CLARENCE RIVER FINANCE GROUP PTY LTD

EXPLORATION LICENCE - EL 6940

STATUTORY 50% RELINQUISHMENT REPORT

JANUARY 1993

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E L 6940 HARTS RANGE — NORTHERN TERRITORY

1. LOCATION & ACCESS

Exploration Licence EL 6940 is situated approximately 175 km by road from Alice Springs. To locate EL 6940, travel north from Alice Springs along the Stuart Highway for 70 km and turn onto the Plenty Highway, another 70 km will take you to the Gem Tree Caravan Park.

EL 6940 is approx. 35 km further along the Plenty Highway on the right hand side of the road. The licence comprised 92 sub blocks and forms part of the Aritunga-Harts Range Region.

One access to the EL involves turning off the Plenty Highway at Blackfellows Bones Bore, the prospective Oonagalabi Cu - Zn prospect is within the EL, some 55 km Southeast and east of this turnout.

The original blocks covered by the EL were:

MAP 76

<table>
<thead>
<tr>
<th>Blocks</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>41/20-39</td>
<td>46/24-39</td>
<td></td>
</tr>
<tr>
<td>42/29-39</td>
<td>47/24-39</td>
<td></td>
</tr>
<tr>
<td>43/29-30</td>
<td>48/24-39</td>
<td></td>
</tr>
<tr>
<td>44/29-30</td>
<td>49/24-39</td>
<td></td>
</tr>
<tr>
<td>45/29-30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The blocks surrendered from the EL were:

<table>
<thead>
<tr>
<th>Blocks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>41/29-39</td>
<td>42/29-39</td>
</tr>
<tr>
<td>43/29-39</td>
<td>44/29-39</td>
</tr>
<tr>
<td>45/29-39</td>
<td>46/24-30</td>
</tr>
<tr>
<td>46/36-39</td>
<td>47/37-39</td>
</tr>
<tr>
<td>48/38-39</td>
<td>49/38-39</td>
</tr>
</tbody>
</table>
2. REGIONAL GEOLOGY

The Exploration Licence covers part of the high grade metamorphics of the Early Proterozoic Harts Range Group. The contact between the two units is unconformable. Outcrop over most of the EL is excellent, however in the Northwest corner, most of the Proterozoic geology is obscured by unconsolidated Quarternary sediments.

The Strangways Complex consists of highly contorted volcanics, sediments and igneous intrusions. They have been regionally metamorphosed to the amphibolite-granulite facies and have been deformed by at least three major orogenies. The rock types include mafic, felsic and pelitic granulites and gneisses, marble, calc-silicate rocks and charnockite.

The Strangways Complex crops out predominantly in the southern part of the EL.

Within the EL the Stranways Complex can be divided into two units:

i) The earlier Bungatina Metamorphics (PESb)

ii) The younger Upper Strangways Unit (PES1)

The Bungatina Metamorphics crop out in the central-southern part of the EL and can be divided into an upper and lower unit, both of which are complexely intruded by the Ongeva Granodiorite.

The lower unit crops out in the northern and eastern part of the Strangways outcrop area. It includes the area around Oonagalabi, where the unit is further divided into the lower Florence Creek Unit and the upper Oonagalabi Formation.
Tectonic blocks.
The lower unit comprises quartz and feldspathic gneiss, mafic granulite, amphibolite, biotite gneiss, garnet bearing quartz and feldspathic gneiss, hornblende gneiss and some quartz feldspathic gneiss.

The upper unit comprises garnet bearing quartz and feldspathic gneiss porphyroblastic feldspar gneiss, amphibolite, plagioclase-quartz rock, calc-silicate rock and biotite gneiss.

The _Ongeva Granodiorite has intruded the Bungatina Metamorphics in a complex pattern. The Granodiorite comprises both mafic and felsic granulite, plus garnet bearing and ordinary quartz feldspathic gneiss and migmatitic gneiss.

The Upper Strangway Unit comprises biotite schist, muscovite-biotite schists or gneiss, calc-silicate rock, thinly layered amphibolite and quartz amphibolite.

The Younger Proterozoic Harts Range Group consists of pelitic, semi-pelitic, calcareous and felsic gneisses, quartzite and amphibolite.

Regionally, the Harts Range Group can be divided into three units. This includes the Irindina Gneiss, Riddock Amphibolite and Brady Gneiss.

