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INTRODUCTION:

The Final Report of Exploration Licence 3504 presents a summary of the uranium exploration activities carried out by Total Mining of Australia Pty Ltd under joint venture with Zapopan N.L. in the Pine Creek Geosyncline of the Northern Territory. Subsequent to the work by Total Mining, Zapopan N.L. briefly reconnitred the area in order to assess the gold potential. This work is also reported here.

Exploration activities in E.L. 3504 were directed towards assessing the potential for uranium mineralisation related to granite intrusion. Preliminary mapping on E.L. 3504 (Kelly’s Prospect) indicated that mineralisation was controlled primarily by faulting and/or shearing. The recognition of calcareous sediments led to the supposition that the sediments may have been deposited nearshore and thus, the area may be analogous to the Rum Jungle/Waterhouse field.

Work carried out entailed geological mapping, reconnaissance ground radiometrics, helicopter survey, rock chip sampling, and 2 phases of rotary percussion drilling programme.

Results from this work indicated little potential for economic mineralisation of both uranium and gold.

SUMMARY OF WORK: 1982 - 1983

In 1982, a narrow vein of primary uranium mineralisation was discovered at the Kelly’s Prospect. In consequence, various radon detection methods and EM conductivity surveys were embarked upon in 1983. These 1983 surveys located several new radon anomalies which occurred on strike with the Kelly’s (ring) structure. An EM conductivity survey delineated two conductors paralleling the granite contact, at right angles to the interpreted aplite shear hosting the mineralisation.

Of geological significance in 1983 was the recognition of thin beds of dolomite within the interpreted Koolpin Formation. These acted as marker horizons and emphasised the sinuosity of the folding caused by the refolding of the syncline rimming the Burnside Pluton.

Two percussion holes were drilled:

a) BUR-RP-41 - intersected a single narrow rich vein of pitchblende.

b) BUR-PR-62+64 - showed low grade mineralisation (425 eUppm) over 20.7m at a depth between 10m and 20m in graphitic schist. The "stratabound" - like position of the mineralisation brought hope of an economic occurrence, but considering the location close to the superficial oxidation and to the water table, a supergene origin was also possible.

Exploratory work carried out during 1983 is contained within the following reports:


SUMMARY OF WORK: 1984

a) SYSTEMATIC GROUND RADIOMETRIC SURVEYS over the Koolpin Formation. Lines were at 500m intervals and readings at 50m intervals. The highest reading obtained was 200cps with most readings less than 50cps, the latter corresponding to the Zamu Dolerite. The survey showed that no elevated radioactivity was present with the chemically favourable Koolpin Formation away from the granite activity.

b) A HELICOPTER SURVEY was flown as part of a more regional spectrometric survey being carried out in the Burnside area. Results showed U/TH ratios varying from 1.0 to 1.6 and a maximum U reading of 78c/s. These values indicate very weak anomalism and were not worth following up.

c) DRILLING: The programme comprising 3 rotary percussion holes were designed to test for a westerly dip to the mineralised zone as well as to undercut the EM conductors paralleling the granite contacts.

Hole 1 (to 51m) - BUR-RP-42 was designed to test for a westerly dip to a narrow pitchblende veining.

Hole 2 (102m) - BUR-RP-44 was sited to undercut the EM conductivity axis trending 110 degrees in the vicinity of known mineralisation.

Hole 3 (60m) - BUR-RP-45, 46 was sited to undercut the EM conductivity axis trending 120 degrees in the vicinity of the mapped dolerite bed near the granite contact.

Results of the drilling were generally disappointing. However, in BUR-RP-44 two intersections with U values greater than 150 ppm were recorded: (75m - 81m) 6m averaging 164ppm; (85m - 90m) 5m averaging 172ppm.

Mineralisation in this hole indicated that mineralisation appeared to be closely related to the presence of nearby granite dykes. Carbonates, as calcite veins were present near elevated U values as are carbonaceous shales.

