ANNUAL REPORT E.L. 4334
26th August, 1984
to
25th August, 1985

OPEN FILE

Licensee: A.O.G. Minerals Limited
Operator: Ashton Mining Limited
Sheet Reference: Brunette Downs (SE 53-11) 1:250,000
Submitted to: Department of Mines & Energy

Ashton Mining Limited
444 Queen Street
Brisbane. 4000

September, 1985

NORTHERN TERRITORY GEOLOGICAL SURVEY CR85/234A
**ABSTRACT**

During the period 26th August, 1984 to 25th August, 1985, Ashton Mining Limited as Manager of the A.D.E. Joint Venture carried out an exploration program in E.L. 4334 aimed at the location of kimberlite pipes.

Work undertaken included an airborne thematic mapper survey and ground magnetics.

A number of targets remain which will require further testing during the next field program.
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1.00 INTRODUCTION

Exploration Licence 4334 covers an area of 1,610 square kilometres (500 blocks) on the Brunette Downs 1:250,000 sheet (refer to Figure 1).

The licence, which was granted to A.O.G. Minerals Limited on 26th August, 1983, is subject to the A.D.E. Joint Venture Agreement between Ashton Mining Limited, A.O.G. Minerals Limited and Aberfoyle Exploration Pty. Limited, concluded on 9th September, 1980. Ashton Mining Limited is the Manager of the Joint Venture.

During the second year of tenure of the licence, an airborne thematic mapper survey was conducted over the whole of the licence area. In addition potential target areas defined by a previous airborne magnetic survey (the results of which have been reported in last year's annual report) were subject to ground magnetic surveys.

This report gives a summary of the work carried out in E.L. 4334 during the period 26th August, 1984 to 25th August, 1985.

A statement of expenditure covering this period is included in the report.
TABLE 1

SURVEY SPECIFICATIONS.

Instrument: Daedalus 1268 Scanner (11 channels)

<table>
<thead>
<tr>
<th>Channels available:</th>
<th>Channel</th>
<th>Wave length (μm)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td>0.42 - 0.45</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>0.45 - 0.52</td>
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<tr>
<td>3</td>
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<td>0.52 - 0.6</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>0.605 - 0.625</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0.63 - 0.69</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>0.695 - 0.75</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>0.76 - 0.9</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>0.91 - 1.05</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>1.55 - 1.75</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>2.08 - 2.35</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>8.5 - 13</td>
</tr>
</tbody>
</table>

Aircraft: Beech King Air
Flying Altitude: 8000 metres above ground level
Ground Element Size: 20m x 20m
Flight Times: 0930 hours to 1430 hours
Azimuth of Runs: North or South
Overlap between runs: 40%
2.00 AIRBORNE THEMATIC MAPPER SURVEY

An airborne thematic mapper survey, undertaken on behalf of the A.D.E. Joint Venture by the National Safety Council of Australia, Victorian Division ("NSCA"), was flown over the whole of the licence area. Specifications for the survey are given in Table 1.

Thematic mapping was chosen over other remote sensing exploration methods as it had the advantage of using an eleven channel scanner giving a larger number of spectral bands which can be discriminated and because all data collected is digitized allowing for the greatest flexibility in manipulation of the data.

Within Exploration Licence 4334 the exploration method of thematic mapping was aimed primarily to enhance or distinguish between a possible kimberlite body and its surrounding overburden of Cainozoic black and grey clayey soil, gravel and lesser laterite.

The scanner data in the form of 'quick look paper prints' collected from the airborne thematic survey, together with all relevant aerial photography, was forwarded to Hunting Geology and Geophysics (Australia) Pty. Limited for examination.
LISTING OF ANOMALIES

The format used for the listing of anomalies is as follows:-

<table>
<thead>
<tr>
<th>Anomaly Number</th>
<th>Grading</th>
<th>Map Ref</th>
<th>Air Photo Number</th>
<th>Scanner Run &amp; Description</th>
<th>Size Channel No.</th>
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</thead>
<tbody>
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<td></td>
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</tbody>
</table>

ABREVIATIONS

Grading:
- H = high (highest priority)
- M = medium (definitely worth checking)
- L = low (probably worth checking)
- X = lowest (of low interest unless supported by additional data)

Map Ref:
- Cor = Corella Creek
- Par = Paradise Bore

Air Photo Number:
- BD = Brunette Downs

Description:
- NSC = No stereo coverage

TABLE 2.

