Rio Tinto Exploration Pty. Limited
A.C.N. 000 057 125

A member of the Rio Tinto Group

EL 9058 Foelsche River South

Annual Report
For the Year Ending 15th May 2001

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Date: May 2001
Copies to: Dept. Mines and Energy - Darwin
Rio Tinto Exploration - Darwin
Rio Tinto Exploration - Perth
Map Sheet: SE5303 Bauhinia Downs
SE5304 Robinson River

Submitted by: ............................................................
Accepted by: ............................................................

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ABSTRACT

Three 10 tonne bulk gravel samples were taken by Ashton Mining Limited during the reporting period. Results consisted of one 0.333 ct diamond and 12 chromites, one macro diamond and two chromites, and 12 chromites respectively. Mineral chemistry data were not available at the time of writing. A program of mapping, sampling and geophysics has been recommended, contingent upon results of SEM probing of indicators. Two rock samples were also submitted for diamond and kimberlitic indicator processing, yielding one micro diamond. This result confirms that the Cretaceous sediments form a secondary source of diamonds in the area.
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</thead>
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<td>EL 9058 Foelsche River South Location Plan</td>
<td>1:500,000</td>
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Appendix I  SAMPLING RESULTS
1. INTRODUCTION

This report describes the exploration completed within EL 9058 during the year ended 15th May, 2001.

EL 9058 is located in the McArthur River region of the Northern Territory, 40km to the north east of Kiana Station homestead (see plan NTd 6861). The tenement lies on the Bauhinia Downs (SE5303) and Robinson River (SE5304) 1:250,000 scale map sheets.

EL 9058 comprises 8 sub-blocks (approximately 26 km$^2$). Rio Tinto Exploration acquired EL 9058 as a consequence of its takeover of Ashton Mining Limited in late 2000.

2. CONCLUSIONS AND RECOMMENDATIONS

Three bulk drainage gravel samples were taken within EL 9058 during the reporting period. These samples were processed using Ashton’s MKIII DMS plant at Cape Crawford. The fine fraction was jigged on site to recover a fine concentrate, which was sent to Ashton’s diamond laboratory in Perth for conventional indicator mineral processing and observation.

One 0.333 ct diamond and 12 chromite grains were recovered from bulk sample 00025-004. The catchment of this sample lies within EL 9058 and the adjoining tenement application to the south. It is recommended that the chromite grains be analysed by SEM to enable an assessment of their likely origin. Further gravel sampling, airborne geophysical surveying and geological mapping may then be undertaken to locate the source of these minerals.

One macro diamond and two chromite grains were recovered from bulk sample 00025-005. The diamond was an opaque, green, resorbed cube, whilst the chromites were assigned moderate priority and showed signs of wear. No diamonds were recovered from bulk sample 00025-007, however 12 chromite grains were recovered from the fine concentrate, and these were assessed visually as being probably kimberlitic in origin. The results of bulk samples 00025-005 and 00025-007 are less encouraging, and it is recommended that the chromite grains be probed to enable an assessment of their likely origin.

3. GEOLOGY

Published maps of the area suggest that outcrop within EL 9058 consists of Lower Proterozoic Tawallah Group rocks which form part of the Foelsche Inlier (Pietsch et al, 1991). However, field investigations conducted by Ashton Mining Limited suggest that these rocks are overlain in some areas by Lower Cambrian Bukalara Sandstone.

4. PREVIOUS EXPLORATION

4.1. Previous exploration during current tenement

Initial exploration conducted by Ashton Mining Limited during the current tenement (see Thompson, 1997) consisted of drainage gravel sampling to follow up chromite-positive samples reported in open-file literature. Investigations focussing on this anomaly also included a single bulk sample downstream of the anomaly (no diamonds recovered) and nine RAB holes (total 213m). Subsequent ground investigations...
revealed a coarse-grained Proterozoic sedimentary rock containing volcanic clasts. A rock sample yielded chromites, and it was concluded that the chromites recovered from the creek originated from this secondary source. A small EM34 ground electromagnetic survey and soil geochemical sampling was also completed over the chromite anomaly.

Further gravel sampling, bulk gravel sampling, RAB drilling, EM34 and ground magnetic surveying was completed in subsequent reporting periods (Thompson, 1998, Lewis, 1999).

Ashton Mining Limited located outcrops of Proterozoic-aged chromite-bearing sandstone some 4km to the north of the chromites within EL 9058. Ashton geologists postulated that the chromites recovered from drainage gravel samples within EL9058 had eroded from a similar secondary source. However, a helicopter-supported field trip undertaken during the year ending 15th May 2000 failed to locate a similar source within the tenement (Thompson, 2000).

