EXPLORATION LICENCE 5023

BAN BAN SPRINGS

REPORT FOR THE YEAR ENDING
15TH OCTOBER 1987

OPEN FILE

PREPARED FOR ZAPOPAN N.L.,

by

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GEONORTH
DARWIN.

NOVEMBER 1987.

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR 87/242
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FIGURE 1 Locality Map

FIGURE 2 Tenement Map  1:100,000

FIGURE 3 Regional Geology  1:100,000

FIGURE 4 Geology and Sample Locations  1:15,000 approx.
1. INTRODUCTION

Exploration Licence 5023 was granted to Grants Patch Mining Ltd. on 16th October 1986. It encloses two one minute square blocks, having a total area of approximately six square kilometres, and is located 120 kilometres southeast of Darwin on Ban Ban Springs Pastoral Lease in the Batchelor 1:100,000 sheet area.

Access is gained by a station track heading northwest 17 kilometres from Ban Ban Homestead.

Topographically the area consists of low ridges formed by Proterozoic Sediments and tuffs interspersed with extensive soil and alluvium covered flats. The main drainage is directed along McCallum Creek and its tributaries, but there are no permanent sources of surface water. Vegetation consists of open savannah woodland typical of the region.

There are no known mineral occurrences of significance in the area. The nearest known mineral deposits include the old Mt. Ellison Cu/Bi mine, 3km to the southeast, and the Goodall gold mining project (W.M.C.) 15km to the northwest.

The present survey, consisting of geological and geochemical reconnaissance, was undertaken to make a preliminary evaluation of the gold potential of the area. The work was carried out by GEONORTH in September/October 1987.

2. GEOLOGY

The Ban Ban Springs area is situated in the northwestern part of the Cullen Mineral Field which lies centrally within the Early Proterozoic Pine Creek Geosyncline.

This portion of the Cullen Mineral Field contains important gold orebodies of both syngenetic-stratiform and structurally controlled epigenetic types.

The stratiform deposits are associated with carbonaceous metapelites and sulphidic banded iron formations in the middle part of the Koolpin Formation and are exemplified by orebodies at Cosmo Howley and Golden Dyke.
The epigenetic deposits consist of gold-quartz vein systems emplaced preferentially in fractured greywacke beds along the hinge lines of anticlinal folds. The most favoured stratigraphy includes the Mt. Bonnie and Burrell Creek Formations. Typical orebodies include Goodall, Fountain Head, Zapopan, Woolwonga and Glencoe.

Figures 1 and 3 show the location of some of these deposits in relation to EL 5023.

The Ban Ban Springs area lies on the northern margin of a major dome structure which surrounds the intrusion of the Burnside Granite. The stratigraphy dips at moderate to steep angles to the north and includes metasediments and metavolcanics of the South Alligator Group in the upper part of the Early Proterozoic Succession. These are interlayered with thick sills of metamorphosed mafic rocks designated Zamu Dolerite.

Exploration Licence 5023 is underlain almost entirely by Gerowie Tuff (the middle member of the South Alligator Group) and sills of Zamu Dolerite. A small area of the overlying Mt. Bonnie Formation is present in the northwest, and some underlying Koolpin Formation occurs along the southern margin of the area.

The Gerowie Tuff consists of banded chert and cherty argillites, with thin horizons of banded, gossanous chert containing boxworks after sulphides.

In the northwest of the area the Mt. Bonnie Formation consists of red-weathering, coarse grained, arkosic greywacke and slate. At this locality these rock types are intensely fractured and veined with glassy quartz but very scarce indications of sulphide are present.

Several large northeast-trending quartz reefs are present in Mt. Bonnie Formation just outside the northwest corner of the EL. Several other northeast-trending reefs of white to glassy quartz generally lacking in indications of sulphide, are present in the areas of Gerowie Tuff.
3. WORK CARRIED OUT

The work programme carried out included interpretation of colour 1:25,000 scale aerial photography, reconnaissance geological mapping, rock chip sampling of gossan and quartz occurrences, and bulk sediment sampling of principal drainages. The bulk sediment samples consisted of approximately 5 kg of minus 20 mesh active sediment. Figure 4 shows the geology of the area and rock chip and drainage sample locations.