THEMATIC MAPPER ANOMALIES — E.L. 4334

463 L Par BD3/5035 R32 ch 6-9 Slight topo high(?) in sand plain. Appears as faint vegetation anomaly on scanner data. NSC. 350m

464 X Cor BD1/5018 Circular broadening of creek bed. On possible major NNW-trending linear. NSC.

465 L Cor BD1/5018 Subcircular patch of cemented gravel on NNW-trending linear. NSC.

473 X Cor BD1/5022 Faint circular structure. Possibly soil-covered calcrete. Lies on NW linear. NSC. 200m

474 M Cor BD3/5031 R33 ch 6-10 Depression at centre of apparently inward dipping laterite over calcrete. Lies in zone of WNW-trending linears. No thermal anomaly. NSC. 550m.
The procedure used by Hunting in such an examination is listed below:

1. Monoscopic examination of aerial photography.
2. Identification of anomalies from Step 1 on scanner data.
3. Examination of 11 channels of scanner data.
4. Identification of additional anomalies from Step 3 on aerial photography.
5. Stereoscopic examination of all anomalies on aerial photography where stereoscopic coverage was available.

The targets selected by Hunting were rated on a lowest, low, medium or high priority scale. Grading was established solely on the appearance of the anomalous zones without consideration of their position in regard to regional tectonic structures, or their apparent age in relation to residual surfaces.

Within E.L. 4334 two lowest, two low and one medium priority thematic target were outlined, details of these being listed in Table 2: Anomaly locations are given in Plan 1.
3.00 FOLLOW-UP OF AIRBORNE MAGNETIC SURVEY

During the first year of tenure of E.L. 4334, the fixed wing airborne magnetic survey flown previously by Geometrics International Incorporation covered the entire licence area.

The work was carried out as part of a larger regional airborne magnetic program by the A.D.E. Joint Venture in the Brunette Downs area. Flight line spacing was 300 metres with lines oriented in a north-south direction.

The data collected from the survey was interpreted by Ashton Mining geologists at the commencement of the second year of tenure of the E.L. and a number of potential target areas were selected for further investigation. Anomalies were chosen from the stacked magnetic profiles and priority was attached to those discrete anomalies which could not be readily accounted for by the available geology. The position of the anomaly in relation to major structural features was also noted.

Selected targets were subject to field inspection and, where appropriate, ground magnetic surveys. Results of such surveys within E.L. 4334 are presented as magnetic profiles and contoured plans (refer to Figures 2 to 6).
4.00 FUTURE PROGRAMS

Potential target areas outlined by the thematic mapper survey will be subject to field inspection and, where appropriate, ground magnetic surveys and/or loam sampling.

Further interpretation of airborne magnetic data together with additional ground follow-up in the form of detailed gravel and/or loam sampling and possibly additional ground magnetic surveys may also be undertaken.

Depending on the outcome of such a work program, the thematic mapper data, initially acquired on high density tape may be converted into computer compatible tapes for further image processing.
A.D.E. JOINT VENTURE

EXPLORATION LICENCE NO. 4334

EXPENDITURE FOR THE YEAR ENDED 25.8.85

<table>
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<tr>
<td>Salaries</td>
<td>4,323</td>
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<tr>
<td>Field &amp; Laboratory Expenses</td>
<td>30,580</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4,768</td>
</tr>
<tr>
<td><strong>Expenditure for year:</strong></td>
<td><strong>39,671</strong></td>
</tr>
</tbody>
</table>

Date Licence Granted: 26.8.83
ANOMALY PB1/1 PARADISE BORE

FIGURE 2
SEPTEMBER, 1985

CORRECTED DATA ANOMALY PB1/1
LINE 2500.0 SCALE 1: 5000.0

CORRECTED DATA ANOMALY PB1/1
LINE 2400.0 SCALE 1: 5000.0
ANOMALY PB1/2 PARADISE BORE

FIGURE 3
SEPTEMBER, 1985

ANOMALY PB1/2 PARADISE BORE
LINE 3200.0 SCALE 1: 10000.0 ANOM NR.

ANOMALY PB1/2 PARADISE BORE
LINE 3000.0 SCALE 1: 10000.0 ANOM NR.