ANNUAL AND FINAL REPORT ON
EXPLORATION LICENCE NO. 935

Compiled by:

G. J. BUJTOR

OPEN FILE

TENNANT CREEK, N.T.    MAY, 1977

CR77/63
ANNUAL AND FINAL REPORT ON EXPLORATION LICENCE

No. 935

Contents

1. INTRODUCTION 1

2. TENURE 2

3. REGIONAL GEOLOGY 3

4. REGIONAL GEOPHYSICS 5

5. PROSPECT EVALUATION 6
   5.1 Explorer 164
   5.2 Explorer 165

6. EXPENDITURE 9

Figures

Figure 1 - Location Plan of Exploration Licence No. 935
Figure 2 - Location Plan of Prospects within Exploration Licence No. 935
Figure 3 - Simplified Regional Geology and Structure of Exploration Licence No. 935.
Figure 4 - Section A-B of Simplified Regional Geology and Structure of Exploration Licence No. 935
Figure 5 - Geomagnetic Total Force Profiles & Contours Explorer 164
Figure 6 - Geomagnetic Total Force Profiles & Contours Explorer 165
1. INTRODUCTION

Exploration Licence No. 935 held by Peko Mines Ltd was initially granted on September 12th 1973 and subsequently renewed for six months on September 12th 1974. It was renewed for twelve months on March 12th 1975 at which time the area held under licence was reduced from 137 sq kms to 68 sq kms. It was again renewed for a further twelve month period on the 12th March 1976 and the area held under licence again reduced, from 68 sq kms to 13 sq kms.

This report covers the exploration activities conducted by Geopeko Ltd on behalf of Peko Mines Ltd for the twelve month period from March 12th 1976 to March 11th, 1977. It is the fourth Statutory Report to be presented and is to be regarded as both Annual and Final Report, since further renewal is not sought.

Access to the exploration licence area is via a bitumen road from Tennant Creek to Warrego Mine, thence west for 22 kms along the Wiso Bore Road until a prominent N-S striking sandstone ridge (Tomkinson Creek Beds) is reached. An ill-defined track runs north along the eastern side of the sandstone ridge for some 4 kms to the Explorer 116 Prospect. From the Explorer 116 Prospect, many ill-defined vehicular tracks run in an easterly direction for some 4.5 kms to intersect the south western corner of the exploration licence area. The north eastern corner of the licence area is situated approximately 18.2 kms on a true bearing of 306 degrees from Warrego Mine.
2. **TENURE**

Twelve (12) mineral leases within E.L. 935 are either held or applied for by Peko Mines Ltd. These are:-

<table>
<thead>
<tr>
<th>Number</th>
<th>Area (ha)</th>
<th>Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML903E</td>
<td>16</td>
<td>Explorer 164 No. 1</td>
<td>Granted</td>
</tr>
<tr>
<td>ML904E</td>
<td>16</td>
<td>Explorer 164 No. 2</td>
<td>Granted</td>
</tr>
<tr>
<td>ML905E</td>
<td>16</td>
<td>Explorer 164 No. 3</td>
<td>Granted</td>
</tr>
<tr>
<td>ML906E</td>
<td>16</td>
<td>Explorer 164 No. 4</td>
<td>Granted</td>
</tr>
<tr>
<td>ML1143E</td>
<td>16</td>
<td>Explorer 164 No. 5</td>
<td>Under Application</td>
</tr>
<tr>
<td>ML1144E</td>
<td>16</td>
<td>Explorer 164 No. 6</td>
<td>Under Application</td>
</tr>
<tr>
<td>ML907E</td>
<td>16</td>
<td>Explorer 165 No. 1</td>
<td>Granted</td>
</tr>
<tr>
<td>ML908E</td>
<td>16</td>
<td>Explorer 165 No. 2</td>
<td>Granted</td>
</tr>
<tr>
<td>ML909E</td>
<td>16</td>
<td>Explorer 165 No. 3</td>
<td>Granted</td>
</tr>
<tr>
<td>ML910E</td>
<td>16</td>
<td>Explorer 165 No. 4</td>
<td>Granted</td>
</tr>
<tr>
<td>ML1145E</td>
<td>16</td>
<td>Explorer 165 No. 5</td>
<td>Under Application</td>
</tr>
<tr>
<td>ML1146E</td>
<td>16</td>
<td>Explorer 165 No. 6</td>
<td>Under Application</td>
</tr>
</tbody>
</table>
3. REGIONAL GEOLOGY

The general geology and stratigraphic subdivisions of sediments within E.L. 935 is shown in Figs. 3 and 4, and briefly described below.