For drilling details refer to Report "EL 3504 and 3505, Northern Territory Burnside Joint Venture". Total Mining Australia Pty Ltd and Zapopan Consolidated Pty Ltd NTGS Report No. CR85/131.

SUMMARY OF WORK 1987:

The 1987 drilling programme was designed to test the lateral extension of the mineralises volume and provide a good indication of the potential of the project.

1000m of percussion drilling were allocated for 4 drilling
profiles oriented N10E. A total of 12 holes were drilled (percussion) totalling 705m.

On Profile 1, 3 holes were drilled to investigate the N-S extension of the mineralised intersection in BUR-RP-44 (RP-65, RP-75, RP6-66).

On profile 2, 3 holes were drilled to investigate 20m away from Profile 1, the eastward extension of the mineralisation intersected in RP-62 AND RP-64, (RP-67, RP-68, RP-69).

2 holes were drilled in Profile 3 (RP-70, RP-71) and 3 holes were drilled in Profile 4 (RP-72, RP-73, RP-74).

These profiles were drilled to test any extension 40m west and east of Profiles 1 and 2.

Each hole was gamma logged and lithologically logged.

RESULTS:

In Zone 1 mineralisation was intersected in RP-44, RP-65 and RP-75. It occurred approximately between 50m and 90m, dipping south.

The mineralisation occurs mainly in the carbonaceous schist and also in the granite (RP-75, 55m - 57m), or at the contact of granite and schist. The host rock of the mineralisation always exhibited signs of fracturation calcite or quartz veins chloritic alterations, sericite and even pigmatite minerals.

The two best intersections at the 5000eUppm cut-off: 2.1m at 1631 eUppm between 62.4 and 64.5 in RP-65. 0.9m at 3131 eUppm between 74.44m and 75.3m in RP-75.

This indicates uranium concentration in fractures in the vicinity of a faulted area.

In Zone 2 mineralisation presents similar features to Zone 1. It occurs in fractured host rocks but also located near the water table and the limit of the surface weathering/oxidation. Refer to Report G. P. Bou 1987 Total Mining Australia Pty Ltd and Zapopan Consolidated Pty Ltd, Burnside Project EL 3504.

Mineralisation is linked to fractures intersecting the rock formation. Where this mineralisation is shallow, it has been remobilised by the water table. Its extension is very restricted in the vicinity of a fault zone.

At this point, Total Mining Australia Pty Ltd decided not to carry out further work and to withdraw from the joint venture.

SUMMARY OF WORK: 1988

A brief field reconnaissance was carried out over part of EL 3504 in March, 1988 to assess the potential for gold occurrences. The area reconnitred encompassed the region mapped by Total Mining Australia Pty Ltd. Lithologies encountered comprised the Burnside Granite, Zamu Dolerite, Koolpin Formation and Gerowie Tuff.
At the granite - sediment contact the granite was in part greisenised, and where associated with quartz "sweat-outs" ferruginised to gossanous (sample BB/1). The Koolpin Formation consisted of well banded carbonaceous ++ pyritic siltstones with narrow interbeds of tourmaline (samples BB/2, 3, 5). The dolerite was also sampled BB/4.

Results were as follows: -

<table>
<thead>
<tr>
<th>ppm</th>
<th>BB/1</th>
<th>BB/2</th>
<th>BB/3</th>
<th>BB/4</th>
<th>BB/5</th>
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<tbody>
<tr>
<td>Au</td>
<td>.05</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>As</td>
<td>46.00</td>
<td>24.00</td>
<td>20.00</td>
<td>52.00</td>
<td>28.00</td>
</tr>
</tbody>
</table>

These values were not considered anomalous since they represented background levels for the lithologies considered. Arsenic values were within the anticipated background range.

Structurally the sitting for the E.L. is not considered favourable, particularly as anticlinal structures observed elsewhere and possibly as a result of contemporaneous regional deformation and granite intrusion, are not observed within the licence area.

Consequently a decision was made to withdraw from further geological exploratory work in this area.
Burnside Project - 1:100,000 Geology

Figure 2