Sample analyses are given in Appendices I and II.

4. RESULTS OBTAINED

Analyses of bulk stream sediment samples by cyanide leach gave values in the range of 0.892 to 1.254 parts per billion gold. Experience elsewhere in district suggests that the anomalous threshold lies between 1 and 3 ppb depending upon the content of iron oxides and organic material in the sample. These results are accordingly considered to be discouraging but inconclusive.

Rock chip samples of gossanous horizons (oxidised pyritic beds) in the Gerowie Tuff reported only low gold values on fire assay, ranging from 0.01 to 0.06 g/t Au (samples BS011 - BS015, BS025 and BS030).

With the exception of sample BS019, which assayed 0.14 g/t Au, samples of quartz vein material from the Mt. Bonnie Formation and Gerowie Tuff likewise reported only low gold values, up to a maximum of 0.05 g/t Au.

Sample BS019 consisted of white quartz with coarse sulphide boxworks and is a typical of this locality where indications of sulphides are generally lacking. The quartz stockworks and reefing in the area surrounding BS019 are very extensive and continue northwards into adjoining EL 5417 held by Grants Patch Mining. Some more detailed mapping and sampling is warranted in this area.
5. PROPOSALS FOR FUTURE EXPLORATION

The only target identified for further exploration is the quartz stockwork in greywackes of the Mt. Bonnie Formation in the northwest corner of the Exploration Licence. The exploration should be undertaken in conjunction with work on extensions of the same mineralisation in EL 5417.

The programme required consists of grid surveys, geological mapping and detailed rock chip sampling. Encouraging results would be followed up by trenching and/or percussion drilling.

A minimum expenditure of $4,000 would be required to carry out the initial programme of mapping and sampling.
APPENDIX I

Analytical Results Bulk Sediment Samples
4th November, 1987

Our Ref : D502/88

REPORT NUMBER : D502/88

CLIENT : Geonorth

CLIENT REFERENCE : Order Number 38

REPORT COMPRISING : Cover Page
                      Page 1

DATE RECEIVED : 28th October, 1987

Alan Ciplys
Manager
AMDEL Limited (N.T.)
# ANALYSIS

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**METHOD:** PM6
APPENDIX II

Analytical Results Rock Chip Samples
28th October, 1987

Our Ref: D425/88

REPORT NUMBER: D425/88

CLIENT: Geonorth

CLIENT REFERENCE: Order Number 34

REPORT COMPRISING: Cover Page
                      Page 1

DATE RECEIVED: 16th October, 1987

Alan Ciplys
Manager
AMDEL Limited (N.T.)
## ANALYSIS

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PM3/2
APPENDIX III

ESTIMATE OF EXPENDITURES

The estimated expenditures incurred in carrying out the work described in this report are as follows:

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**TOTAL $3,019**
CAINozoic
Qa Alluvium.
Cz Soil.

EARLY PROTEROZOIC
Edz Zamu Dolerite.
Pso Mount Bonnie Formation.
Psg Gerowie Tuff.
Psk Koolpin Formation.

--- Approximate Geological Boundary.
f --- Inferred Fault.
----- Air Photo Lineament Trend.
--- Strike and dip of bedding.
--- --- Fence.
--- --- Track.
X(8S)002 Rock Sample.
\(8S)003 Bulk Sediment Sample.

ZAPOPAN N.L.
EL 5023
BAN BAN SPRINGS
GEOLOGY AND SAMPLE LOCATIONS

Air Photo Origin: Betchelor 9/1641

All Sample Numbers Shown
Bear the Prefix, BS

GEOLOGIST: G.RORIDGE
DATE: 16 NOVEMBER, 1987