EL 7138

PINE CREEK, NORTHERN TERRITORY

FINAL REPORT

OPEN FILE

BY

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GPO BOX 3307 DARWIN 0801

FOR

JA Earthrowl, CR Day, MD Teelow
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SUMMARY

EL 7138 has been subjected to systematic and intensive base metal and gold exploration over a five year term.

This has included stream sediment, soil and rock sampling, costeasing as well as reverse circulation and diamond drilling.

Copper mineralisation with intermittent lead and zinc was traced over a several kilometre front within a near shore shale/dolomite sequence.

This stratigraphy is correlated with the Rum Jungle sequence. No economic tonnage/grade copper mineralisation was located. Some gold and cobalt anomalies warrant follow up.

1. INTRODUCTION

This is the Final Report for EL 7138 a tenement granted in December 1990 and surrendered in December 1995 covering the western flank of the Cullen Granite Batholith. The tenement covers Early Proterozoic sediments in contact with Mid Proterozoic granites and the stratigraphy correlates with the Rum Jungle Mineral Field where U, Cu-Pb-Zn-Co-Ni mineralisation is known.

2. TENEMENT

EL 7138 was originally granted to JA Earthrowl and CR Day on 17 December 1990 for a 6 year term. Subsequently, a 5% equity was transferred to MD Teelow. A Joint Venture with Aztec Mining (Poseidon) was entered into in December 1992 and that terminated in 1995. The EL was surrendered in December 1995 prior to the end of the fifth year.

3. LOCATION

3.1 Cadastral

EL 7138 falls entirely within the Mary River Pastoral Lease (PPL 1134), a farming/grazing property more recently diversifying into ironwood timber production.

3.2 Geographical

EL 7138 is centred at 18°32'00"S, 132°00'00"E which is 35 kms north north east of the community of Pine Creek. The region is sparsely populated with mining, cattle and tourism the main activities.

Topographically EL 7138 is influenced by the granite
batholith causing sediments to be ridge-forming due to them being contact metamorphosed.

3.3 Geological

EL7138 follows the western contact of the Proterozoic Cullen Granite where it is in concordant contact with black shales and dolomites over a 21 km strike length. It is this environment that has been equated with the Rum Jungle Mineral Field. Detailed descriptions of the geology are given in Year 1 and Year 3 annual reports.

4. PREVIOUS EXPLORATION

The first systematic exploration was not conducted until the late 60's early 70's. During that period Australian geophysical Pty Ltd conducted airborne radiometric surveys covering part of EL 7138. No anomalies or ground follow up was reported for the area presently covered by EL 7138.

Ferruginous units overlying the Masson Formation found in the south-west corner of EL 7138 have been investigated by Wandooroo Mining and CRA for their iron ore potential. Tonnages and grade were found to be insufficient for mining.

CRA Exploration Pty Ltd conducted regional soil traverses covering a majority of EL 7138. This sampling identified nineteen anomalies, five of which were followed up with detailed soil sampling, mapping and gossan sampling. Anomaly 1.5, approximately 12 km west of EL 7138 was considered to have the most potential. A diamond drill hole targeted at the best geochemistry within anomaly 1.5 yielded disappointing results (max 2 m @ 0.16% Pb and 0.19% Zn) and the ground was relinquished.

Uranium, tin, tungsten, molybdenum and base metal exploration conducted by Australian and New Zealand Exploration Company consisted of -80 # stream sediment sampling at 1 km intervals, heavy mineral concentrate sampling, radiometric surveys and soil sampling. Elevated base metal values were found in a number of localities along the granite contact(max 140 ppm Cu, 200 ppm Pb and 460 ppm Zn). Follow up rock chipping located anomalous stratabound ironstone outcrops (max 130 ppm Cu, 600 ppm Pb and 1800 ppm Zn). The base metal potential was interpreted to be limited and little evidence of uranium, tin, tungsten or molybdenum mineralisation existed.

Greenex conducted a photo interpretation and an ironstone sampling programme to test the gold, tin and tungsten

Total Mining Australia Pty Ltd held two ELs (4414 and
4460) which corresponded roughly to the original EL 7138 boundary.

Total Mining's primary target was hydrothermal uranium mineralisation. Their initial exploration identified anomalous scintillometer (SRAT SSPP2 x 15,000 cps) readings in silicified dolomite within the BMR mapped Mundogie Sandstone, 8 Km south of the Mary River Station.

5. EXPLORATION COMPLETED

5.1 - YEAR 1  17/12/90 to 16/12/91

Work consisted mainly of library research, data compilation and air photo interpretation. All old Government maps were perused for 'quartz vein' evidence, often found to be silicified dolomites in the field.

Further, photo examination of fractures and lineaments within the Cullen Granite was done.