Locally in the Oonagalabi area a fourth unit known as the Mount Brassey Amphibolite occurs. This unit is thought to represent a basic intrusive, of a similar composition to the Riddock amphibolite and has intruded rocks of the Strangway Group in this area.
The Irindina Gneiss is confined to the northeast corner and to the area surrounding and east of the Oonagalabi Prospect in the southern part of the EL.

The unit comprises garnet-biotite plagioclase quartz gneiss, garnet-bearing quartz and feldspathic gneiss, quartz and feldspathic gneiss, amphibolite and marble. The Irindina Gneiss probably represents a metamorphosed lithic sandstone or finer grained equivalent.

The Riddock Amphibolite overlies the Irindina Gneiss and occupies the central part of the EL and also occurs around the Oonagalabi Prospect. It runs as a band along the centre of the Harts Range and includes Mount Mable and Mount Brassey.

The lithology comprises thinly layered amphibolite, quartz amphibolite, amphibolite, garnet-bearing quartz and feldspathic gneiss and garnet-biotite-plagioclase-quartz gneiss. The unit probably represents metamorphosed basic volcanics.

The Brady Gneiss is also confined to the northeast corner of the EL. It comprises garnet-muscovite biotite schist or gneiss, calc-silicate rock and quartz-rich metasediment.

The regional structure comprises large, tight, often recumbent folds, which basically trend east-west. Large east-west striking thrust faults are common and have considerable displacement.
3. MINERALISATION

The known base metal and precious mineralisation within the EL is confined to the Strangway Complex and occurs in the southern and western part of the EL.

The mineralisation comprises copper, lead and zinc. The main deposit is at Oonagalabi, where the mineralisation is hosted by Marble, Mg-Al-rich Schist/gneiss and quartz magnetite or quartz garnet rock (Oonagalabi Formation).

The only other known deposit is the Virginia Deposit situated to the northwest of Oonagalabi. Here the mineralisation is hosted by the garnet bearing granodiorite of the Bungatina Metamorphics.

This Shear type deposit has a strike length of approx. 3 km and consists of copper carbonate staining garnet quartzite which is accompanied by quartzofeldspathic gneiss and underlain by migmatic garnet-quartz-rich hornblend rock.

The mineralised zone contains quartz veins, and is more schistose than the country rock. The mineralisation here was observed in places to have three distinct closely spaced zones. Numerous samples taken for copper and zinc assay returned low values.

Nitrogen Investments Ltd explored the area to the south of Oonagalabi for heavy minerals. Six to seven areas were defined as worthy of follow-up for mineralisation similar to Oonagalabi.

It was considered that the potential of the area for industrial garnets and heavy minerals does required further evaluation.
4. JOINT VENTURE

During this year, the Clarence River Finance Group Pty Ltd negotiated a Joint Venture with M.I.M.

The agreement has been registered with the Northern Territory Department of Mines and Energy in Darwin.

MIM have lodged their Proposed Programme of Works for the third year of the licence. In the current year of the licence, it was evident that a J/V would be negotiated, therefore it was decided that the licence shall be divided into two arenas for exploration.

- **Arena 1: Metaliferous.** This area was to be left for the incoming J/V partner as these were the target minerals of the J/V offers.

- **Arena 2: Industrial.** In all J/V negotiations, the Industrial Minerals were to be excluded from the J/V and left exclusively for CRFG.
5. GARNET SANDS:

Within the Reduced portion of Exploration Licence E.L. 6940 Northern Territory (previously held by the Clarence River Finance Group Pty Ltd - [CRFG]) exists a Garnet Sands resource.

The salient physical characteristics (exc. colour) of garnet are:
Crystal System: Cubic. The rhombic dodecahedron (twelve faces) and the trapezohedron (twenty four faces) are the most common habits.
Hardness: 6.5 - 7.5.
Specific Gravity: 3.15 - 4.3.
Lustre: Vitreous to resinous.
Refractive Index (singularly refracting): Minimum 1.73 (pyrope) to maximum 1.89 (demantoid).
Fracture: Subconchoidal to uneven.
Diaphaneity: Transparent to subtranslucent.

Within EL 6940 the garnet was found to be of the Almandine variety.

ALMANDINE OR ALMANDITE - [Fe3Al2(SiO4)3]:
Almandine is a complex iron aluminium silicate and is usually red, brownish red, purplish red or black in colour. It is found in many metamorphic rocks primarily schist and gneiss.

