ANNUAL REPORT

for

E.L. 4179
Tennant Creek
1:250,000 Sheet No. SE 53 - 14

For the twelve months
from 23.3.83 to 22.3.84

- NELSON -
EL 4179 is held by Peko Operations Ltd.
and operated by Geopeko

Compiled by
R. LOVE
APRIL, 1984

Distribution
Northern Territory Mines Department ✓
Geopeko - Tennant Creek
- Perth
- Sydney
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PLANS

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Interpretive Geological Map of Tennant Creek</td>
<td>1:250,000</td>
</tr>
<tr>
<td>TF 3129</td>
<td>EL 4179 Access and Locality</td>
<td>1:250,000</td>
</tr>
<tr>
<td>TF 3130</td>
<td>Stratigraphic Column</td>
<td>-</td>
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</table>

APPENDICES

1. Aeromagnetic Contours for Flynn III 1:50,000
2. Aeromagnetic Contours for Short Range II 1:50,000
1. **INTRODUCTION**

This is the first Annual Report for Exploration License 4179 covering the period from the twenty-third of March 1983 to the twenty-second of March 1984, outlining the exploration activities undertaken by Geopeko.

EL 4179 covers an area of approximately 364 square kilometres and lies to the north west of Tennant Creek and between Warrego Mine and the Stuart Highway (TF 3129). It is contained within the 1:50,000 sheets SE 53 / 14 / 5759 / III (FLYNNIII) and SE 53 / 14 / 5659 / II (SHORT RANGE II).

2. **PHYSIOGRAPHY AND ACCESS**

The major portion of the license area is covered by low density scrub consisting of Spinifex, Turpentine bush and occasional native trees. Topographically the ground varies between flat "flood-out" areas to low hills, found in the Short Range area. This area falls within the monsoonal zone with rain falling between December and April. During this period drainage systems may have to cope with large run offs which, for the greater part of the year, are dry.

Access may be made via a sealed road between Tennant Creek and Warrego Mine and thence by tracks of various quality, used in the past to service small prospecting operations. Much of the license area however becomes inaccessible during the wet season.
3. **EXPLORATION PHILOSOPHY**

The objective of the exploration program over this E.L. has been to locate anomalous concentrations of gold, the principal host being an ironstone mass similar to that found in other locations in the Tennant Creek area. Secondary targets include, but are not restricted to, alluvial gold, gold in quartz veins and hosting in banded iron formation.

The initial stage in this program was to undertake the compilation and preparation of all available geological and geophysical data onto 1:50,000 scale base plans which would then be used to define areas of potential mineralisation. The minerals to be prospected for include gold, silver, copper, bismuth, cobalt, lead and zinc.

4. **WORK CARRIED OUT**

4.1 **Geology**

The most economically significant geological unit in the Tennant Creek area is the Carraman Formation of the Lower Proterozoic Warramunga Group which hosts bodies of ironstone (TF 3130). This unit forms a substantial part of EL 2719 (Figure 1) and therefore must be considered as stratigraphically prospective.

Due to the paucity of outcrop, however, and the absence of continuous marker horizons the genetic and stratigraphic relationship of various mineral occurrences has been difficult to discern.

Therefore to assist in this synthesis all available data relating to individual prospects, which contain ironstone and/or mineralised sediments associated with magentic anomalies, has been collected and awaits evaluation.
- LITHOLOGY -

15
Lavas and pyroclastics.

?  
Conglomerate, quartzite and sandstone.

?  
Orthoquartzite, sandstone, minor pebble beds.

>3000
Quartz sandstone, feldspathic quartz sandstone and conglomerate.

[Diорite and dolerite which intrude Warramunga Group and Tomkinson Creek Beds.]

500
Greywackes, lithic greywackes and minor shales.

500 to 1500
Felsic turbidites, tuffaceous greywackes, argillaceous iron formations (b.i.f.'s), rhyolitic pyroclastics, ash-flow tuffs.

500
Felsic turbidites, chloritic sltstones, argillaceous iron formations (b.i.f.'s).

0 to 700
Rhyolite lavas, pyroclastics, tuffs and shales.

300
Massive sandstones, minor greywackes and shales.

Gneisses, schists, amphibolites.

--- Unconformity ---
4.1 (cont.)

Base maps, at a scale of 1:50,000, are currently being compiled showing the location of these prospects so that each may be later placed into its regional context upon the completion of a geological re-evaluation of the Tennant Creek field.

4.2 Geophysics

Since mineralisation has been found to be closely associated with ironstones the most effective method of identifying target areas has been the use of low level aeromagnetics. As a consequence the contoured results of all available surveys (company, open file reports and B.M.R.) have been compiled onto specially prepared 1:50,000 base sheets (Appendices 1 and 2).

4.3 Map Preparation

Work during the first year of tenure has been directed at gathering relevant data for presentation on one standard scale. Base sheets have been, or are in the process of being, prepared to cover:

(a) Topography  
(b) Aeromagnetics  
(c) Geology  
(d) Prospects  
(e) Tenure

As at 22.3.84 only the aeromagnetic base was complete and has been reproduced for this report. Other bases have been field checked and are awaiting cartographic preparation.
Total expenditure on EL 4179 for the first twelve month period of exploration was $27,274. Direct expenditure on the exploration license has been taken from Geopeko monthly financial statements for 1.4.83 to 31.3.84 as costs have been reconciled on a monthly basis.

The minimum expenditure commitment, as prescribed under the Terms and Condition Schedule was $20,000.

A breakdown of the cost incurred is as follows:

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<th>Category</th>
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<td>- Geophysicists</td>
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<td>- Drafting</td>
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<td>- Other (Clerical &amp; General)</td>
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<td>Geological Consultants &amp; Maps</td>
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<td>Management Charge</td>
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<td>Proportion of general exploration costs distributed on EL area basis</td>
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<tr>
<td>TOTAL</td>
<td>27,274</td>
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</tbody>
</table>
6. **FUTURE EXPLORATION**

Geoeko will be conducting a low level aeromagnetic and radiometric survey over the Tennant Creek area, during mid 1984, which will include the majority of EL 4179. It is anticipated that the results of this survey will be a significant improvement over the present coverage and will facilitate the identification of significant bodies of ironstone.

In addition a specialist geologist will be appointed to compile the regional geology, **metallagenesis** and prospect geology. This investigation is expected to complement the evaluation of anomalies which are generated from the airborne survey. It is also anticipated that a rigorous evaluation of geological data will define non magnetic targets such as sites for alluvial of elluvial concentrations, gold in quartz veins and oxidised ironstone hosts.

This program is aimed to lead to the early definition of drill targets.

Proposed expenditure for the forthcoming year of tenure is estimated to be $40,000.

R.J. LOVE