Six stream sediment samples were collected and assayed by BLEG method for Au and Cu only. None was anomalous.

The covenant for Year 1 was $9,000; actual expenditure was $6,530. See Yr. 1 Annual Report for further detail.

5.2 - YEAR 2  17/12/91 to 16/12/92

During Yr 2 a Joint Venture agreement was entered into with Aztec Mining Company and that company took over the management of all field exploration. In Year 2 Aztec collected a variety of geochemical samples
- 278 samples of -40 mesh stream sediment and assayed for Cu, Pb, Zn, Ni, Mn, Ag.
- 20 samples for BLEG
- 4 rock chip samples

These showed a zone of elevated Cu,Pb,Zn,Mn,Ni parallelling the granite contact. One BLEG was anomalous gold. Expenditure totalled $11,625. See Year 2 Annual Report for further details.

5.3 - YEAR 3  17/12/92 to 16/12/93

Exploration activity peaked on this tenement during Year 3 when the Joint Venture partner spent $116,856. Work carried out included the following:-

- Airborne Geophysics - multiclient survey of magnetics and radiometrics was acquired
- Geological Mapping - Regional and detailed. The latter over four anomalies.
- Soil Sampling
- Costeaining - 6 at Sleepy Cod anomaly for 98m
  - 4 at Catfish anomaly for 50m
- Reverse Circulation Drilling
  - 6 at Catfish anomaly (ASRC11 - ASRC16)
  - 10 at Sleepy Cod anomaly (ASRC17 - ASRC26)
- Diamond Drilling
  - 3 holes at Catfish anomaly (ASDDH3,3A,4) for 335.5m

After this program Aztec Mining concluded:

- that the geological setting at EL 7138 was similar to the Rum Jungle Mineral Field
- the copper mineralisation located in a stratabound cupferous horizon within an equivalent black shale unit to the RJMF Whites Formation
- exploration to date has failed to located any primary or supergene copper mineralisation of economic grade. See Year 3 Annual Report for further detail.

5.4 YEAR 4  17/12/93 to 16/12/94

This year Aztec carried out a soil survey over the known uranium mineralisation in the south-east of the tenement targeting gold.

Soils outlined two narrow (50m) open ended anomalies with values to 370 ppb corresponding to faults mapped by Total Mining in the 1980s. In addition, a rock chip sample nearby assayed 0.68 g/t over 2m.

Expenditure covenant for Year 4 was $15,000; actual expenditure was $19,291.

5.5 YEAR 5 (PART) 17/12/94 to 1/12/95

Year 4's gold anomalies were to have been followed up by Aztec (Poseidon) but because of budgeting rearrangement this did not eventuate.

However, selected diamond drill core from earlier uranium exploration was reassayed for gold. See appendix.

6. GENERAL CONCLUSIONS

EL 7138 has been well tested for copper-lead -zinc within the Rum Jungle Mineral Field model as recognised on the tenement. No economic grade/tonnage of copper is present.

All methods were used: airborne geophysical, stream sediment, soil, rock sampling, costeaning, reverse circulation and diamond drilling.
7. RECOMMENDATIONS

The only untested anomalies that warrant some follow up are
- the gold anomalies over the Total Mining uranium mineralisation.
- the cobalt anomaly reported in Year 2 Annual Report.

8. ACKNOWLEDGEMENTS

Of necessity, sections of this report are direct extracts from Annual Reports by Aztec Mining. The reader is referred to their Annual Reports for all details of field activity and results.
REFERENCES

Earthrowl JA (1992)  Annual Report - Year 1
EL 7138 Closed File Report
Department of Mines & Energy

Grove AD (1992)  Annual Report for EL 7138 Year 2
Allamber Springs
Aztec Company Report
Closed File Report
Department of Mines & Energy

Butler IK (1994)  Annual Report, ELs 7138, 7604 and
7935, Allamber Springs Project
Aztec Mining Company Report
Closed File Report
Department of Mines & Energy

Allamber Springs Project
Normandy Poseidon Company Report
Closed File Report
Department of Mines & Energy

Metals.
EL 7138 Allamber Springs
Normandy Poseidon Company Report.
EL 7138

Mr J A Earthrowl
GPO Box 3307
DARWIN NT 0801

Dear Mr Earthrowl

I am pleased to advise that I, as delegate of the Minister for Mines and Energy have granted Exploration Licence 7138. The relevant licence document is enclosed.

This licence is granted subject to the Mining Act 1980 and its Regulations and all other laws of the Northern Territory as are applicable. Before any field work is commenced, it is essential that all persons to be employed on the licence area be fully conversant with the conditions on which the licence is granted.

Guidelines are attached for submitting annual and final reports under section 32 and 34 of the Mining Act and applications for exploration expenditure certificates under section 7 and 8 of the Mineral Royalty Act 1980.

