EL 25709

Annual and Final Report

For period ending 19th December 2011

Murphy Project, NT

2012

D. Esser

January 2012
CONTENTS

1 SUMMARY........................................................................................................................................... 4

2 INTRODUCTION..................................................................................................................................... 5

3 LOCATION AND ACCESS .................................................................................................................... 6

4 TENURE ............................................................................................................................................... 7

5 REGIONAL GEOLOGY .......................................................................................................................... 9

  5.1 Structure ....................................................................................................................................... 11

6 LOCAL GEOLOGY .................................................................................................................................. 12

  6.1 The Georgina Basin .......................................................................................................................... 12

7 PREVIOUS WORK .................................................................................................................................. 14

  7.1 Historic Exploration ......................................................................................................................... 14

  7.2 Exploration by Bondi ....................................................................................................................... 14

8 EXPLORATION PROGRAM 2011 .......................................................................................................... 19

9 FUTURE WORK ................................................................................................................................... 20

10 CONCLUSIONS ................................................................................................................................. 20

11 REFERENCES ..................................................................................................................................... 21
LIST OF FIGURES

Figure 1: EL 25709 Tenement Location Map .......................................................... 5
Figure 2: Location of Murphy Uranium Project tenements in the NE of the Northern Territory .......... 6
Figure 3: EL 25709 Block & Sub-Block Identification Map ........................................ 8
Figure 4: Generalised Geology, Westmoreland Area .................................................... 10
Figure 5: Stratigraphy of Murphy Inlier Region ......................................................... 11
Figure 6: Erosional Remnant of the Centralian Superbasin ....................................... 13
Figure 7: Extent of 2007 Airborne geophysical survey .............................................. 15
Figure 8: Alpha Track Etch Sample Locations .......................................................... 16
Figure 9: Extent of 2009 Airborne geophysical survey .............................................. 18
Figure 10: Location of Aerial EM survey ................................................................. 19

LIST OF APPENDICES

Appendix 1- Expenditure Statement (Supplied under separate cover) ......................... 22
EL 25709 is part of a group of twelve (12) tenements comprising the Murphy Project in the northeastern part of the Northern Territory. Bondi Mining Limited was conducting exploration for unconformity and sedimentary hosted uranium mineralisation, analogous to the unconformity deposits of the East Alligator River Region (e.g. Jabiluka) of the Northern Territory, and the Westmoreland deposit in northwestern Queensland respectively.

Exploration during the 2011 field season comprised an environmental audit which involved checking that rehabilitation of drill holes and tracks was completed on EL 25709. All drill holes were satisfactorily rehabilitated.
2 INTRODUCTION

This annual report documents the results of the work done by Bondi Mining Limited over EL 25709 covering the western part of the Murphy Project in the Northern Territory. Refer to Figure 1 for a location map of the tenement. The tenement was granted on the 20th of December 2007 and this report summarizes all work completed on EL 25709 since it was granted in 2007.

Figure 1: EL 25709 Tenement Location Map
3 LOCATION AND ACCESS

The Murphy Uranium Project area is located in the Barkly Tablelands in the eastern Northern Territory. The largest city in the region is Mount Isa located 400 km to the south-east of the project area. The closest townships are Borroloola, which is located 150 km to the north, and Tennant Creek, located 250 km by road to the south west of the project area. Port facilities are located at Bing Bong a further 50 km north of Borroloola. These port facilities were established to service the McArthur River Lead Zinc Mine owned by Xstrata.

Figure 2: Location of Murphy Uranium Project tenements in the NE of the Northern Territory

The project area is readily accessed the Barkly Highway to the Barkly Roadhouse and then north along the bitumen Tablelands Highway, or alternatively from the Savannah Highway, a formed gravel road leading from Normanton via Burketown to Borroloola. A network of local formed roads and pastoral tracks provides good access to most of the area of interest. During occasional periods of intense rainfall during the wet season (December – April) both the major and minor creeks may be impassable for some days, or weeks. The tenements are situated in remote, sparsely populated country. Topography mostly comprises black soil plains, which are essentially treeless with some broad gentle valleys covered by open woodland dominated by grey box eucalypt trees, to rugged east-west trending ridges on the flanks of the valleys.
4 TENURE

