ANNUAL REPORT E.L. 1845

27th February, 1980
to
26th February, 1981

NORTHERN TERRITORY GEOLOGICAL SURVEY

OPEN FILE

Submitted to: Department of Mines & Energy,
Minerals House,
Darwin.

On behalf of: Secured Loans & Developments Ltd.

Ashton Mining Limited,
83-89 Eagle Street,
Brisbane. 4000

May, 1981.
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ABSTRACT

During the period 27th February, 1980 to 26th February, 1981, Ashton Mining Limited processed and evaluated eight regional gravel samples from Exploration Licence 1845. The processing of the samples was undertaken by the Company's laboratory in Perth. A grain of chromite was recorded from one of the samples but it was considered to be of non-kimberlitic origin.

An assessment of airborne geophysical data from the northern section of the licence was carried out and a brief helicopter reconnaissance undertaken. The major area of continuing interest lies along the southeast fault which bisects the licence.
1.00 INTRODUCTION

Exploration Licence 1845 covers an area of 49.69 square kilometres and is located on the Fergusson River 1:250,000 geological sheet.

The licence was first granted to Secured Loans and Developments Ltd. on 27th February, 1979 for a period of twelve months and was renewed for a further twelve months from 27th February, 1980.

Exploration Licence 1845 lies within the specified Exploration Area of a Joint Venture Agreement between A.O. (Australia) Pty. Ltd. and Secured Loans and Developments Limited concluded on 31st May, 1979. A.O. (Australia) Pty. Ltd. which is wholly owned by Ashton Mining Limited is the Manager of the Joint Venture.

Exploration within the licence centred on (1) a kimberlite search and (2) investigating the potential of the area to host Pb-Zn and uranium deposits. Regional gravel sampling, stream sediment sampling and geological reconnaissance were the main techniques applied.

This report gives a summary of the work carried out in E.L. 1845 during the period 27th February, 1980 to 26th February, 1981. A statement of expenditure covering this period is included in the report.
FIGURE 1
2.00 TENURE

During the year under review, which was the second term of the licence, E.L. 1845 continued to be held on behalf of the Joint Venture by Secured Loans and Developments Limited. The licence covered 49.69 square kilometres and is outlined in Figure 1 and described fully below:

Commencing at the intersection of latitude 14 degrees 30 minutes with longitude 131 degrees 20 minutes thence proceeding to the intersection of latitude 14 degrees 30 minutes with longitude 131 degrees 23 minutes thence proceeding to the intersection of latitude 14 degrees 35 minutes with longitude 131 degrees 23 minutes thence proceeding to the intersection of latitude 14 degrees 35 minutes with longitude 131 degrees 20 minutes thence proceeding to the intersection of latitude 14 degrees 30 minutes with longitude 131 degrees 20 minutes, subject to all applications for mining tenements and excluding therefrom all mining tenements granted or registered and all reserves included within the definition of "reserve" in section 7 of the Mining Act.

In accordance with the provisions of section 38B(11) of the Mining Act an application has been lodged for the renewal of the licence over an area of 23.15 square kilometres. The outline of this area is shown in Figure 1.
PHYSIOGRAPHIC SKETCH MAP OF FERGUSSON RIVER
1:250,000 SHEET SHOWING E.L. 1845 LOCATION
(after EMR)

FIGURE 2

ASHTON MINING LIMITED
MAY, 1981
3.00 LOCATION AND PHYSIOGRAPHY

Exploration Licence 1845 is located to the west of the Daly River in the vicinity of Dorisvale Homestead. Access to the northern portion of the licence area is gained via the Claravale Homestead - Dorisvale Homestead road. Vehicle access elsewhere within the licence is limited (refer to Map 1).

Exploration Licence 1845 lies predominantly within the Daly River Basin physiographic unit - an extensive sub-mature basin with prevalent soil and alluvial sand development (see Figure 2).