Further research has found that the use of this type of garnet in the industrial field is becoming highly prized as an environmentally friendly material.
6. GARNET PRODUCT ANALYSIS:

The chemical analysis of the + and - 250 micron product (preliminary) Ex the test programme is:

<table>
<thead>
<tr>
<th></th>
<th>+250 %</th>
<th>-250 %</th>
<th>Average %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe2O3</td>
<td>29.4</td>
<td>28.8</td>
<td>29.1</td>
</tr>
<tr>
<td>Al2O3</td>
<td>19.5</td>
<td>18.1</td>
<td>18.8</td>
</tr>
<tr>
<td>SiO2</td>
<td>38.9</td>
<td>39.2</td>
<td>39.05</td>
</tr>
<tr>
<td>MgO</td>
<td>6.00</td>
<td>6.45</td>
<td>6.22</td>
</tr>
<tr>
<td>MnO</td>
<td>1.45</td>
<td>1.32</td>
<td>1.38</td>
</tr>
<tr>
<td>CaO</td>
<td>4.93</td>
<td>6.08</td>
<td>5.50</td>
</tr>
<tr>
<td>S.G.</td>
<td>4.06</td>
<td>3.91</td>
<td>3.98</td>
</tr>
<tr>
<td>U3O8</td>
<td>5.00 ppm</td>
<td>5.00ppm</td>
<td></td>
</tr>
<tr>
<td>ThO2</td>
<td>10.00 ppm</td>
<td>55.00ppm</td>
<td></td>
</tr>
</tbody>
</table>

Random surface grab samples were taken for analyses from several locations within the licence, from creek beds and alluvial plains.

These samples were to test for the total percentage, and the percentages of garnet in particular size ranges. These results are defined in earlier reports.
7. FURTHER SAMPLING:

Further sampling was undertaken in an attempt:-

i) To identify an economic garnet grade distribution.

ii) To identify the possibility of paleo-streams in the alluvial plains where concentrations of garnet was likely to be higher.

iii) To test a coarser garnet product in the wet, open circuit, gravity tabling as performed on all previous samples.

Pan concentrates of the alluvial plains samples indicated grades averaging 10% - 15% with some grades exceeding 20%.

A Head Grade calculation of the alluvial plain as a potential resource indicates an average grade of:-

0 - 1 metre @ 4.5%

1 - 2 metre @ 5.3% (with undeslimed [-1/16 @ 8.05%])

The flow sheet of the wet, open, gravity circuit is provided on the following page.
8. TEST SAMPLE PROCESSING FLOW SHEET

Screen
1000 micron

U/S

Wet Table
Conc
tail

sink/float Bromo-Form

float

sink/float Bromoform
Sink

H/S Mags
Reject

Induced Roll Magnet (0.3 amp)

Screen
250 micron

+ 250 micron

- 250 micron

N/Mag

Induced Roll Magnet (3.3 amp)
Mag

Induced Roll Magnet (3.3 amp)
Mag

Garnet Enriched Concentrate

N/Mag
9. WATER

To process any garnet bearing material in a wet gravity circuit would require an abundant supply of potable water. Consultants were commissioned to locate sufficient supplies of potable water.

The results of this survey indicated that sufficient supplies were available locally from the bores, provided that a semi concentrate of garnet was made at the location of the resource and that a reticulated circuit was constructed with the inclusion of underground water storage tanks.

It was decided to attempt to avoid any potential water supply problems earlier rather than later by investigating other methods of processing known and in doing so, define by the process of elimination, the method as deemed most appropriate for the orebody and the regions conditions.
Bore Location: Harts Range
Client: NT Construction Authority
Reference:
Purpose: Domestic

Map: SF 53-10  Alcoota
Grid Reference: 491520 7458672 (GPS)

RECOMMENDATIONS.

Pumping Rate: 1.0 L/s  Pump Setting: 25.0 m below Ground Level.
General recommendations are given on the reverse side. The aquifer and bore cannot sustain higher pumping rates with deeper pump settings or for short periods in favourable seasons. Further advice can be obtained from: Water Resources Branch (In all correspondence please refer to bore’s RN number) Stuart Hwy

ALICE SPRINGS NT.

BORING DATA.

