GEOPEKO - TENNANT CREEK

A Division of

PEKO WALLSEND OPERATIONS LIMITED

OPEN FILE

ANNUAL REPORT ON EXPLORATION LICENCE 2719

16th FEBRUARY 1981 to 16th FEBRUARY 1982

Compiled by:

P. G. HARBON
March, 1982
1. Introduction 1
2. Physiography 1
3. Exploration Philosophy 1
4. Exploration History 1
5. Geology and Geophysics 2
6. Expenditure 2
7. Future Exploration 3

PLANS

TF 2300 Plan to accompany Exploration Licence application 4
TF 2703 Plan of outcrop within EL2719 Map Pocket 1
TF 2493 Area covered by magnetic survey, July 1981 5
TF 2702 Plan showing Input flight lines and prospects within licence area. 6

APPENDICES

1. Total Magnetic Intensity contour map scale 1:50 000 on Tennant Creek III sheet Map Pocket 2
2. Total Magnetic Intensity contour map scale 1:50 000 on Bonney IV sheet Map Pocket 2
3. Total Magnetic Intensity contour map scale 1:50 000 on Chaluba I sheet Map Pocket 2
4. Input flight line data - Geoterrex 3rd October 1981 line 1.1N. Map Pocket 3
5. Input flight line data - Geoterrex 3rd October 1981 line 2.1S. Map Pocket 3
5. **GEOLOGY AND GEOPHYSICS**

Aerial photographs were produced (both colour and black and white) at a scale of 1:50 000 over the whole of the licence area. Outcrop and access tracks were located on the ground as accurately as possible using the photographs. The photographs are being used in regional mapping, currently hampered by recent wet weather.

To date lithologies mapped are as predicted (Hatches Creek sandstones and quartzites, and Warramunga siltstones). Outcrop is poor (see TF 2703) and although broad hills appear on the aerial photographs, outcrops are very small, with few rocks in situ.

An aeromagnetic survey has been flown over those parts of PL2719 not previously covered, between longitudes 134°10' and 134°15' (see TF 2493). Results have been incorporated on base sheets as total magnetic intensity contours at a scale of 1:50 000 (see Appendices 1, 2 & 3). This most recent aeromagnetics coverage shows minor Tennant Creek type anomalisim in the southern part of the Licence area.

Two electromagenetic (INPUT) lines were flown in a NNE-SSW direction over known magnetic anomalies in the eastern part of the licence area (see TF 2702), and raw data has been received but not interpreted in detail (see Appendix 4). One observation is that many anomalies (conductive zones) were picked up which did not correspond to airborne magnetic anomalies. The survey was done to test whether ground conductivity in the area rules out airborne E.M. geophysical surveys as a means of detecting magnetic ore bodies.

6. **EXPENDITURE**

Total expenditure on Exploration Licence no. 2719 for the first twelve month term was $49,321. Although the twelve month period ended on the 16th February 1982, the expenditure figure given is taken from Geopeko monthly financial statements up to the 31st January 1982. The minimum expenditure commitment as prescribed under Section 1 of the Terms and Conditions schedule of the Exploration Licence granting document was $20,000.

Breakdown of the cost incurred is as follows:

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<tr>
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<tbody>
<tr>
<td>Geology</td>
<td>1,673</td>
</tr>
<tr>
<td>Airborne Geophysics and Aerial Photography</td>
<td>44,856</td>
</tr>
<tr>
<td>Management and Administration</td>
<td>2,792</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 49,321</strong></td>
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1. **INTRODUCTION**

This is the first Annual Report for Exploration Licence 2719 covering the period from 16th February 1981 to 16th February 1982, outlining the exploration activities conducted by Geopeko on behalf of the licence holders Peko Wallsend Operations Limited (60%) and the Shell Company of Australia Limited (40%). EL2719 covers an area of approximately 1080 square kilometres in the Bonney Well/Tennant Creek locality.

No formal access exists to the area, though the Stuart Highway forms the most part of the eastern boundary. A graded dirt track extends westwards from Kelly Creek in the northern part of the licence area (see TP 2300) and this, together with a few minor tracks to gravel pits west of the highway, are the only access tracks in the area.

