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1. SUMMARY

EL 7912 Moyle was granted to CRA Exploration Pty Limited on 24 December 1992, for a period of six years. The tenement area, covering 49 blocks, is situated approximately 200 kilometres south-southwest of Darwin and lies predominantly within the Pine Creek Geosyncline.

The licence area encompasses high grade metamorphic rocks of the Early Proterozoic Hermit Creek Metamorphics unconformably overlain by metasediments and felsic volcanics of the Finniss River Group, intruded by ‘younger’ Early Proterozoic gabbros, dolerites, granitoids and acidic sills.

The Berinka Volcanics, placed at the base of the Finniss River Group, were originally considered prospective for Volcanics Hosted Massive Sulphide style base metal deposits.

During the period of tenure for EL 7912 Moyle a comprehensive open file review of competitor data revealed potential for an untested conductor within the Hermit Creek Metamorphics. Airborne magnetic data purchased from the NTGS 1984 survey of the Port Keats area revealed a magnetic ‘bullseye’ response to be coincident with these conductors.

Competitor drilling and geophysical surveying has shown potential for significant basemetal mineralisation to be associated with shallow conductive graphite-quartz-mica schists. Modelling of magnetic and electromagnetic data suggests that the geophysical responses documented in open file reports could be attributed to a much larger and deeper source than has been identified.

2. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are drawn from exploration activities completed within EL 7912 Moyle during the second year of tenure;

• Surficial conductors identified by competitors do not adequately explain responses recorded in an early Sirotem survey.

• Computer modelling of Sirotem data and airborne magnetic data over known shallow mineralised conductors suggests the presence of a deeper and larger conductor.

The following recommendations are made;

• A detailed CSAMT survey should be carried out over the known conductors and magnetic anomalies with the specific objective of locating deep conductors.
• Drill test any anomalous response recorded from the CSAMT survey.

• Conduct downhole EM surveys to ascertain if CSAMT targets were intersected by drilling.

3. INTRODUCTION

EL 7912 Moyle was granted to CRA Exploration Pty Limited on 24 December 1992 for a period of six years. The licence area, covering 49 blocks, is located approximately 200km south-southwest of Darwin and encompasses Early Proterozoic lithologies of the Hermit Creek Metamorphics and Finiss River Group (NTd 5509).

Outcrop of the Finiss River Group within EL 7912 form the westernmost exposures of the sedimentary sequence of the Pine Creek Geosyncline. The Berinka Volcanics, placed at the base of Finiss River Group and outcropping within EL 7912, were originally considered prospective for Volcanics Hosted Massive Sulphide base-metal deposits.

Tenure year one activities focused on an open file review and statistical analysis of a competitor multi-element stream sediment sampling programme which resulted in the definition of nine geochemically anomalous areas within the licence area (Bisset et al, 1994). Selected areas were then surveyed with the Geotem airborne electromagnetic system to test for Volcanics Hosted Massive Sulphide style base metal mineralisation.

A single conductor was identified from the Geotem survey over an area encompassing discrete moderate magnitude Cu/Pb/Zn anomalism in stream sediment samples.

This report details work completed within EL 7912 during the second year of tenure.

4. REGIONAL GEOLOGY

Exploration licence 7912 Moyle lies predominantly within the Pine Creek Geosyncline. The licence area encompasses Early Proterozoic lithologies of the Finiss River Group, with the region dominated by the Burrell Creek Formation and the unconformably overlying Chilling Sandstone (NTd 5902). Scattered and isolated exposures of the Hermit Creek Metamorphics within EL 7912 Moyle are interpreted to unconformably underlie lithologies of the Finiss River Group.
The Burrell Creek Formation is characterised by southeast dipping phyllites, schists and quartz arenites. Interlayered near the base of the unit, rhyolitic-to-andesitic Berinka Volcanics occur and are tentatively correlated with the massive sulphide Cu-Pb-Zn lode-host Warrs Volcanic Member in the Daly River area.

The Finnis River Group within the licence area is intruded by Early Proterozoic Wangi Basics and by younger granitoids (Murra-Kamangee Granodiorite) and acidic sills (Ti-Tree Granophyre).

The tenement is transected by the transcurrent dextral Giants Reef Fault and a zone of subparallel faults/splays which appear as fundamental control to sedimentation on the western edge of the Pine Creek Geosyncline.

5. EXPLORATION ACTIVITIES

The presence of a conductor within a region previously identified as geochemically anomalous during tenure year one prompted a more focused open file review on this area. The ensuing review and subsequent difficulties in securing specialist contractors to conduct a CSAMT survey meant ground geophysical data was not acquired during the second year of tenure.

Airborne magnetic and radiometric data covering the Moyle 1:100 000 map sheet was purchased from the NTGS 1984 survey of the Port Keats region. This data was used to model the magnetic response observed to be coincident with the recorded Geotem anomaly.

5.1 Open File Review

A review of past exploration activities proximal to the Geotem anomaly focused on work completed by Mobil Energy Minerals Australia Incorporated. (CR82/325, CR83/150). As a result of this review the following synopsis is presented.

- Significant basemetal anomalousism is associated with near surface graphitic schists. Mobil Energy Minerals Australia reported geochemical assay values up to 1.5%Pb and 0.38%Zn from graphite-quartz-sericite schists intersected in drill testing of conductivity anomalies.

- Some doubt remains as to whether the 1982 Sirotom survey would have detected or defined any conductors at depth. Forward modelling of separated loop Sirotom data has shown that responses from conductors at a depth of around 200 metres would be masked by responses from near surface conductors using this loop configuration.
• No downhole EM work has been undertaken to confirm that conductors interpreted from the Sirotem survey with separated loop configuration were intersected in a subsequent drilling phase.

• Forward modelling of coincident loop Sirotem data has shown that a similar response to that recorded in the 1982 survey can be produced by a deep, plunging conductive layer in air dipping to the south-west end of the survey line.

• Magnetic modelling of Mobil Energy’s ‘Buffalo Fly Prospect’ bullseye anomaly was completed using airborne magnetic data from the NTGS 1984 survey of the Port Keats area. Modelling indicated a magnetic source at around 100 metres depth and dipping at 20 degrees to the south under the Chilling Sandstone.

• The spatial relationship between the conductivity anomaly observed by Mobil Energy Minerals and the interpreted source of the magnetic bullseye is uncertain. Potential exists for a conductive layer at depth with possible pyrrhotite/magnetite associations.
6. REFERENCES


Mobil Energy Minerals Australia Inc. EL1597, Chilling Creek Annual Report For 1981 (8/8/81-8/8/82) CR82/325

Mobil Energy Minerals Australia Inc. EL1597, Chilling Creek Final Report (8/8/82-16/2/83) CR83/150

RGC Exploration Pty Ltd (1991) Murra Kamangee EL6918 Annual and Final Report (15/10/90-14/10/91) CR 91/561

7. KEYWORDS


8. LOCATION

Port Keats SD5211 1:250 000 mapsheet  
Fergusson River SD5212 1:250 000 mapsheet

Moyle 4969 1:100 000 mapsheet  
Wingate Mountains 5069 1:100 000 mapsheet

9. LIST OF PLANS

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<td>NTd 5509</td>
<td>EL 7912 Moyle Location Plan</td>
<td>1:250,000</td>
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<tr>
<td>NTd 5902</td>
<td>EL 7912 Moyle Geology Plan</td>
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Area: 49 blocks
approx. 163 sq. km.