Finished depth: 27.50 m  Completion Date: 21-10-77  Test Date: 12-08-92
Standing Water Level: 19.6 m on 12-08-92  Test Rate: Up to 1.70 L/s
Test Duration: 10 hrs

<table>
<thead>
<tr>
<th>Interval (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 5.0</td>
<td>188 mm ID Steel Casing</td>
</tr>
<tr>
<td>0.0 - 25.3</td>
<td>140 mm ID Steel Casing</td>
</tr>
<tr>
<td>25.3 - 27.5</td>
<td>114 mm ID - 0.75 mm screen with 0.29 mm pump</td>
</tr>
</tbody>
</table>

Notes:
1. Top of casing as constructed was 0.55 m above ground.
2. All depths are measured from natural ground level.
3. Test rates are not indicative of safe long term pumping rates

WARNING: Minimum internal bore diameter is 140 mm to 25.3 m then 114 mm to TD.

COMMENTS.

The above recommendations are based on previous tests and a re-test at 1.43 L/s for 10 hours and take into account the fact that the standing water level has dropped 7.1 m since the bore was drilled.

Bore diameter is 140 mm ID to 25.3 m, then reduces to 114 mm ID to 27.5 m.

Provision to monitor the water level by installing a 32 mm water pipe coupling in the top flange, to enable PVC pipe to be run through it, should be incorporated when equipping the bore.

The bore should be fitted with a water meter and sampling tap.

It is anticipated that the aquifer will recharge and hence the standing water level rise following a heavy wet.

WATER QUALITY ANALYSIS

Prepared by: C Garner
**WATER ANALYSIS**

**DEPARTMENT OF NORTHERN AUSTRALIA**

**WATER RESOURCES BRANCH**

**LOCATION AND DETAILS**

**HARTS RANGE 77/1 RN 11674**
**DEPTH 24.0m**
**DISCHARGE 4.29 lmps**

**DISCHARGE PIPE**

**Bottle No.** YU 08
**Time of sampling (hrs)** 0600
**Date of sampling** 26.11.77

**ANALYSIS - PHYSICAL**

**SAMPLED:** F. OLINGA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.2</td>
</tr>
<tr>
<td>Specific conductance (microsiemens/cm at 25°C)</td>
<td>940</td>
</tr>
<tr>
<td>Total dissolved solids (mg/l - by evaporation at 180°C)</td>
<td>610</td>
</tr>
<tr>
<td>Turbidity (A.P.H.A. units)</td>
<td></td>
</tr>
<tr>
<td>Suspended solids (mg/l)</td>
<td></td>
</tr>
</tbody>
</table>

**ANALYSIS - CHEMICAL (mg/l)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dissolved solids (by summation)</td>
<td>749</td>
</tr>
<tr>
<td>Total alkalinity (as CaCO₃)</td>
<td>235</td>
</tr>
<tr>
<td>Sodium chloride (calc. from chloride)</td>
<td>152</td>
</tr>
<tr>
<td>Total hardness (as CaCO₃)</td>
<td>219</td>
</tr>
<tr>
<td>Chloride, Cl</td>
<td>92</td>
</tr>
<tr>
<td>Sodium, Na</td>
<td>118</td>
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<tr>
<td>Sulphate, SO₄</td>
<td>118</td>
</tr>
<tr>
<td>Potassium, K</td>
<td>11</td>
</tr>
<tr>
<td>Nitrate, NO₃</td>
<td>13</td>
</tr>
<tr>
<td>Calcium, Ca</td>
<td>30</td>
</tr>
<tr>
<td>Bicarbonate, HCO₃</td>
<td>206</td>
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<tr>
<td>Magnesium, Mg</td>
<td>35</td>
</tr>
<tr>
<td>Carbonate, CO₃</td>
<td></td>
</tr>
<tr>
<td>Iron (total), Fe</td>
<td>0.4</td>
</tr>
<tr>
<td>Fluoride, F</td>
<td>0.8</td>
</tr>
<tr>
<td>Silica, SiO₂</td>
<td>45</td>
</tr>
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</table>

**ANALYSIS - ADDITIONAL (mg/l)**

**WATER RESOURCES BRANCH**

**ALICE SPRINGS**

**Bottle No.** 177/5.2078

**ANALYSSED BY:** J. ALCOCK

**DATE:** 18.1.78

The sample is chemically suitable for human consumption according to 1971 W.H.O. Drinking-Water Standards.