Sturt Plateau outliers occur within the licence extending southeast from Dorisvale Homestead. These outliers are remnants of the Wingate Plateau to the west and form part of a divide between the Fitzmaurice and Daly Rivers. The isolated mesas were originally continuous with the Wingate Plateau. A hard cap, formed by the ferruginous and pallid zones of a laterite profile generally developed on Cretaceous Mullanman Beds, produces cliffs which drop steeply away to the gentle slopes and undulating hills of the underlying rocks. The maximum elevation of the Sturt Plateau outliers within the exploration licence is of the order of 260 metres.
STRUCTURAL SKETCH MAP OF FERGUSSON RIVER

1:250,000 SHEET SHOWING E.L. 1845 LOCATION

(after BMR)

ASHTON MINING LIMITED

MAY, 1981
4.

4.00 GEOLOGY AND STRUCTURE

The generalized geology and main structural elements of E.L. 1845 are illustrated in Figure 3. The Dorisvale Fault is the main structural feature of the area west of the licence marking the boundary of the Palaeozoic Daly River Basin with the Adelaidean rocks of the Victoria Platform to the west. A major inferred fault, paralleling the Dorisvale Fault cuts diagonally across the licence.

Exploration licence 1845 lies within the Daly River Basin which consists of a sequence of gently dipping sediments showing little faulting or folding. The basin may have resulted, in part, from Tertiary movements although gravity measurements* suggest that a basin existed in Precambrian time. The Daly River Group, a Middle Cambrian to Lower Ordovician limestone, sandstone and siltstone sequence is confined to the basin. The Group comprises three formations, the Tindall Limestone, the Jinduckin Formation and the Ooloo Limestone.

The Tindall Limestone, consisting of calcilutite, coarsely crystalline limestone and minor sandstone outcrops in a narrow, discontinuous belt along the margins of the basin. The Jinduckin Formation conformably overlies the Tindall Limestone and consists of flaggy, friable, ferruginous sandstone and siltstone with minor limestone and dolomite. The Ooloo Limestone is a partly silicified limestone conformable on the Jinduckin Formation.

Residual sand and soil predominate within E.L. 1845. Minor outcrops of Tindall Limestone occur in the northwest of the licence with ferruginous sandstones and siltstones of the Jinduckin Formation located in the south and southwest. A lateritic hard cap is developed on the Cretaceous Mullaman Beds in the east of the licence.
5.00 KIMBERLITE INVESTIGATIONS

During the first year of tenure a helicopter-supported regional gravel sampling program was undertaken with the aim of locating kimberlite intrusives. Eight samples were collected giving a sampling density of one sample per six square kilometres. At each sample site approximately 40 kg of gravel were sieved and the minus 4 mm fraction collected for laboratory examination. Generally the minus 4 mm samples weighed 25-30 kg.

The gravel samples were forwarded to the Ashton Mining Limited laboratory in Perth. However, as the regional sampling program was carried out towards the end of the field season, and as the samples formed part of a bulk consignment from all the Tolmer Joint Venture licences, laboratory processing and observation of the samples was not completed until the second term.

The processing of the samples involved initially their concentration by Wilfley Table and heavy liquid separation techniques. The heavy liquid used was tetrabromoethane with a specific gravity of 2.96. The concentrates were then screened into various size fractions, further concentrated, where required, by magnetic and electrostatic separation techniques and a comprehensive grain by grain examination carried out on the appropriate fractions.

Of the eight samples collected within E.L. 1845, only one contained a possible kimberlite indicator mineral -
### TABLE 1: GRAVEL SAMPLE RESULTS

The following fractions of each sample were studied:

- $1.0 \text{ mm} + 0.8 \text{ mm}$; denoted by +0.8
- $0.8 \text{ mm} + 0.5 \text{ mm}$; " +0.5
- $0.5 \text{ mm} + 0.425 \text{ mm}$; " +0.425

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<th>Results</th>
<th>Comments</th>
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<tr>
<td>TOL 035</td>
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<tr>
<td>TOL 036</td>
<td>+0.5 chromite</td>
<td>Fresh/Worn, euhedral-rounded, pitted, ragged surface. +0.5, +0.425 kyanite.</td>
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<td>TOL 037</td>
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<td>TOL 081</td>
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a +0.5 grain of chromite. This grain was subject to further examination and was subsequently considered to be of non-kimberlitic origin.