EL 25709 was applied for by Canon Investments Pty. Ltd., a wholly owned subsidiary of Buffalo Gold Ltd. The tenement were granted in August 2007 for a period of six years and were transferred to Murphy Uranium Pty Ltd, a wholly owned subsidiary of Bondi Mining Ltd, as part of an acquisition of Buffalo Gold’s uranium portfolio by Bondi Mining on 17th January 2008. In December 2008 a Letter of Agreement was signed between Bondi and Japan Oil, Gas and Metals National Corporation (JOGMEC) wherein JOGMEC can earn a 51% undivided interest in the project by funding AUD $3 million in exploration over four years. EL 25709 originally comprised an area of 622.5 square kilometres and encompassing 190 sub-blocks. The tenement was reduced by 95 sub-blocks in July 2010 and 47 sub-blocks 2011 with total surrender in January 2012. The tenure details and sub-block map of the tenements, prior to total surrender are shown in Table 1 and Figure 3 respectively.

Table 1 - Tenement Details

<table>
<thead>
<tr>
<th>Tenement No.</th>
<th>Tenement Name</th>
<th>Tenement Holder</th>
<th>Area S/blks</th>
<th>Area Sq km</th>
<th>Grant Date</th>
<th>Expiry Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>25709</td>
<td>Ballyaira Creek</td>
<td>Murphy Uranium Pty Ltd</td>
<td>48</td>
<td>107</td>
<td>29/08/2007</td>
<td>28/08/2013</td>
</tr>
</tbody>
</table>
Figure 3: EL 25709 Block & Sub-Block Identification Map
5 REGIONAL GEOLOGY

The Murphy Project tenements are situated within the Calvert Hills, Wallhallow, Mount Drummond and Brunette Downs (Northern Territory) 1:250,000 geological sheets. The first geological observations in the area were reported by explorer Gregory in 1861. The Redbank copper deposit was discovered in 1916 by prospectors however little geological work was done until the late 1930s when the federal government funded the Aerial Geological and Geophysical Survey of Northern Australia (“AGGSNA”). The discovery of uranium in 1955 at Pandanus Creek led to increased interest from mining companies.

The oldest rocks exposed in the area are early Proterozoic sediments, volcanics and intrusives which were deformed and regionally metamorphosed prior to 1875 Ma. These Murphy Metamorphics (Yates et al, 1962) are represented mainly by phyllitic to schistose metasediments and quartzite. They are overlain by two Proterozoic cover sequences laid down after the early deformation and metamorphism of the basement, and before a period of major tectonism which began at about 1620 Ma. The oldest cover sequence is the Cliffdale Volcanics unit, which unconformably overlies the Murphy Metamorphics. The Cliffdale Volcanics contain over 4000 m thickness of volcanics of probably sub-aerial origin, more than half of which consist of crystal-rich ignimbrites with phenocrysts of quartz and feldspar. The remainder are rhyolite lavas, some of which are flow banded. The ignimbrites are more common in the lower part of the sequence, with the Billicumidji Rhyolite Member occurring towards the top.

The Cliffdale Volcanics are comagmatic with the Nicholson Granite and together they comprise the Nicholson Suite. SHRIMP dating of both the Nicholson Granite and the Cliffdale Volcanics gave an age of 1850 Ma (Scott et al, 1997). The Nicholson Granite is predominantly I-type granodiorite in composition.

The Nicholson Suite shows little evidence of fractional crystallisation and on this basis the potential for forming large tonnage deposits is considered to be minor, although small tonnages of high grade are possible. In the vicinity of the granites there are no significant potential host rocks documented. Potential exists for small Sn and W deposits within the granite and for smaller Cu and Au deposits outside the granite (Budd et al, 2001).