*Information at discretion on the analysis shown above, can be obtained by contacting the Senior Engineer, Water Branch.*
ANALYSIS — PHYSICAL

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td></td>
<td>7.9</td>
</tr>
<tr>
<td>Electrical conductivity (mS/cm at 25°C)</td>
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<td>205</td>
</tr>
<tr>
<td>Total dissolved solids (mg L⁻¹)</td>
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<td>565</td>
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ANALYSIS — CHEMICAL (mg L⁻¹)

<table>
<thead>
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<th>Result</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Potassium, K</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Calcium, Ca</td>
<td></td>
<td>88</td>
</tr>
<tr>
<td>Magnesium, Mg</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Total hardness (as CaCO₃)</td>
<td></td>
<td>265</td>
</tr>
<tr>
<td>Total alkalinity (as CaCO₃)</td>
<td></td>
<td>210</td>
</tr>
<tr>
<td>Iron, total Fe</td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Silica, SiO₂</td>
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<td>59</td>
</tr>
<tr>
<td>Chloride, Cl</td>
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<td>93</td>
</tr>
<tr>
<td>Sulphate, SO₄</td>
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<td>117</td>
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<tr>
<td>Nitrate, NO₃</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Bicarbonate, HCO₃</td>
<td></td>
<td>257</td>
</tr>
<tr>
<td>Carbonate, CO₃</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>NaCl (calc. from chloride)</td>
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<td>153</td>
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ANALYSIS — ADDITIONAL (mg L⁻¹)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper, Cu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese, Mn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc, Zn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic, As</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium, Cd</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This report relates specifically to the "sample tested as received".


Boxes marked thus indicate:
- Levels are within the limits as quoted in the "Guidelines for Drinking Water Quality in Australia", 1987 N.H. & M.R.C. and the A.W.R.C.
- Levels exceed non-health related limits.
- Levels exceed health related limits.

DATE: 20/11/88
CHECKED: 
SIGNATORY: 

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**ANALYSIS — PHYSICAL.**

<table>
<thead>
<tr>
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<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>8.0</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>10.25</td>
</tr>
<tr>
<td>Total dissolved solids</td>
<td>6.55</td>
</tr>
</tbody>
</table>

**ANALYSIS — CHEMICAL (mg l⁻¹).**

<table>
<thead>
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<th>Parameter</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium, Na</td>
<td>145</td>
</tr>
<tr>
<td>Potassium, K</td>
<td>10</td>
</tr>
<tr>
<td>Calcium, Ca</td>
<td>31.6</td>
</tr>
<tr>
<td>Magnesium, Mg</td>
<td>27</td>
</tr>
<tr>
<td>Total Hardness (as CaCO₃)</td>
<td>201</td>
</tr>
<tr>
<td>Total Alkalinity (as CaCO₃)</td>
<td>244</td>
</tr>
<tr>
<td>Iron, (total) Fe</td>
<td>0.5</td>
</tr>
<tr>
<td>Silica, SiO₂</td>
<td>37</td>
</tr>
</tbody>
</table>

**ANALYSIS — ADDITIONAL (mg l⁻¹).**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper, Cu</td>
<td></td>
</tr>
<tr>
<td>Lead, Pb</td>
<td></td>
</tr>
<tr>
<td>Arsenic, As</td>
<td></td>
</tr>
<tr>
<td>Manganese, Mn</td>
<td></td>
</tr>
<tr>
<td>Zinc, Zn</td>
<td></td>
</tr>
<tr>
<td>Cadmium, Cd</td>
<td></td>
</tr>
</tbody>
</table>

This report relates specifically to the “sample tested as received”.


Boxes marked thus indicate:
- Levels are within the limits as quoted in the “Guidelines for Drinking Water Quality in Australia”, 1987 H.H. & M.R.C. and the A.W.R.C.
- Levels exceed non-health related limits.
- Levels exceed health related limits.
ANALYSIS — PHYSICAL

- pH: 7.9
- Specific conductance (mS/cm at 25°C): 650
- Total dissolved solids (g/L, by evaporation at 180°C): 430

ANALYSIS — CHEMICAL (mg/L)

- Sodium, Na: 80
- Chloride, Cl: 52
- Potassium, K: 10
- Sulphate, SO₄: 60
- Calcium, Ca: 30
- Nitrate, NO₃: 6
- Magnesium, Mg: 30
- Bicarbonate, HCO₃: 271
- Total Hardness (as CaCO₃): 198
- Carbonate, CO₃: 
- Total Alkalinity (as CaCO₃): 223
- Fluoride, F: 0.8
- Iron (total), Fe: 0.1
- Orthophosphate, PO₄: 
- Silica, SiO₂: 44
- NaCl (calc. from chlorides): 84