5. EXPLORATION COMPLETED DURING REPORTING PERIOD

5.1. Bulk gravel sampling

Three 10 tonne bulk gravel samples were taken and processed using Ashton’s MKIII DMS plant located at Cape Crawford during the reporting period. The purpose of the sampling was to gather sufficient chromite grains from the anomalous catchments to enable an interpretation of their likely origin. Therefore, the fine fraction usually discarded during HMS processing was collected and jigged on site to produce a concentrate. This concentrate was bagged and sent to the Ashton diamonds lab in Perth for standard lab processing and observation.

Results of this sampling are tabulated in Appendix I. Sample locations are shown in plan NTd 6862. In summary, the following results were obtained:

Sample 00025-004

One macro diamond weighing 0.3330 carats (5.2x2.4x3.1mm, colourless, clear, inclusion-free, dodecahedron) was recovered. The fine concentrate contained 12 chromites. These were mainly anhedral, irregular grains, with sharp to round edges and no obvious kimberlitic features. One moderate priority grain was described as “euhedral, matte surface, round edges”. One moderate to low priority grain was described as “irregular, matte surface and possible granular rim”. These grains had not been probed at the time of writing.

Sample 0025-005

One macro diamond was recovered (0.25x0.4x0.35mm, green, opaque, cube with resorbed edges). Two chromite grains were recovered from the fine concentrate. These were described as “fragments of octas, one slightly rounded-other more so, frosted surfaces”. Ashton assigned the indicators a moderate priority, based upon grain morphology. These grains had not been probed at the time of writing.
Sample 00025-007

No diamonds were recovered from the sample. A total of 12 chromite grains were recovered from the fine concentrate. These were described as “mostly round matt, couple granular, with some faces. High priority - some good kimberlitic types - well resorbed”.

5.2. Rock sampling

Two rock samples (00015-001 and 00015-002) were taken, in an attempt to determine whether a secondary source of diamonds and indicators existed within the tenement. The samples are tabulated in Appendix I, and locations are indicated on plan 6862. Descriptions of the samples are given below:

Sample 00015-001

Poorly sorted clayey sand conglomerate with clasts 5mm to 50mm. Moderately rounded, overlies possibly Cretaceous clayey sandstone. May be a reworked gravel deposit or a Cretaceous unit.

One micro diamond was recovered (0.3x0.2x0.3mm, irregular fragment, colourless, clear, inclusion free, sharp edges).

Sample 00015-002

Well-sorted, coarse, moderately consolidated grained pebbly quartz sandstone, with <1mm thick, fining upward sequence. Overlies presumed Cretaceous unit. The rock is presumed Cretaceous.

Sample 00015-002 was negative for diamonds and indicators.

The micro diamond recovered from sample 00015-001 confirms that Cretaceous sediments can form a secondary source of diamonds in this region.

6. EXPLORATION PROGRAM AND BUDGET FOR NEXT REPORTING PERIOD

The planned budget for the next reporting period is $30,000. A detailed breakdown of planned expenditure is given below:

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<thead>
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<tr>
<td>Field support/office salary</td>
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<tr>
<td>Travel, accommodation and meals</td>
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</tr>
<tr>
<td>Helicopter charter</td>
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<tr>
<td>Laboratory</td>
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<tr>
<td>Geophysics</td>
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<tr>
<td>Field supplies</td>
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</table>
Vehicles 2,000

Total $30,000

7. REHABILITATION

All access tracks and sample sites have been rehabilitated to accepted industry standards.

8. REFERENCES


9. KEYWORDS

Diamonds, McArthur River, gravel sampling

10. LOCALITY

- Bauhinia Downs SE53-03 1:250,000
- Robinson River SE53-04 1:250,000
- Glyde 6164 1:100,000
- Foelsche 6264 1:100,000

11. DESCRIPTOR

APPENDIX I

SAMPLING RESULTS
<table>
<thead>
<tr>
<th>Sample</th>
<th>Date of sample</th>
<th>Type</th>
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<td>00015-002</td>
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</tbody>
</table>
Sample Locations

- **SDS03 Bauhina Downs**:
  - Rock sample
  - Bulk gravel sample

- **EL 9058 Foelsche River South**
  - Tenement boundary

**Sample Locations**

**Author**: D. Johnson  
**Ref**: SDS503 Bauhina Downs

**Drawn**: I. Hubbard  
**File Ref**: 5/Carto/Plans/NTd

**Date**: 17-05-2001  
**Report No**: 24532

**Scale**: 1:50 000  
**Plan No**: NTd 6862