ANNUAL REPORT  E.L. 4329

26th August, 1984
to
25th August, 1985

OPEN FILL

Licensee: Ashton Mining 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

CR 85/236 A
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. 4329 aimed at the location of kimberlite pipes.

A program of airborne remote sensing using thematic mapper techniques was undertaken over the whole of the licence area. The data generated from the survey was evaluated in conjunction with a photogeological study and targets defined for ground follow-up.
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1.00 INTRODUCTION

Exploration Licence 4329 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 Ashton Mining 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 initial interpretation of data collected from a previous airborne magnetic survey (the results of which have been reported in last year's annual report) was completed.

This report gives a summary of the work carried out in E.L. 4329 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>
</thead>
<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>
</tr>
<tr>
<td>3</td>
<td></td>
<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 4329 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 soils, sand and sandy soils, alluvium, lesser nodular, white limestone and minor Cambrian dolomite and dolomitic limestone.

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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</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**:  
  - **Roc** = Rockhampton Downs  
  - **Tar** = Tarrabool

- **Air Photo Number**:  
  - **BD** = Brunette Downs

- **Description**:  
  - **NSC** = No stereo coverage

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**TABLE 2.**

**THEMATIC MAPPER ANOMALIES - E.L. 4329**

<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>
</tr>
</thead>
<tbody>
<tr>
<td>504 L Roc BD5/5196 R44 ch 1-11</td>
<td>M</td>
<td>Roc</td>
<td>BD</td>
<td>Textural anomaly (depression?) in sand-covered black soil plain. Sits on major NE-trending linear. NSC. 800m.</td>
<td></td>
</tr>
<tr>
<td>505 L Tar BD4/5087 R43 ch 1-7</td>
<td>M</td>
<td>Tar</td>
<td>BD</td>
<td>Indistinct circular anomaly. Slight topo high. NSC. 450m.</td>
<td></td>
</tr>
<tr>
<td>510 X Roc BD5/5196 R44 ch 1-8</td>
<td>X</td>
<td>Roc</td>
<td>BD</td>
<td>Dark tonal anomaly. NSC. 450 x 700m.</td>
<td></td>
</tr>
<tr>
<td>514 X Roc BD5/5192-R47 ch 1-11</td>
<td>X</td>
<td>Roc</td>
<td>BD</td>
<td>Indistinct oval feature at apex of breached domal structure at intersection with WNW-trending linear. Most conspicuous on thermal channel. NSC. 650 x 950m.</td>
<td></td>
</tr>
<tr>
<td>516 X Roc BD5/5196 R45 ch 1-2,5-10</td>
<td>X</td>
<td>Roc</td>
<td>BD</td>
<td>Dark tonal anomaly on possible WNW-trending linear. Rather smaller and less anomalous on channels 3 &amp; 4. NSC. 300m.</td>
<td></td>
</tr>
<tr>
<td>520 X Tar BD4/5091 R46 ch 9-11</td>
<td>M</td>
<td>Tar</td>
<td>BD</td>
<td>Circular anomaly - prominent on thermal channel. NSC. 200m.</td>
<td></td>
</tr>
</tbody>
</table>
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. 4329 four lowest and two low priority thematic targets were outlined, details of these being listed in Table 2. Anomaly locations are given in Plan 1.
3.0 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 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.
APPENDIX 1.
A.D.E. JOINT VENTURE

EXPLORATION LICENCE NO. 4329

EXPENDITURE FOR THE YEAR ENDED: 25.8.85

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$4,323</td>
</tr>
<tr>
<td>Field &amp; Laboratory Expenses</td>
<td>$25,580</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$4,143</td>
</tr>
</tbody>
</table>

Expenditure for year: $34,046

Date Licence Granted: 26.8.83