You are reminded that exploration licences are granted with the expectation that you will inter alia comply with the expenditure covenant. Failure to honour this obligation could result in the licence being liable for cancellation.

Strict compliance with the enclosed "Code of Conduct" of the Northern Territory Chamber of Mines is expected. Any deviation from this code which has an adverse impact on the landowner may jeopardise your title holding and tarnish the mining industry’s image and relationship with other land users and interested groups. In the interest of public relations, you should renew your contact with the landowner/s whose land is likely to be affected by any exploration or mining activity (including access) to provide details of your programs and to exchange contact names and addresses, particularly where you engage contractors.

Please note item 3 in the Explanatory Notes on Reporting, whereby transparencies must be provided for any plans larger than A3 size. Transparencies are less susceptible to damage or fading and are easier to reproduce for future records.

Yours sincerely

C P SMITH
Principal Registrar

17/12/90
NORTHERN TERRITORY OF AUSTRALIA

MINING ACT

EXPLORATION LICENCE

EL No. 7138

John Anthony Earthrowl as to 95 shares out of 100 and Carol Ruth Day as to 5 shares out of 100 are hereby licensed, for a period of six (6) years from the date hereof, to explore in accordance with the provisions of the Mining Act, the regulations thereunder and the terms and conditions specified in the First Schedule, all the area of land delineated in red in the Second Schedule excluding therefrom all land vested in the Commonwealth and all radio repeater sites held by the Australian Telecommunications Commission.

[Signature]

C. P. SMITH
Principal Registrar
as delegate of the Minister

DATE 17/12/90.

FIRST SCHEDULE

Terms and Conditions

1. The licensees shall ensure that a minimum amount of $9 000 is expended in carrying out exploration on the licence area during year one (1) of the licence.

2. The licensees shall comply with the provisions of and directions lawfully given under this Act and all other laws in force in the Territory in relation to his activities on the licence area.

3. Not later than one (1) month after the expiration of each 12 month period of this licence, the holder shall submit in writing a statement specifying the details of the exploration programme reflecting expenditure for the next year of the licence.
SECOND SCHEDULE
(Plan of Area)

EL7138
22 BLOCKS
68 sq km
EL 7138

Mr John A Earthrowl
GPO Box 3307
DARWIN NT 0801

Dear Mr Earthrowl

EXPLORATION LICENCE 7138 - J A EARTHOWL 90%, C R DAY 5% & M TELOW 5%

The above exploration licence was surrendered on 1 December 1995.

Pursuant to section 32 of the Mining Act, the final report, including details of all exploration on the licence area during the term of the licence, must be lodged with Titles Administration Branch by 29 February 1996.

Please note that final reports must include details of ALL exploration activities on the areas for the entire life of the licences. Should any of the area be retained under separate tenure, a separate report must be lodged for this area so that it may remain on closed file.

Please confirm in writing when all rehabilitation carried out as a consequence of any surface disturbance on the licence area has been completed. An inspection will then be made to "clear" the title environmentally.

I look forward to the receipt of your report.

Yours sincerely

[Signature]

CRISTEL MACKNEY
Regional Mining Registrar
Northern Region

4.12.95
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Ann. Rep. 2

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Annual Report Exploration Licence 7138
REPORT ON CORE SAMPLING FOR PRECIOUS METALS

EXPLORATION LICENCE 7138
ALLAMBER SPRINGS, NORTHERN TERRITORY

AUTHOR: PAUL MELVILLE
1. **INTRODUCTION**

The association of Au-Pt-Pd with unconformity related uranium mineralisation is well documented in the Northern Territory. The association of gold with uranium has been previously recorded from Allamber, with a random assay giving 1.89g/t over 0.5m (PD19, Dam Prospect).

Four diamond holes from Allamber were located in the NTDME Core Library; PD155, 161, 333 and 367. Intervals in two holes, PD333 and 367, were logged and sampled. Hole locations are plotted on the accompanying plan.

2. **WORK CARRIED OUT**

Selected core from the two drill holes was re-logged and sampled for gold-platinum-palladium. Lithological descriptions and the analyses are attached. Extracts from a TMA report, giving full description of the holes, are also included.

Analyses were performed at Assaycorp, Pine Creek. A total of 22 samples were assayed for Au (FAGC method) and Pt-Pd (ICP). No anomalous values were recorded.

3. **EXPENDITURE SINCE 16 DECEMBER, 1994**

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6.3.1.2 Drill Sections

Cross-section 20 (Holes ALL-PD-333, 334) Plate 3.

Hole ALL-PD-333 drilled to undercut good mineralization in ALL-PD-149 and ALL-PD-155 ended up following the western contact of the dolomite.