A complete listing of results of the laboratory examinations is given in Table 1 and sample locations are shown in Map 1.
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<thead>
<tr>
<th>Sample No.</th>
<th>Cu (ppm)</th>
<th>Pb (ppm)</th>
<th>Zn (ppm)</th>
<th>Ni (ppm)</th>
<th>Co (ppm)</th>
<th>U (ppm)</th>
<th>Cu (ppm)</th>
<th>Pb (ppm)</th>
<th>Zn (ppm)</th>
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<td>45</td>
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<td>S -044</td>
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</table>
E.L. 1845

STREAM SEDIMENT SAMPLING PROGRAM
ZINC RESULTS

FIGURE 5

-80# ZINC RESULTS
VALUES ≥60 p.p.m.
STREAM SEDIMENT SAMPLING PROGRAM
URANIUM RESULTS

---200# URANIUM RESULTS
VALUES ≥5 p.p.m.

FIGURE 6
6.00 LEAD - ZINC AND URANIUM INVESTIGATIONS

6.10 General
During the year some field data, which had previously been lost through a helicopter accident was recovered. The location of the majority of the stream sediment samples collected prior to the helicopter crash is now known and is illustrated in Figure 4. In addition data from an airborne magnetic and gamma ray spectrometer survey which covered the northernmost part of the licence has been assessed and a brief helicopter reconnaissance undertaken.

6.20 Stream Sediment Sampling
The stream sediment survey was designed to test the lead - zinc potential of the licence. The -80# fractions were assayed by Australian Laboratory Services in Brisbane for Cu, Pb, Zn, Ni and Co. Routine uranium analyses were performed for all samples on the -200# fraction and the -20+80# fractions were assayed for Cu, Pb and Zn. All results are given in Table 2. The -80# results for Zn and U are plotted in Figures 5 and 6 respectively.

Reference to Table 2 illustrates that no anomalous Cu, Pb, Ni or Co values were detected. Slightly elevated values for zinc (65 ppm) were recorded from streams draining the northeast and southwest portions of the licence - the north-east area recording the only anomalous uranium value (6 ppm).
6.30 **Airborne Geophysics**

An airborne magnetic and gamma ray spectrometer survey was carried out over an area immediately north of the licence and approximately one fifth of E.L. 1845 was also covered by this survey. The survey utilized north-south flight lines, a line spacing of 300 metres and a mean terrain clearance of 80 metres.

Examination of all the relevant γ-ray spectrometer traces was undertaken and although no uranium anomalies were identified, a brief helicopter reconnaissance was conducted in the vicinity of stream sediment sample S-015 with negative results. However high background (100 cps) counts were located in the vicinity of the major fault paralleling the Dorisvale Fault in the central western portion of the licence and future investigations will be concentrated in this area.

An assessment of the aeromagnetic data was carried out, but no anomalies of note were delineated.
Laboratory testing of the regional gravel samples failed to give any kimberlite derived minerals. As the sampling program is regarded as having tested the licence adequately, it was concluded that the likelihood of finding kimberlites in E.L. 1845 was remote and that no further exploration for diamonds should be undertaken.

Further exploration of the licence for Pb-Zn and U mineralization is warranted particularly in the vicinity of the major southeast fault which bisects the licence.
**TOMER & ASSOCIATED JOINT VENTURE**

**EXPLORATION LICENCE NO. 1845**

**EXPENDITURE for Year Ended 26/2/81**

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<th>Description</th>
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<td>Salaries</td>
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<td>Field &amp; Laboratory Expenses</td>
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<td>Miscellaneous</td>
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<td><strong>Expenditure for Year Ended</strong></td>
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Date Licence Granted: 27.2.79

D.W.B. 25/5/81