2. **PHYSIOGRAPHY**

The major part of the licence area is covered by low broad sand dunes, spinifex and shrubs, with scattered outcrop. A number of small but prominent quartz ridges are aligned in a N-S direction in central and eastern parts of EL2719, and alluvium, minorchalcedonic limestone and a swamp area (Porcupine Swamp) cross the western limits of the exploration licence.

3. **EXPLORATION PHILOSOPHY**

Lower Proterozoic Warramunga Group rocks outcrop in the eastern part of EL2719. These rocks host gold, copper and bismuth mineralization within ironstone bodies at Tennant Creek and at depth below overlying Cambrian lithologies in the Rover area to the west of EL2719. It is hoped that the remote geophysical methods that have been useful in these areas will also be successful in locating similar mineralized ironstone bodies in EL2719.

4. **EXPLORATION HISTORY**

A low level aeromagnetic survey was conducted by previous licence holders over part of the licence area and detected several magnetic anomalies, some of which were subsequently located on the ground. Detailed magnetics was read over these anomalies using vehicle magnetometer traverses (see Appendices 1, 2, & 3). Several anomalies were then given prospect status (Explorer No's 42, 191 & 192). On Explorer 42 exploratory diamond drilling was carried out in 1967. Magnetite/jasper/hematite lode was intersected. This indicates that the potential exists for Tennant Creek type magnetic lodes to be found in this area.
7. **FUTURE EXPLORATION**

Knowledge of regional geology gained from field mapping will be used in conjunction with a geophysical interpretation of low level aeromagnetic surveys flown over EL 2719 to locate possible Tennant Creek ironstone target areas.

Gravimetric surveys may be carried out to outline any denser non-magnetic material corresponding to lead-zinc deposits or to extensions of mineralisation hosted in magnetic bodies.

Ground magnetic and gravity surveys will then be carried out to get a detailed knowledge of the likely size and shape of any anomalous bodies. A reappraisal of all data would then follow, and a decision made as to whether to drill. Should exploratory drilling go ahead, downhole electrical logging will be used in an attempt to correlate between holes using bulk rock properties, and build up a stratigraphy of the area.
**GEOPEKO**

**TENNANT CREEK NORTHERN TERRITORY**

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>DESERTEX</th>
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<tr>
<td>AREA</td>
<td>E.L. 2719</td>
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**DATA**

<table>
<thead>
<tr>
<th>INPUT FLIGHT LINES AND PROSPECTS WITHIN LICENCE AREA</th>
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<tr>
<td>DRAWN</td>
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<tr>
<td>LW</td>
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</table>

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**Legend:**

- **Dirt track**
- **Exp 42** Explorer prospect
- **L 2:1 S** Line 2:1 South
- **L 1:1 N** Line 1:1 North
- **58972** Real time (in seconds) after midnight

2nd October, 1981

Input lines flown 3rd October, 1981.
BONNEY WELL SF53-2

CHALUBA

5657-I

GEPEKO

SCALE 1:100000

AIRBORNE GEOPHYSICAL SURVEYS

FLIGHT DATA FOR AREA A

Traverse line spacing: 330m
Traverse line spacing: 250m
Nominal data spacing along flight lines: 50m
Nominal terrain clearance: 100m
Navigational and recovery using conventional photography
Magnetometer type: RME/Baringer in bed
Flight line direction: North-South
Survey date: 1974

WGP DATA
Coastline altered: 200m
Survey flown by Geosearch Pty Ltd
Map compiled by Pittman Data Systems Pty Ltd

FLIGHT DATA FOR AREA B

Nominal traverse line separation: 250m
Nominal traverse line separation: 250m
Nominal data spacing along flight lines: 50m
Nominal terrain clearance: 100m
Navigational and recovery using Mineole Mini-Hanger MPO-3
Magnetometer type: Varian V80 in stinger
Flight line direction: North-South
Survey date: 1974

WGP DATA
Coastline altered: 200m
KRF subtracted prior to contouring
Survey flown and data compiled by B国立 International Ltd
Project management by Geopex Geophysical Group