ANALYSIS — ADDITIONAL (mg/L)

- Copper, Cu: 
- Lead, Pb: 
- Arsenic, As: 
- Zinc, Zn: 
- Cadmium, Cd: 
- 
- 

Sample as analysed complies with Northern Territory Drinking Water Standards as recommended by the Northern Territory Department of Health.
<table>
<thead>
<tr>
<th>Bottle No.</th>
<th>Lab. Register No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM 58</td>
<td>91/92/0560</td>
</tr>
<tr>
<td>Date Received in Lab.</td>
<td>Time Sampled</td>
</tr>
<tr>
<td>16/10/91</td>
<td>1200</td>
</tr>
<tr>
<td>Location and Details: MT. RIDDOCK, PENSTEAND MILL BORE SAMPLER: R. MARKS</td>
<td></td>
</tr>
</tbody>
</table>

ANALYSIS — PHYSICAL

- pH: 7.9
- Electrical conductivity (microsiemens/cm at 25°C): 730
- Total dissolved solids (mg L⁻¹ directed at 180°C): 1455

ANALYSIS — CHEMICAL (mg L⁻¹)

- Sodium, Na: 72
- Potassium, K: 4
- Calcium, Ca: 31
- Magnesium, Mg: 21
- Total Hardness (as CaCO₃): 219
- Total Alkalinity (as CaCO₃): 233
- Iron (total): 1.0
- Silica, SiO₂: 4.4
- Chloride, Cl: 48
- Sulphate, SO₄: 75
- Nitrate, NO₃: 29
- Carbonate, CO₃: 287
- Bicarbonate, HCO₃: 287
- Fluoride, F: 0.6
- Na (calc. from chloride): 18

ANALYSIS — ADDITIONAL (mg L⁻¹)

- Copper, Cu: 0.0
- Lead, Pb: 0.0
- Arsenic, As: 0.0
- Cadmium, Cd: 0.0
- Zinc, Zn: 0.0
- Selenium: 0.0

This report relates specifically to the "sample tested as received".


Boxes marked thus indicate:
- Levels are within the limits as quoted in the "Guidelines for Drinking Water Quality in Australia", 1987 N.I. & M.R.C. and the A.W.R.C.
- Levels exceed non-health related limits.

DATE: 20 JAN 1992
CHECKED:  [Signature]
SIGNATORY:  [Signature]

This Laboratory is registered by the National Association of Testing Authorities, Australia. The latest reported here.
Transport & Works
Darwin N.T.

Laboratory Register No. 85/86/1123
Date received in Laboratory 12/11/85

DES 64
Bole No. 1545
Time of sampling 26/10/85
Date of sampling 29/10/85

Details: MT RIDDICK UGARNA BORE R/N 3986

use: Domestic, Stock, Irrigation, other (specify)

ANALYSIS — PHYSICAL

- Colour (Hazen units) 7.4
- Turbidity (NTU's) 15.20
- Suspended solids 990

ANALYSIS — CHEMICAL (mg/l)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl</td>
<td>200</td>
</tr>
<tr>
<td>SO4</td>
<td>217</td>
</tr>
<tr>
<td>NO3</td>
<td>9</td>
</tr>
<tr>
<td>HCO3</td>
<td>396</td>
</tr>
<tr>
<td>CO3</td>
<td>535</td>
</tr>
<tr>
<td>F</td>
<td>0.4</td>
</tr>
<tr>
<td>PO4</td>
<td>0.1</td>
</tr>
<tr>
<td>NaCl (calc. from chloride)</td>
<td>325</td>
</tr>
</tbody>
</table>

ANALYSIS — ADDITIONAL (mg/l)

- Lead, Pb
- Arsenic, As
- Zinc, Zn
- Cadmium, Cd
- Cobalt, Co

DOES NOT COMPLY WITH NORTHERN TERRITORY DRINKING STANDARDS AS RECOMMENDED BY THE NORTHERN TERRITORY DEPARTMENT OF HEALTH.