The hole was collared at -70° but deviated to a steeper dip by the 199.90 m final depth.

The percussion section of this hole penetrated 93 m of schist, predominantly carbonaceous but with much chlorite, especially at 34 m and 65 m. Hematite schist was common to 45 m, sporadic to 72 m and absent from then on except in the last 20 m. Dolomite was hit at 93 m and gave way to chert till 142 m.

Breccia zones of varying fragment and matrix compositions gave slightly radiometrically elevated readings. Narrow granite dykes in the graphitic schist were all associated with 2 to 3 x background radiometric values; only one, at 171.30 m, gave good values: 0.4 m of 0.288% U₃O₈ from CGC log. The best intersection in this hole came from the percussion section: 2.0 m from 83.70 m at 0.102% U₃O₈ from CGC. Background values in the graphitic schist were as follows:

- 173 - 176 m 80 ppm U₃O₈ adjacent to 0.4 m of 0.288% U₃O₈
- 181 - 184 m 40 ppm U₃O₈
- 191 - 196 m 40 ppm U₃O₈

The isolated chlorite-rich unit at 60 m, which was mineralized higher in the sequence in earlier drilling, was intersected at depth by hole ALL-PD-33 but was devoid of mineralization in this hole. As this hole ended in the graphite schist it has been interpreted as indicating a closure of the synform as shown in Plate 5.

Hole ALL-PD-334 (see Plate 5), on the eastern flank of the Twin synform, was spudded in granitized psammites, and that lithology continued till 100 m, giving a new interpretation and a near vertical dip to the contact with the schists. The hole deviated to the east resulting in a dip of approximately 66°.

Within 5 m of the contact, at 95 m, the schist was mineralized with some visible bassetite amongst chlorite and pyrite: 0.5 m of 0.278% U₃O₈ from CGC data. Background uranium values in the graphite schist:

- 125 - 139 m 105 ppm U₃O₈ adjacent to a granite dyke

The hole intersected the dolomitic core of the fold represented by chert between 162 and 184 m. Only thin granite dykes broke the monotony of the 72 m thick carbonaceous schist unit - all with elevated radiometric responses but none being really significant.

Of mineralogical interest was an occurrence of hematite cutting fresh pyrite at 137 m - indicating that at least some of the hematite was not an oxidation product of the sulphides.

Hole ALL-PD-334 was terminated at 200.60 m where it was only 70 m from the end of hole ALL-PD-333.
Much of the carbonaceous shale was partially silicified and contained minor pink feldspar. Chlorite was common within siltstone interbeds.

The hole was abandoned due to technical problems associated with the casing operation.

Hole ALL-PD-367 was collared 10 m underneath ALL-PD-341 and was drilled successfully to its target depth of 157 m.

The percussion section, 0 - 78 m, drilled through the dolomite bed and into the graphitic schist. Three intersections occurred in the dolomite, all where it had been chloritized, and a fourth was just below the contact in the graphitic schist. The coring section (78 - 157 m) passed through graphitic schist, which was mineralized at two intervals, then into a chloritized granite, chert and ended in the lower dolomite member. The widest and best intersections occurred within the schist at 95 m and 107 m.

Mineralization occurred at the following depths:

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>62.64 - 63.51</td>
<td>0.87</td>
<td>.1322%</td>
</tr>
<tr>
<td>63.94 - 64.52</td>
<td>0.58</td>
<td>.1226%</td>
</tr>
<tr>
<td>64.80 - 65.20</td>
<td>0.40</td>
<td>.1459%</td>
</tr>
<tr>
<td>71.15 - 71.61</td>
<td>0.46</td>
<td>.1177%</td>
</tr>
<tr>
<td>94.97 - 96.09</td>
<td>1.12</td>
<td>.2569%</td>
</tr>
<tr>
<td>107.09 - 108.55</td>
<td>1.46</td>
<td>.2324%</td>
</tr>
<tr>
<td>123.78 - 124.05</td>
<td>0.27</td>
<td>.1102%</td>
</tr>
</tbody>
</table>

At 95 m uranium mineralization was associated with a granite dyke in the pyrite-graphite schist which contains minor dolomite beds.

At 107 m mineralization was also associated with a granite dyke in graphite schist. Pitchblende was visible as disseminated specks.

6.3.3.3 Conclusions

Appendix 2c shows mineralized drill hole intersections at Dam.

In spite of numerous drilling problems, useful geological data were obtained from the 1988 drilling programme at the Dam prospect.

Stratigraphically the geology remains simple with two overturned dolomite beds dipping east, the lower one containing chert beds, separated by a carbonaceous schist unit. Faults can only be interpreted on the basis of cavities and collapsed holes and are rarely seen as chlorite shears or quartz veins in core.
ALLAMBER SPRINGS
DRILL HOLE LOCATION