Unconformably overlying the Nicholson Suite is the Tawallah Group (Yates et al, 1962). This is the oldest segment of the southern McArthur Basin. The base is a sequence of conglomerates and sandstones comprising the Westmoreland Conglomerate (Carter et al, 1958). The conglomerates thin out to the southeast and are in turn conformably overlain by the Seigal Volcanics (Grimes & Sweet, 1979), an andesitic to basic sequence containing interbedded agglomerates, tuffs and sandstones. Together these units comprise about two-thirds of the total thickness of the Tawallah Group. The volcanics are overlain in turn by the McDermott Formation, the Sly Creek Sandstone, the Aquarium Formation and the Settlement Creek Volcanics. Age dating of volcanics within the Tawallah Group indicates a depositional age of between 1780 and 1710Ma.
Figure 4: Generalised Geology, Westmoreland Area

To the south and south-west of the Murphy Tectonic Ridge, the Tawallah Group is unconformably overlain by shallow marine and fluvial sandstone and siltstone of the mid Proterozoic (1570 - 1590 Ma) South Nicholson Group. To the southwest of the Murphy Tectonic Ridge, the South Nicholson Group appears to have been deposited directly onto lithologies of the Murphy Metamorphics.

To the west of the exposed parts of the Murphy Tectonic Ridge and the area in which the Murphy Project tenements are located, Proterozoic Rocks are concealed by Quaternary colluvium and black soil plain and Cambrian shallow marine sediments of the Barkly Group. Sporadic outcrop of Westmoreland Conglomerate and Murphy Metamorphics indicates that the depth to potentially prospective lithologies is minimal in the eastern half of the tenement holding. Interpretations of Proterozoic geology presented with the BMR Calvert Hills 1:250 000 geological map publication indicate that the Murphy Tectonic Ridge continues to the west under younger cover rocks and the Murphy Project tenement block.
5.1 Structure

Cratonisation of the northern Australian orogenic domains during the Barramundi Orogeny was accompanied by the establishment of a fundamental framework of deep-seated NW, NNW to NNE and NE-trending crustal structures (Etheridge et al., 1987). It is widely speculated that these structures were reactivated and became the major controlling influence on the depositional geometry of succeeding basin phases and the localisation of subsequent deformation (e.g., Plumb, 1979; Etheridge and Wall, 1994; Rogers, 1996). The majority of models for the evolution of the McArthur Basin promote extensional tectonics, in which specific fault orientations acted as normal or ‘growth’ structures and others acted as accommodation or transfer structures during various stages of basin formation. The most influential aspect of McArthur Basin geology that has driven extensional models is the presence of significant volcanic and coarse grained clastic rocks at the base of the basin succession (Rogers, 1996).

The igneous rocks of the Westmoreland region are markedly bimodal with respect to silica content, a typical feature of intracratonic rifting. No rocks older than the Murphy Metamorphics are known east of the Westmoreland area, implying that the detrital sediments of the Tawallah Group were derived from either within or west of the Murphy Tectonic Ridge. The Tawallah Group is dominated by shallow-water marine sediments deposited on a regionally extensive platform.

Subsequent contractional reactivation of earlier ‘extensional fault systems’ is thought to have occurred at least three times during and after basin development (Plumb, 1994; Rogers, 1996).

![Figure 5: Stratigraphy of Murphy Inlier Region](image-url)
6 LOCAL GEOLOGY

Most of EL is covered by tertiary laterite, sandstone and siltstone and accreted carbonate outcrops of an undesignated formation. Small exposures of the Brunette Limestone which is conglomeratic and fossiliferous in parts are scattered within the tenement area. Recent sediments and black soil, cover approximately 85% of the EL.

6.1 The Georgina Basin

The Palaeozoic Georgina Basin is one of a number of Neoproterozoic to Palaeozoic sedimentary intracratonic Basins (once an extensive super basin) that comprise the Central Australian Platform Cover and are characterised by shallow marine epicontinental successions of carbonate and marine clastic rocks, evaporite, fluvial and lacustrine continental sandstone, Glaciogenic sediments, shale and siltstone. These sediments were succeeded by marine carbonate and clastic deposits, which accumulated into Cambrian and Ordovician times (IGR B.H.McCrow and Associates Phosphate Australia Prospectus).

The Georgina Basin occupies a very large part of the north central part of the continent and extends from western Queensland westwards well into the Northern Territory. A number of orogenic events contributed to the accumulation of a variety of sediments in the basins and sub-basins.

