ANNUAL REPORT
ON
EXPLORATION LICENCE 2585
FOR THE PERIOD
3RD DECEMBER 1980 - 2ND DECEMBER 1981

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All results of heavy mineral separation (Appendix 1) and geochemical analysis (Appendix 2) are given in a separate report; GEOPEKO REPORT NO. D81/28.
INTRODUCTION

Exploration Licence 2585 covering 197.51 square miles was granted on the 3rd December, 1980 and this is the Annual Report for the 1st year of tenure.

This Licence is part of a regional exploration programme, mainly for diamonds, comprising Exploration Licences 2411, 2412, 2417, 2418, 2419, 2420, 2421, 2504, 2513, 2514, 2515, 2584 and 2585 which are the subject of a joint venture between Design and Construction Pty Limited, BP Australia Limited and Peko-Wallsend Operations Ltd, where Peko-Wallsend, through Geopeko, are the operators. The joint venture commenced on 1st May, 1981.

Because of recent successful exploration for kimberlites in Western Australia, the recognition of a potential kimberlite province in the Kimberleys, and possible influence of the Hall's Creek Fault on emplacement of the Argyle diamondiferous kimberlite, the Fitzmaurice Mobile Zone and Sturt Shelf in the proximity of the Victoria River Fault must also be considered prospective for diamonds.

Potential for stratiform base metal deposits in the sediments of the Victoria River Basin was also recognised and samples were taken for geochemical analysis. Sample density was inadequate and was controlled by the sample density used in the diamond search.

LOCATION

Bunda Station, Pastoral Lease 823; Mistake Creek Station, Pastoral Lease 527 on the Limbunya/Birrindudu 1:250,000 sheets (SE52-7, SE52-11).

TARGET

Diamonds were the primary exploration target with stratiform base metal deposits a secondary target.
SUMMARY

Units in the exploration area range from the Bunda Grit (Carpentarian?) unconformably overlain by the Limbunya Group (Adelaidean?) which is in turn unconformably overlain by the Wattie Group (Adelaidean). The Lower Cambrian Antrim Plateau Volcanics lies unconformably on the Wattie Group.

Exploration work carried out included the following:-

(i) Collection of 40kg, +0.6mm fraction samples from trap sites in streams.

(ii) Collection of -80 mesh sample for geochemical analysis.

(iii) Collection of bulk gravel samples.

(iv) Heavy mineral separation and identification.

Results achieved to date are not encouraging.
GEOLOGY

Extract from Limbunya 1:250,000 Geological Series—Explanatory Notes.

The lowest unit exposed in the exploration area is Bunda Grit, thought to be Carpentarean and consisting of poorly sorted grits and indurated quartz sandstones.

The Carpentarian or Adelaidean Limbunya Group unconformably overlies the Bunda Grit. The rocks cropping out east and southeast of Kirkimbie Homestead consist of a great thickness of dolomite, shale and sandstone. The Wickham Formation of the Wattie Group lies unconformably on the Limbunya Group near Kirkimbie Homestead in the exploration area and is regarded as probably Adelaidean. The Wickham Formation consists of feldspathic sandstone with interbeds of laminated and brecciated chert. The Lower Cambrian Antrim Plateau Volcanics consist of numerous basalt flows, averaging about 30 metres in thickness, with interbeds of chert and sandstone. Most of the Precambrian sedimentary rocks are only slightly or moderately folded, even though they have been affected by more than one period of earth movement.
WORK DONE

Geological Mapping

No formal mapping programme was carried out other than brief field observations at sample sites.

Stream Sediment Sampling

Gravel Samples:
1. Sample sites were selected in the office to give a sample density of one 40kg sample representing $10 \text{ km}^2$ and one 2,000kg sample representing $100 \text{ km}^2$.

2. The sample area was reached by helicopter and the streams were flown along to aid selection of the best possible trapsites for heavy minerals.

3. Gravel from the trapsites were sieved by hand to give the required fraction (0.6mm - 4mm) and weight of sample.

4. Samples were transported by helicopter to the base camp for processing.

5. Here the samples were sieved into three fractions; 0.6mm - 1.0mm, 1.0mm - 2.0mm, 2.0mm - 4.0mm.

6. Each fraction was put over a Plietz jig and the heavy mineral concentrates removed, dried and bagged.

7. These concentrates were despatched to Geopeko, Perth, for mineral identification by a trained observer.

Results:
Sample localities are given on Maps 1 and 2. The results of the heavy mineral identification are given in Appendix 1. Neither diamonds nor kimberlitic indicator minerals were observed.
Geochemical Samples:
Three hundred grams (300g) of sample were taken from each 40kg sample and despatched to Analabs, Perth, for analysis. The elements assayed for by X.R.F. were Cu, Pb, Zn, Fe, Co, Sn, W, Cr, Ni, Nb, Mg and the mineral barite. Only the -80 mesh fraction was used.

Results:
Details of all results are given in Appendix 2.
EXPENDITURE

As this licence is part of a regional programme, expenditure has been allocated according to its areal percentage.

Total allocated expenditure from 3rd December, 1980 to 30th November, 1981 was $48,032.

E & R noted
TABLE 1

STREAM SEDIMENT SAMPLING

<table>
<thead>
<tr>
<th>No. of Samples</th>
<th>Weight</th>
<th>Type</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>40kg</td>
<td>gravel sample</td>
<td>0.6mm - 4mm</td>
</tr>
<tr>
<td>29</td>
<td>300g</td>
<td>geochemical sample</td>
<td>-80 mesh</td>
</tr>
<tr>
<td>nil</td>
<td>500kg</td>
<td>gravel sample</td>
<td>0.6mm - 4mm</td>
</tr>
<tr>
<td>nil</td>
<td>1000kg</td>
<td>gravel sample</td>
<td>0.6mm - 4mm</td>
</tr>
<tr>
<td>nil</td>
<td>1500kg</td>
<td>gravel sample</td>
<td>0.6mm - 4mm</td>
</tr>
<tr>
<td>1</td>
<td>5000kg</td>
<td>gravel sample</td>
<td>0.6mm - 4mm</td>
</tr>
</tbody>
</table>
FIGURE 2.
EXPLORATION LICENCE NO. 2585
TENEMENT LOCALITY PLAN

SCALE: 1:250,000

AREA: 197.51 SQUARE MILES
511.57 SQUARE KILOMETRES