Cambrian Merrina Beds:
The flat lying Merrina Beds crop out along the eastern margin of the exploration licence area and unconformably overlie sediments of the Lower Proterozoic Warramunga Group. They consist of chert breccias and chert with minor sandstones, grits and siltstones. The cherts may be silicified dolomites. The sediment/grit fragments are commonly 2-50mm in maximum dimension. Some larger broken fragments can be visually rejoined to particles up to 20cm in size. The basal breccias/conglomerates (?)unconformity) contain small angular quartz and clay fragments in a shaley and often ironstained matrix.

Lower Proterozoic Warramunga Group:
Warramunga Group sediments are well exposed along the western margin of the licence area. The sediments consist of predominantly interbedded greywackes, siltstones, cherty siltstones, shales, hematite shales and porphyroidal rocks. They strike at approximately 110° magnetic and dip to the north at 75-80°.

Four distinct lithological subdivisions of the Warramunga Group have been recognised :-

(i) Greywacke/Siltstone sequence (>1000m outcrop width). Interbedded siltstones and medium to coarse grained greywacke,

(ii) Siltstone/Chert sequence (=800m outcrop width) Interbedded cherty siltstone, hematite shale and silty greywacke. The sequence is similar to that found in the Great Western Syncline.

(iii) Greywacke sequence (=1000m outcrop width) Dominantly greywacke with minor siltstones.
(iv) **Porphyroidal sequence (>1000m outcrop width)**

This sequence consists of the following -

(a) Quartz Porphyroid - highly sheared greywacke with ovoids of quartz up to 1cm across, and often enclosed by flakes of silts.

(b) Quartz Feldspar Porphyroid (Rheopelite Type) - typical quartz feldspar porphyroid with ovoids of feldspar up to 3 cm across and smaller bluish-white ovoids of quartz up to 1cm across. Euhedral phenocrysts of feldspar are not present.

The quartz feldspar porphyroid is similar to that observed in the Great Western Area while the slip-sheared greywacke resembles the sheared sediments within the slip complexes at Argo and Olive Wood.

**Intrusives:**

The sediments of the Warramunga Group have been intruded by the Warrego Granite which crops out to the east of the exploration licence. Numerous lamprophyre dykes are also common.
4. REGIONAL GEOPHYSICS

An aeromagnetic survey was conducted over an area embracing the Exploration Licence by Geometrics International Corporation on behalf of Inter Copper N.L., prior to the granting of the licence area. Results of the aeromagnetic survey were presented in the Annual Report for the year ending September 11th 1974. No further airborne magnetic surveys have been carried out.

Results of the aeromagnetic survey revealed the presence of an area of low intensity magnetic character to the east and south east of the licence area. This area is underlain by granite and, to the west within the licence area, is surrounded by a belt of more intense and complex magnetic character representing Warramunga Group Sediments.

Analysis of the aeromagnetic results indicated two anomalies of interest: Explorer 164 and Explorer 165.
5. PROSPECT EVALUATION

Detailed prospect evaluation has continued throughout the current term of the exploration licence. This has involved gridding and leasing, and geophysical analysis of ground magnetic data. Work carried out previously to the current year is briefly outlined under 'Summary of Previous Activities'. This includes results of the six reconnaissance magnetic traverses over Explorers 164 and 165 (Annual Reports on E.L. 935 for years ending February 11th 1974 and March 11th 1976), results of geomagnetic total force surveys conducted over Explorers 164 and 165 (Annual Report for year ending 11th March 1976) and results of the detailed geological mapping over the licence area (Annual Report for the six months ending March 11th 1975).

5.1 EXPLORER 164

Location:
The Explorer 164 Prospect is situated approximately 20 kms on a true bearing of 297 degrees from Warrego Mine at the intersection of latitude 19° 22' 07" with longitude 133° 39' 22".

Summary of Previous Activities:
The aeromagnetic anomaly was located on the ground and one reconnaissance vehicle magnetometer-navigator traverse was conducted over it. A survey grid of 5.6 line kilometres was established over the prospect and covered by an elevated sensor ground magnetic survey. Four 16 hectare mineral leases were surveyed in over the prospect (ML903E-ML906E).

Summary of Activities for the Year Ending March 11th 1977:
(i) Grid Surveys -
The following grid extensions were surveyed in over the Explorer 164 prospect. The baseline (10,000N) on a true bearing of 90° was extended from 10400E to 10800E.