One such event during the Cambrian was responsible for the siliciclastic and carbonate platform deposits which formed the Shadow Group during the Lower Cambrian, the Narpa and Cockroach Groups during the Middle Cambrian.

The basin is a 330 000 km$^2$ erosional remnant of the Centralian Superbasin, a series of originally interconnected Neoproterozoic to Palaeozoic intracratonic basins. Refer to Figure 6.
This Superbasin rests on a Palaeoproterozoic felsic and Granitoid basement and in parts is up to 2.4 km thick in synclinal structures.

There are a number of correlative units which are named on type localities. Most favourable constituent units include:

- The Border Waterhole Formation, which hosts the Highland Plains Prospect of Australian Phosphate Ltd. On the Queensland /Northern Territory Border
- The Wonarah beds which Host the Wonarah deposit also in the eastern part of the Northern Territory
- The Beetle Creek Formation, which hosts the Duchess deposit in NW Queensland,
- Other correlative formations include Gum Ridge Formation, Anthony Lagoon Beds, Burton Beds, Ranken Limestone, and Camooweal Dolostone of central and western Georgina Basin and Top Springs Limestone of northern Georgina Basin.
- The southern Georgina Basin is also prospective for a range of base metals and other commodities. The best Cu occurrences are in Neoproterozoic siliciclastic rocks. Known Pb-Zn prospects and occurrences are widespread and throughout the succession, from Neoproterozoic siliciclastic rocks to Lower Ordovician carbonate and mixed carbonate-siliciclastic rocks. A wide range of mineralisation styles is observed, including MVT and possible Century-type Zn-Pb mineralisation. And, to that end, several attempts by major and moderate explorers were made over the years to locate another HYC McArthur River, Mississippi Valley style and other regimes favourable for copper and precious metal deposition.
7  PREVIOUS WORK

7.1  Historic Exploration

During the process of these investigations, some stratigraphic data regarding the Phanerozoic rocks were reviewed in government and company reports. It wasn’t until the late 1960’s and early 1970’s that IMC and ICI carried out some exploration to evaluate the potential for Phosphate mineralisation in the Northern Territory part of the Georgina Basin. Their results led to the identification of a number of deposits at or close to surface which at the time proved to be uneconomic due to grade and size constrains when compared to the Duchess Phosphate Hill deposit of NW Queensland. These discoveries are now attracting interest because of the exploded price of Phosphate and have been acquired by various companies in an effort to bring them to JORC reserve status.

7.2  Exploration by Bondi

2008 EXPLORATION:

Airborne Magnetometer and Radiometric survey

In September 2007, Bondi retained the services of FUGRO AIRBORNE SURVEYS PTY LTD to carry out an airborne geophysical survey over the Murphy Group of tenements, referred to as the Murphy Project. EL 25709 was incorporated in this survey. The Total area covered by the survey was 25937 line km. The survey was flown at a height of 60m with N - S lines spaced at 100m, the rationale was to better define the structure and stratigraphy of the underlying basement rocks. Fig 7 shows the area covered by the survey over several tenements which form the Murphy Project. A copy with the details of this survey was forwarded to the NTGS as appendix 2 in the annual statutory activity report in May 2008.

interpretation of airborne geophysical survey results

Bondi retained the services of Douglas Haynes Discovery Pty Ltd to review and interpret the results of the FUGRO survey. Douglas Haynes incorporated results from other surveys including the early Alpha Cup Track Etch Survey results as well as the results of the airborne EM (HOISTEM) and magnetic survey which had been flown in 2007, which was also interpreted by Douglas Haynes and included in the EL 24841 annual report for 2007.
Figure 7: Extent of 2007 Airborne geophysical survey

**Alpha Track Etch Survey**

One of Bondi’s preliminary exploration techniques is to carry out buried Track Etch cups on a regional scale over and peripheral to selected structural features to measure emitted alpha radiation. The cups which are imported from Canada, are buried some 40 cm or so below surface and left for a period of at least 30 days before retrieval and despatch back to the suppliers for processing.

