of the area was not fully understood until recently.

BUREAU OF MINERAL RESOURCES

Bureau of Mineral Resources (BMR) and exploration company surface geochemical data were compiled, log normalised and presented as colour-contour maps by Dunster et al (2007). Contouring of rock chip lead values highlighted Box Hole with zinc anomalies centred on Box Hole and Boat Hill. Copper in soils was considered unreliable by previous explorers but there are clear anomalies within the Ediacaran Central Mount Stuart Formation (not within Rox Resources tenements).

Exploration Targets and Recommended Work

Dunster et al. (2007, p.xi) comment that Irish-style and Manto orebodies, which form at higher temperatures than MVT and have a stockwork feeder, will be in Cambrian carbonate rocks in areas of highest thermal maturity and would have been fed by a suitable dilatational fault.

Geophysics

Dunster et al. (2007) suggest that electromagnetic surveying could be a suitable technique to locate base metal host rocks and that all the available data support the validity of an MVT model.

Extensive SIROTEM surveying and modelling by MIM Exploration in the early 1990's completed at the Boat Hill Prospect and seven km to the west across the strike of both the prospective Hay River and the Wonnadinna Dolomite was followed up by drilling to test all the anomalies except for those on Lines 1 and 4. These may be worthy of follow up investigation.

Recommendations by MIM Exploration after their work (from CR1992-0235) were:

- BHD4, 5 and 9 should be downhole SIROTEM logged to check for possible offhole conductors.
- Other geophysical techniques such as IP should be used to test possible structural and lithological targets associated with the reverse fault.

An extensive IP survey with follow-up ground gravity and magnetics was planned but not carried out by Agip in 1981. This survey, or at least the use of IP to explore for base metal mineralisation, may be worthy of reassessment considering Agip relinquished their ground not so much because they deemed the Marqua area to be uneconomical for base metals but because the whole company was pulling out of base metals exploration in Australia.

Additional Sampling Data to Compile

Assay results from Agip surface sampling that have not been georeferenced and are therefore not in the surface sampling data compilation of the Marqua Projec, can be reviewed in report CR1982-0376, SECT08GC.tif. It may be possible for a small number of these samples and corresponding assays to be georeferenced from the geological maps on which the sample locations are annotated (SECT10.tif and SECT11.tif).

Similarly, with the MIM Exploration stream and rock chip samples, there are more assay results than there are samples that have been georeferenced. Reports CR1992-0235 and CR1992-0506 refer to drawings on which sample locations are shown; however they are not actually displayed there.

It is worth following up on both sets of missing data mentioned above as there are a significant number of samples and corresponding assay results which have not been georeferenced, many of which are located in and around the Boat Hill Prospect.

In 1991 CRAE carried out reconnaissance rock chip and stream sediment sampling. Of the 111 stream samples with anomalous Cu and Zn assays of up to 600ppm Cu and 1800 ppm Zn, just four of these samples were reassayed and two additional check samples taken. The 600ppm Cu assay repeated as 37ppm but the 1800 ppm Zn assay was not re-assayed or re-sampled. CRAE concluded that the assay results failed to indicate the presence of any significant gold-base metal mineralisation but, based on the questionable reliability of their assay results, it may be worth having another look at this area.

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Anomalous zinc and lead values (2195-6577ppm Zn, 2.47% Pb) were found in ERB0220 and ERB0218 by Elkedra Diamonds in the far north-western portion of Rox Resources current EL28275. Very little surface sampling and drilling has taken place in this area therefore it is recommended additional work be carried out here.

Finally, following up on some of the recommendations made by Uramet (see previous section: Evaluation of Phosphate Prospects) should be a high priority for base metals exploration as well. Specifically:

- Follow-up of possible Thorntonia carbonaceous shale under thin cover identified by Uramet through subsurface sampling using an auger in order to extend known prospective units and possibly define new prospects.
- Further surface mapping of exposed rock units (specific recommendations on useful strategies are outlined by Schmid, 2009, p27).