Date 14/11/85
Primary Plant Flowsheet

Feed from alluvial garnet deposit

Primary plant feed bin

Trash screen

Oversize

Scavenger magnetic separators

Rougher magnetic separators

Magnetic

Primary plant product bin

Primary plant reject to minesite backfill

Transformation to secondary plant
SECONDARY PLANT FLOWSHEET

FEED FROM PRIMARY PLANT

SECONDARY PLANT FEED BIN

SCAVENGER MAGNETIC SEPARATORS

Non-Magnetics

CLEANER MAGNETIC SEPARATORS

Magnetics

DUST COLLECTOR

RECLEANER MAGNETIC SEPARATORS

Magnetics

HEATING KILN

Non-Conductors

SCAVENGER ELECTROSTATIC SEPARATORS

Non-Conductors

Possible Illmenite Recovery Circuit

ROUGHER ELECTROSTATIC SEPARATORS

CLEANER ELECTROSTATIC SEPARATORS

Non-Conductors

CLASSIFICATION

Final Product

SECONDARY PLANT REJECT TO MINESITE

GARNET STORAGE AND PACKAGING
10. DRY PROCESSING:

To provide a semi concentrate, the operation would require either a Dry Blowing process or a Magnetic Separation unit.

The next programme of sampling was aimed at testing the garnet for its response to Dry Blowing, Magnetic and Electrostatic Separation with the view to the possibility of Dry Processing.

DRY BLOWING:

With the S.G. differential between the garnet and the host material, test work indicated that a dry blowing recovery process would be successful however; the setting up of this process would be very capital intensive, treatment rates would be low, maintenance costs would be high and there would be some ongoing dust suppression problems.

MAGNETIC SEPARATION:

Test work on magnetic separation indicated that the setting up of this process would be very capital intensive however; the concentrate that was produced was considerably higher in garnet per unit as opposed to dry blowing, treatment rates would be higher, the maintenance cost were significantly lower plus very significant reductions in dust and noise.

Test work on magnetic separation is ongoing though its is most likely that this type of processing will be the chosen method, as it negates the need of a water supply.
11. MAGNETIC RESPONSE TESTING

PAN CONCENTRATE FEED

Low Intensity
Dry Drum

CC
DRUM

Ferro Mags
4.09%

Non Mags 95.91%

Re_Roll Mag Sep.
@ 2.5 t.p.h. Material

Non Mags
25.39%

Re Mags
Garnet Conc. 70.51%

TYPICAL RAW SAMPLE FEED

Low Intensity
Dry Drum

CC
DRUM

Ferro Mags
0.88%

Non Mags 99.12%

Re_Roll Mag Sep.
@ 2.5 t.p.h. Material

Non Mags
75.95%

Re Mags
Garnet Conc. 23.15%
The sizing of the sample varies across the range from 6mm down to very fine dust. The Re Roll is also affected by particle size and generally it is a good idea to not handle material below 60μ and its best to keep a reasonably close sizing on feed material.

In nearly all samples there is a big difference in the Mags Non-Mags path or trajectory;

ie;

Re_Roll Mag Sep.
@ 2.5 t.p.h. Material

Mags | 300mm | Non Mags

The roughing or cobbing stage therefore appears relatively easy. The separation of the garnet from the Ilmanite and Mica is also possible but will need further tests with relation to fraction sizing, Roll Speeds, Feed Rates and Splitter Settings.

12. MINING LEASE APPLICATIONS:

As a result of our exploration programme identifying an economically processable Garnet Sand Resource, the Clarence River Finance Group Pty Ltd has lodged an initial 8 mining lease applications in the name of Chambigne Resources Pty Ltd, an associate company.

A map of the applications is on the following page.
MINING LEASE APPLICATIONS
13. MICA:

Due to the testing of the garnet bearing material within EL 6940 via the Magnetic and Electrostatic techniques, it was found that the mica within the ore was susceptible to magnetics.

Mica is actually a generic term encompassing a host of complex hydrous aluminosilicates which owe their individual identities to their relative concentrations of iron, lithium and magnesium.

The group comprises muscovite, a potassium mica which can be colourless, pale green or ruby; phlogopite, a magnesium mica either dark brown or amber in colour; biotite, a combination of magnesium and iron ranging from dark green to black; lepidolite, a lithium mica which is lilac in appearance; zinnwaldite, a lithium-iron mica; fuchsite, a chromium mica, and roscoelite, the primary constituent of which is vanadium.