Initially the cups are placed proximal to the structures defined by other exploration methods and generally laid out along traverses in a grid pattern at 800m line spacing with the cups buried 200m apart and if anomalous zones were identified, infill lines were added at 400m spacing to refine the targets. A number of anomalies were identified using this technology.

The results of these surveys where presented as Appendix 4 in the 2008 annual statutory activity report. See Figure 8 for sample locations.
Figure 8: Alpha Track Etch Sample Locations

2008 EXPLORATION:

In 2008 a reconnaissance RAB drilling program comprising a total of 26 wide spaced holes for 1244 m, was conducted to determine if there is any potential for economic phosphate mineralization within the Cambrian limestones of the Georgina Basin sediments. The phosphate holes were all planned as vertical holes to intersect the top sections of the Cambrian to a limit depth of 60m. As this was the initial program to test the concept, it was decided to place the holes at wide spacing on a regional scale, and because the drilling program encompassed the entire Murphy project area, only seven of these holes (MPRB 022, 023, 024) were drilled on EL 25709.
All samples were tested for the presence of phosphorous on site using the field test otherwise referred to as the Shapiro Chemical Test. Almost all limestone intervals were composited over 2m and the samples submitted to ALS for analysis.

Phosphorous was detected in relatively low amounts in all the holes. Values range from a background of 10 to 350ppm P. There are also second order anomalies ranging from 350 to in excess of 1000 ppm P. These are too low to warrant further investigation.

The wide spaced RAB drilling program at the Murphy tenements identified the presence of Cambrian Georgina Basin sediments. Some of the drill holes also revealed the presence of weak anomalous Phosphorous mineralisation. Although no further work is planned, this program is not considered to be a thorough test of the potential of the Georgina Basin sediments for hosting phosphate mineralisation. For further information on the exploration rationale and sampling refer to Tahan (2008).

2009 EXPLORATION:

In 2009 A detailed airborne magnetic and radiometric survey, comprising approximately 69,000 line kilometres, was flown over the entire western portion of the project area of at 100m line spacing and a 50m flying height by UTS Geophysics. The survey was flown on north - south lines, with tie lines every 1 km. This survey covered the western portion of the Murphy Project, EL 25709 was not included in this survey. Refer to Figure 8. All data and interpretation relating to this survey was compiled and presented in the 2009 annual report for EL’s 26138 to 26140.
A ground reconnaissance survey was conducted in May – June 2009 to ‘ground check’ 20 target areas for the presence of Proterozoic outcrop and determine whether access tracks needed to be cut for drill testing in September. Targets UC Four UC 4May, UC 33, UD Seven, UC Eight and part of UC 35 are within EL 25709.

Targets UC Seven and Eight where tested using the Alpha Track Etch method the results of which did not lead to drill testing.

**2010 EXPLORATION:**

On 6th October 2010 Fugro Airborne Services completed an Airborne Electo-Magnetic survey (AEM) comprising a total of 2,355 line kilometres covering the Murphy West area (1,478 line km at 500m spacing), the UC19 area (624 line km at 300m spacing) and the UC 17 survey (253 line km). Refer to **Figure 10** for location of the AEM survey. This survey did not encompass EL 25709.
Figure 10: Location of Aerial EM survey

8 EXPLORATION PROGRAM 2011

The only exploration completed in 2011 was a five day environmental audit of all previous drilling and track building by two field assistants. In particularly the field personnel located all previous drilling which included locating each RAB and RC hole and checking that:

- All rubbish was removed from the site (including PVC collar and plastic bags)
- The collar was removed and the hole plugged below surface.
- Any sump or excavation was backfilled and plastic liner removed.

There has been no drilling on this tenement, none of this work was applicable to EL 25709.
9 FUTURE WORK

No future work is recommended as Bondi believes that the Proterozoic basement is too deep to find economic uranium mineralisation. Also exploration targeting appears limited to ground EM and diamond drilling, which are both very expensive on a regional scale.

10 CONCLUSIONS

No further work is recommended on the tenement due to the depth to the Proterozoic basement (300 – 400m) and the cost of testing a target at these depths.

The tenement was totally surrendered in January 2012.
11 REFERENCES


Appendix 1- Expenditure Statement (Supplied under separate cover)