EVALUATION OF POTENTIAL FOR OTHER MINERALS

URANIUM

BMR drillholes Hayriver11, 11A and Tobermorey14 (for locations see Figure 8) all returned anomalous U of up to 34ppm, at the disconformity between the Arthur Creek Formation and the grainstone layer which separates it from the Thorntonia Limestone.

Roll-front uranium was considered to be a secondary target in exploration of the Marqua area by Agip but no significant occurrences were identified. Re-assay of M13PD by NTGS returned a single anomalous U value of 33.4ppm at 55.5m.

Geopeko targeted the basal Georgina Basin succession as part of a search for Proterozoic sediment-hosted uranium. The company flew a radiometric survey over northern HAY RIVER in 1979 and extrapolated the results into southern TOBERMOREY. Cenozoic cover was a major problem and the only anomalies detected were attributed to weak surficial concentrations. No further work was undertaken.

The NTGS assayed for uranium in corehole NTGS99/1 but no significant results were returned.

Elkedra assayed for uranium in their surface sampling, finding values averaging 1.4ppm U. Three samples recorded slightly above background U values of 4.5 – 10.5ppm. Elkedra also reassayed three Saracen drillholes (MQ4, MQ11 and MQ13) for uranium, all of which returned above background values in multiple intervals, with maximums for each hole between 21.6 and 65.9ppm U. MQ4 is located within the Boat Hill Prospect, whilst MQ11 and 13 are collared 6km along strike to the west.

Assays for Uranium were returned for 19 of Elkedra's 51 drillholes over the Marqua Project area. An average if 5ppm U was received from the 274 samples with drillholes ERB218-220 in the far north-west of the EL returning maximum values of between 21.8 – 49.0ppm U. Re-assays of samples from ERB218-220 by Uramet supported the high U values from previous assays with maximums of between 49-59ppm U. It should be noted that ERB218 and 220 also had anomalous zinc and lead values.

The radiometrics reprocessed by Uramet highlighted a number of interesting U anomalies (Figure 14) including some in the Boat Hill area associated with phosphorites and one to the south associated with ferruginised Cretaceous sandstones. Both these areas remain to be investigated. Surface sampling in the Boat Hill Prospect and along strike to the west (to the north of Elkedra sampling – see Figure 20) averaged 15.3ppm U, with all 19 samples above 10ppm (and up to 148.6 ppm) located in a discrete 3.4 km E-W trending zone within the Boat Hill Prospect.

Uranium assays were returned for 19 Uramet drillholes with an average of 12.5ppm U and a maximum of 55.3ppm U. Seven holes returned assays greater than 20ppm U, five of which are located in the "White Hill" prospect, the other two within the Boat Hill Prospect.

The potential for calcrete and palaeochannel style uranium deposits is still largely untested (Dunster et al, 2007, p.xi).

GOLD

The following paragraph is taken from Shergold, 1985. The recognition of possible hydrothermal activity within the Red Heart Dolomite is significant. The Hay River – Mount Whelan Sheet area contains many of the conditions required to make it prospective for Carlin-style gold deposits. Among them are possible hydrothermal activity associated with thrusting, high-angle normal faults, porous stratigraphic formations, and stratigraphic breaks acting as potential or proven channelways for migrating fluids; the presence of organic sediments required for the production of gold-organic compounds; apparently appropriate temperatures; and a possible association with hydrocarbons. Most of these factors occur in Nevada where the Carlin deposit was first described.

CRAE prospected the north-western portion of the Toomba Fault Zone for gold and base metal mineralisation. Anomalous gold between 0.10 – 0.76ppm was detected in five stream sediment samples taken from drainages scattered over an area of approximately 20 square kilometres. The three lower anomalous results (between 0.1-0.18ppm Au) did not repeat on re-assay whilst the two highest results, 0.32 and 0.76 ppm Au, were not re-assayed or re-sampled. All five anomalous sample locations are located in the south-eastern portions of Rox Resources current EL's 28276 and 28612.

