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ANNUAL REPORT E.L. 4343

26th August, 1984
to
25th August, 1985

Licensee: Aberfoyle Exploration Pty. Ltd.
Operator: Ashton Mining Limited
Sheet Reference: Brunette Downs (SE 53-11) 1:250,000
Submitted to: Department of Mines & Energy

CR 86/021A

NORTHERN TERRITORY GEOLOGICAL SURVEY

Ashton Mining Limited
444 Queen Street
Brisbane. 4000

November, 1985
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. 4343 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. Within Exploration Licence 4343 one low and four lowest priority thematic anomalies were delineated.

Due to the nature of the thematic targets defined, the licence area was not regarded as holding as much potential for kimberlites as ground held elsewhere in the Territory by the Joint Venture.

The licence was subsequently surrendered.
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1.00 INTRODUCTION

Exploration Licence 4343 covered an area of 1,345 square kilometres (426 blocks) on the Brunette Downs 1:250,000 sheet (refer to Figure 1).

The licence, which was granted to Aberfoyle Exploration Pty. Limited on 26th August, 1983, was 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 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. 4343 during the period 26th August, 1984 to 25th August, 1985.

A statement of expenditure covering this period is included in the report.
TABE 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>0.625 - 0.605</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0.69 - 0.76</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>0.75 - 0.69</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>0.91 - 0.76</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>1.05 - 1.55</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>2.08 - 2.35</td>
</tr>
<tr>
<td>10</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 4343 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, nodular, white limestone and lesser alluvium.

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.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>448 L Bor BD8/5266</td>
<td>Indistinct elliptical feature on edge of sand plain. NSC. 450 x 750m.</td>
</tr>
<tr>
<td>451 X Bor</td>
<td>R26 ch 1-7,8-9 Circular dark tonal anomaly. 400m.</td>
</tr>
<tr>
<td>458 X Bor BD7/5090 R29 ch 1-10</td>
<td>Small dark tonal anomaly in colluvium over calcrete. Does not appear to be vegetation. NSC. 150m.</td>
</tr>
</tbody>
</table>
LISTING OF ANOMALIES

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

Anomaly Grading Map Air Photo Scanner Run & Description Size
Number Ref. Number Channel No. -

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. Bor = Boree
Air Photo Number:  B.D. = Brunette Downs
Description:  NSC = No stereo coverage

TABLE 2.

THEMATIC MAPPER ANOMALIES - E.L. 4343

432 X Bor BD8/1845 R26 ch 1-7,8-11 Pale tonal and textural anomaly in drainage along NW-trending linear. Dry clay pan?
350 x 700m.

447 X Bor BD7/5094 R27 ch 4-9 Circular structure in anomalous sand-filled depression(?) in Tertiary limestone. On NNE-trending linear. NSC. 450m.
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. 4343 four lowest and one low priority thematic target were outlined, details of these being listed in Table 2. Anomaly locations are given in Plan 1.
3.00 CONCLUSIONS

Thematic mapping has shown a small number of low and lowest priority thematic targets within E.L. 4343. In the light of work carried out by the A.D.E. Joint Venture in the licence and adjoining areas it was decided that exploration efforts should be concentrated in more promising ground held elsewhere in the Territory. Consequently E.L. 4343 was surrendered with effect from 29th August, 1985.
A.D.E. JOINT VENTURE

EXPLORATION LICENCE NO. 4343

EXPENDITURE FOR THE YEAR ENDED 25.8.85

$  

Salaries 5,901  
Field & Laboratory Expenses 13,571  
Miscellaneous 4,645

Expenditure for year: 24,117

Date Licence Granted: 26.8.83