The only two minerals in the group to have any real commercial significance are muscovite and phlogopite, the typical analyses of which is given below:

**TYPICAL ANALYSES FOR COMMERCIAL MICAS (%)**

<table>
<thead>
<tr>
<th></th>
<th>Muscovite</th>
<th>Phlogopite</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO2</td>
<td>44-47</td>
<td>37-43</td>
</tr>
<tr>
<td>Al2O3</td>
<td>30-38</td>
<td>12-17</td>
</tr>
<tr>
<td>Fe2O3</td>
<td>0.2-5</td>
<td>0.2-2</td>
</tr>
<tr>
<td>K2O</td>
<td>8.5-11.5</td>
<td>8.5-11.5</td>
</tr>
<tr>
<td>Na2O</td>
<td>0.1-0.8</td>
<td>0.3-0.8</td>
</tr>
<tr>
<td>TiO2</td>
<td>0-0.9</td>
<td>0-1.5</td>
</tr>
<tr>
<td>BaO</td>
<td>-</td>
<td>0-0.7</td>
</tr>
<tr>
<td>MgO</td>
<td>0.3-1.5</td>
<td>23-29</td>
</tr>
<tr>
<td>CaO</td>
<td>0.1</td>
<td>0.1-0.5</td>
</tr>
<tr>
<td>Li2O</td>
<td>0.1-0.8</td>
<td>0-0.1</td>
</tr>
<tr>
<td>F</td>
<td>0-0.15</td>
<td>0.5-5</td>
</tr>
<tr>
<td>P</td>
<td>trace</td>
<td>trace</td>
</tr>
<tr>
<td>S</td>
<td>trace</td>
<td>trace</td>
</tr>
<tr>
<td>LOI</td>
<td>4-5</td>
<td>1-3</td>
</tr>
</tbody>
</table>
The mica from EL 6940 is considered to be of the muscovite variety.

Actual classification of the commercial mica grades is very detailed, with two main areas broken down into a seemingly never ending tree of grades and classification.

Primarily, mica is divided into two main categories, namely sheet and ground. Sheet mica can be graded on the basis of colour and visual quality as well as on maximum usable rectangle that can be cut from a single lamina. However, in volume terms it is ground mica that dominates world supply.

Typical uses for non-sheet mica:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sieve size</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Flakes</td>
<td>6 mesh</td>
<td>oil well drilling; artificial snow</td>
</tr>
<tr>
<td>Medium-coarse</td>
<td>10 mesh</td>
<td>christmas ornaments; display materials.</td>
</tr>
<tr>
<td>Fine-coarse</td>
<td>16 mesh</td>
<td>concrete block fillers; refractory bricks; gypsum boards; asphalt roofing felts; shingles.</td>
</tr>
<tr>
<td>Coarse-fine powder</td>
<td>30 mesh</td>
<td>metal annealing; absorbant in explosives; disinfectants and automobile components.</td>
</tr>
<tr>
<td>Medium-fine powder</td>
<td>60 mesh</td>
<td>welding electrodes; cables and wires foundary works; pipeline enamels; mastics; lubricants; adhesives.</td>
</tr>
<tr>
<td>Fine powder</td>
<td>100 mesh</td>
<td>texture paints; acoustical plasters; ceiling tiles.</td>
</tr>
<tr>
<td>Superfine powder</td>
<td>325 mesh</td>
<td>paints; plastics; rubber products; paper</td>
</tr>
</tbody>
</table>
MICA PAPER:

Originally invented in 1944 by Jacques Bardet of Grenoble in France, mica paper now exists as one of the real growth areas for the mineral. It is produced by heating scrap mica particles to a particular temperature and then dipping them into a saturated alkali which cools and exfoliates the flakes into thin laminae.

These are then softened, washed with aqua regia and pulped by either thermal or high velocity water treatment before being discharged to paper making machines which produce a continuous sheet of mica paper. The product is then dewatered by suction boxes and gravity draining and passed to drum dryers prior to rolling the finished article into cores.

In market terms, mica paper has firmly established itself as a strong competitor in both natural sheet mica and micanite insulation products. In fact, such is the versatility and cost effectiveness of the material, it has demonstrated major territorial gains on the natural sheet and micanite markets in recent years, capturing at least 40% of the latters business.

Mica paper maintains a more physically-based superiority, which originates out of its consistency of thickness, uniformity of properties and homogeneity.

Further evaluation of the mica resource within our licenses is ongoing with the end view of the potential to produce a mica paper.