EXPLORATION LICENCE 5816
BURRENDIE SIDING N.T.

REPORT FOR THE YEAR ENDING 31ST JANUARY 1989

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GEONORTH,
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1. INTRODUCTION

Exploration Licence 5816 is situated at Burrundie Siding, on the abandoned North Australia railway line, some 155 kilometres southeast of Darwin and 35 kilometres northwest of Pine Creek. A formed gravel road follows the railway line and provides all weather access to the area. Figures 1 and 2 show the location.

The Licence includes two one minute square blocks, with a total area of approximately 6.7 square kilometres. It was granted to Mr L.E. Frankenfeld on 1st February 1988 for a term of two years. Ross Mining N.L. are exploring the property under a farm-in agreement with the titleholder.

The area includes moderately rugged hill ranges in the northeast and southwest formed by Early Proterozoic metasediments. Relatively low-lying alluviated areas are present along Starkes Creek in the central part, and in a small area underlain by granite in the northwest. Permanent water is available in a small dam at Burrundie Siding.

The vegetation consists of open tropical monsoonal woodlands (ie. savannah) and the only current land usage is for free-range beef cattle production.

2. GEOLOGICAL SETTING

Figures 3 and 4 illustrate the geology of the area.

Burrundie lies centrally within the Pine Creek Geosyncline. This is an Early Proterozoic sedimentary basin, with subordinate volcanics, which was deformed, metamorphosed and extensively intruded by granites about 1800 Ma, at which time a very numerous and varied suite of mineral deposits was formed. The greatest concentration of mineralisation was in the so-called Cullen Mineral Field around the margins of the Cullen Granite and its various apophyses. Within this field one of the most important mineral belts is the Pine Creek Shear Zone or Embayment, a northwest-trending belt of strongly folded metasediments forming a narrow roof pendant within the Cullen Granite. Burrundie is located at the northwestern end of this Embayment.

Mineral deposits in the Embayment southeast of Burrundie include gold at Spring Hill, Elizabeth, Union reefs and Pine Creek, tin at Mundic and Jimmys Knob, and silver-lead-zinc at Flora Bell and Basin Six. Controls for mineral emplacement are both structural
(northwesterly shears and dilatant zones on anticlinal hingelines) and stratigraphic (banded iron formation, stratiform sulphides, brittle-fracturing greywacke beds).

The Mt. Wells Tin Mine, situated two kilometres northeast of Burrundie, exploits a series of northeast-trending quartz-pyrite-chalcopyrite-cassiterite-wolframite lodes which emanate from a concealed granite cupola.

Strata exposed in the area of the Exploration Licence belong to the South Alligator and Finnis River Groups in the middle and upper parts of the Early Proterozoic Succession. The local succession includes the following:-

<table>
<thead>
<tr>
<th>FINNISS RIVER GROUP</th>
<th>Burrell Creek Formation (+ 1000m)</th>
<th>Lithic greywacke, quartz greywacke, slate and phyllite.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUTH ALLIGATOR GROUP</td>
<td>Mt. Bonnie Formation (700m)</td>
<td>Phyllite, slate, black shale, greywacke, chert and banded iron formation.</td>
</tr>
<tr>
<td></td>
<td>Gerowie Tuff (300m)</td>
<td>Felsic tuff, cherty tuff, chert, phyllite, minor banded iron formation.</td>
</tr>
<tr>
<td></td>
<td>Koolpin Formation (200-300m)</td>
<td>Carbonaceous phyllite, carbonaceous hornfels, banded iron formation and quartz-muscovite-schist.</td>
</tr>
</tbody>
</table>

These strata are intruded by the Prices Springs Granite which occupies a small area in the northwest, and by a north-northwest trending dolerite dyke at Burrundie Siding. The granite is dominantly a coarse-grained porphyritic muscovite-biotite granite, with minor pegmatitic and aplitic phases.

The strata show low grade regional metamorphism of greenschist facies, with an overprinted contact metamorphism of albite-epidote hornfels facies.
The dominant structural elements are a series of southeast plunging anticlines and synclines trending parallel to the Embayment. Regionally the overall plunge of the fold axes is shallow, but local steep plunges are common (as at Spring Hill). The southern two-thirds of the EL area is formed by Gerowie Tuff, which is affected by a synclinal fold in the extreme southwest with a small area of Mt. Bonnie Formation in the axial zone, while the adjoining anticlinal axis lying to the northeast brings in a small area of Koolpin Formation in the west.

The northeastern parts of the EL are formed by Mt. Bonnie Formation and Burrell Creek Formation dipping regularly east-northeast.

The area enclosed by the Exploration Licence is not known to contain mineral deposits of commercial significance. Indication of mineralisation are seen in a number of large quartz and quartz pegmatite veins which transverse the granite and adjoining metasediments in the northwest, in sulphidic beds and thin banded iron formations which occur in the Koolpin and Mt. Bonnie Formations and in the ubiquitous small scale quartz veining affecting most particularly the more competent greywacke beds in the Mt. Bonnie and Burrell Creek Formations. Analogies with the geological settings of deposits in the surrounding region suggest that the area may have potential for gold and tin associated with the quartz vein systems.

3. PREVIOUS EXPLORATION

Exploration Licence 5816 falls in an area which was previously part of the Mt. Wells Policy Reserve, which precluded the taking up of exploration titles.

Accordingly there are no records of regional exploration prior to 1982 when the southern half of the area was included in EL 3138 taken up by Peko Wallsend Operations. Exploration work by Peko was of a broad reconnaissance nature, and included geological mapping, drainage and rock-chip geochemistry. Additional work was also carried out by C.S.R. Limited and comprised airborne magnetic and radiometric surveys and reconnaissance bulk leach extractable gold (BLEG) geochemistry. CSR’s target was disseminated gold in mafic sills (Zamu Dolerite) as apposed to Peko’s target of Homestake-type gold in Koolpin Formation. This work did not detect any significant anomalies in the present area of interest.

Peko relinquished the ground in 1986, and there are no records of further exploration since that time.
4. WORK CARRIED OUT DURING 1988/89

During the first year of the Licence work included research into previous exploration work in the district, photogeological studies, preliminary field reconnaissance and reporting.

The expenditures are estimated to be $2,550.

5. PROPOSED EXPLORATION 1989/90

It is proposed to carry out an intensive work programme to delineate mineralised areas in preparation for drill testing. This will include the following:

- Detailed geochemical stream sediment survey.
- Gridding and sampling.
- Detailed geological mapping.
- Costeaming and sampling.

It is estimated that this work will be completed at a cost of $16,500 budgeted as follows:

<table>
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<th>Item</th>
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<td>Geologist</td>
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<tr>
<td><strong>Total</strong></td>
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</table>
6. REFERENCES