Cross traverses were established at -

10450E from 9700 to 10300N
10500E from 9700 to 10300N
10550E from 9700 to 10300N
10600E from 9700N to 10300N
10700E from 9700N to 10300N
10800E from 9700N to 10300N
(iii) **Tenure** -
Two additional 16 hectare mineral leases were surveyed in over the prospect.

<table>
<thead>
<tr>
<th>Number</th>
<th>Area (ha)</th>
<th>Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML1143E</td>
<td>16</td>
<td>Explorer 164 No. 5</td>
<td>Under Application</td>
</tr>
<tr>
<td>ML1144E</td>
<td>16</td>
<td>Explorer 164 No. 6</td>
<td>Under Application</td>
</tr>
</tbody>
</table>

(iii) **Geophysics** -
An elevated sensor ground magnetic survey employing a Geometrics SN 989 Magnetometer was carried out over the grid extensions. Results are shown in Figure 5.

5.2 **EXPLORER 165**

**Location:**
The Explorer 165 Prospect is located approximately 18.5 kms on a true bearing of 300° from Warrego Mine at the intersection of latitude 19° 21' 48" with longitude 133° 40' 20".

**Summary of Previous Activities:**
The aeromagnetic anomaly was located on the ground and five reconnaissance vehicle magnetometer-navigator traverses were conducted over it and the immediate surrounding areas. A survey grid of 7.8 line kilometres was established over the prospect and covered by an elevated sensor ground magnetic survey. Four 16 hectare mineral leases were surveyed in over the prospect (ML 907E-ML 910E).

**Summary of Activities for the year ending March 11th 1977:**

(i) **Grid Surveys** -
The following grid extensions were surveyed in over the Explorer 165 Prospect.

The baseline (10,000N) was extended from 10400E to 10,800E.

Cross traverses were established at -
10450E from 9600N to 10,300N
10500E from 9600N to 10,800N
10600E from 9600N to 10,300N
10700E from 9600N to 10,300N
10800E from 9600N to 10,300N

(ii) **Tenure** -
Two additional 16 hectare mineral leases were surveyed in over the prospect.

<table>
<thead>
<tr>
<th>Number</th>
<th>Area (HA)</th>
<th>Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML1145E</td>
<td>16</td>
<td>Explorer 165 No. 3</td>
<td>Under Application</td>
</tr>
<tr>
<td>ML1146E</td>
<td>16</td>
<td>Explorer 165 No. 6</td>
<td>Under Application</td>
</tr>
</tbody>
</table>

(iii) **Geophysics** -
An elevated sensor ground magnetic survey employing a Geometrics SN989 magnetometer was carried out over the grid extensions. Results are presented in Fig. 6.
6. EXPENDITURE

The total expenditure on Exploration Licence No. 935 for the twelve month period from March 12th 1976 to March 11th 1977 was $9363.00. The expenditure commitment on the exploration licence was $2,000.00. The breakdown of expenditure is as follows -

Geology 1477.00
Geophysics 1554.00
Leasing and gridding 2325.00
Survey and drafting 280.00
Administration Costs 1789.00
General Field Expenses 1938.00

TOTAL: $9363.00

(i) The various subdivisions are costed directly, the exception being General Field Expenses and Administration Costs.

(ii) Administration Costs are proportioned period by period on the basis of man hours worked on the project to the total man hours worked for the period.

(iii) General Field Expenses are spread on the same basis as Administration Costs and consist of the following field overheads:

Field Messing
Field Supplies
Vehicle Operation
Workshop Supplies
Depreciation - field plant.

The total expenditure on E.L. 935 since the initial granting of the licence on September 12th, 1973 is as follows:-

1. 12.9.73 - 11.9.74
   Expenditure Commitment $ 5,000
   Actual Expenditure $ 8,261.00

2. 12.9.74 - 11.3.75
   3,000
   11,431.00
<table>
<thead>
<tr>
<th></th>
<th>Start Date</th>
<th>End Date</th>
<th>Units</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>12.3.75</td>
<td>11.3.76</td>
<td>10,000</td>
<td>12,849.00</td>
</tr>
<tr>
<td>4</td>
<td>12.3.76</td>
<td>11.3.77</td>
<td>2,000</td>
<td>9,363.00</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>$20,000</strong></td>
<td><strong>$41,904.00</strong></td>
</tr>
</tbody>
</table>