MIM also specifically targeted gold mineralisation (Carlin-style) but concluded that rock chip and limited stream sediment sampling failed to find evidence of a gold mineralising system with just two stream sediment samples located within Rox Resources EL28275 and a single rock chip sample in the west of EL28612 receiving assays between 0.11 and 0.35ppm Au.

Although not specifically targeting gold mineralisation, Elkedra assayed for gold in 28 of their 88 surface samples, 16 of which returned Au values between 1-78ppm. Most of these samples were taken on EL28276 to the southeast of the Boat Hill Prospect, including the sample assaying 78ppm. This area is certainly worthy of follow-up.

Very few drillholes over the Marqua Project area have been assayed for gold and those that have were either below the limit of detection or only slightly above.

PLATINUM GROUP ELEMENTS

In 1985 the BMR reported economic levels of 1.5ppm Pt and 0.8ppm Pd in cored stratigraphic drillhole BMR Hayriver11A. These were located in separate samples of shale in medial Thorntonia Limestone.

Following up on these results Geopeko briefly held ground in the Marqua area to explore for PGE's in Georgina Basin shales. The company reviewed BMR magnetic data and reprocessed some in-house airborne magnetic and radiometric data from 1978. After discussions with the BMR, they concluded that the elevated PGE's (1.5ppm Pt result from drillhole BMR Hayriver11A) reported by Shergold (1985) were analytically incorrect and that there were no magnetic anomalies worthy of follow up.

Saracen Minerals were also encouraged by the elevated PGE assays reported by the BMR. Using a "red bed" model similar to the Zechstein Shales (Permian) in Poland, Saracen targeted shales in the Thorntonia Limestone near the Boat Hill Prospect for platinum mineralisation. They drilled nineteen percussion holes in 1988 however no PGE's were detected. It is now generally believed that the BMR assays are spurious (Dunster et al, 2007, p. xi).

Further exploration with a rig suitable for sandy environments was recommended by Saracen in the part of their EL5146 not drilled. This EL lies immediately to the west of Rox's EL28275. A detailed discussion of concepts behind possible occurrences of Pt in the Marqua area is located in CR1988-0055, p11 (Virtue, 1988).

Assays for platinum in all drill core samples by MIM were below the limit of detection.

Elkedra assayed 77 surface samples for Pd and 10 for Pt. No Pt was detected however 22 samples were above the detection limit of 0.1ppb Pd with four of those samples between 278-13910 ppb. No other companies assayed for PGE's in their surface sampling. Of 14 drillholes comprising 89 samples assayed for Pt by Elkedra a maximum of 14ppb Pt was returned, with an average of 3.5ppb. Corresponding Pd values were a maximum of 26ppb with an average of 5.7ppb.

RARE EARTH ELEMENTS

None of the reports referred to in the writing of this report mentioned exploration for REE's however several companies included some of the REE's in their assays of drillholes and surface samples. A summary of these is displayed in Table 2.

	Ce	Dy	Er	Eu	Gd	Но	La	Lu	Nd	Pm	Pr	Sc	Sm	Tb	Tm	Y	Yb
Uramet																	
# holes/max value	10/116.1															10/21.5	
# surface samples/max	73/162.5																
Elkedra																	
# holes/max value	8/182.1						8/97.5		8/79.5							8/37	8/3.4
# surface samples/max	88/121.3					88/1.0	88/49.6		88/63.0							88/58	88/2.4
Elkedra reassays of Saracen holes																	
# holes/max value	3/505.2																
Agip																	
# holes/max value	2/0																
Reassay M13PD by NTGS	1/33.4															1/18.8	
BMR																	
# holes/max value	2/160						3/110									4/1438	
NTGS																	
# holes/max value	1/22.4						1/11.0					1/5				1/19.7	
# surface samples/max	6/86		6/2.9	6/1.1	6/5.8	6/1.0	6/40.7	6/0.4	6/32.7		6/9.1	6/13	6/6.3	6/1.0	6/0.2		6/2.4

 Table 2: Summary of REE assays conducted by company – drillholes and surface samples.

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