NORTH FLINDERS MINES LTD / ROEBUCK RESOURCES N.L.

TENNANT CREEK JOINT VENTURE

RELINQUISHMENT REPORT ON NOBLES SOUTH

E.L. 7410.

FOR PERIOD 12 MONTHS TO - 15 SEPTEMBER 1993

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NORTH FLINDERS EXPLORATION
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Report No. RH: MIH 136
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1. INTRODUCTION

This report was prepared by North Flinders Exploration for the N.T. Department of Mines and Energy and documents exploration carried out on the relinquished blocks of the Nobles South Exploration Licence 7410 in the year to 15th August 1993. During this period the following work programme was carried out.

* Bedrock rockchip and geological mapping programme
* 21 sample "M" surface geochemical survey.

The Nobles South E.L. 7410 is located 10 Kms ESE of Tennant Creek (Fig. 1). Access is via the Nobles Nob Road and a number of old mine tracks and drill site access roads.

The area is inaccessible in the "wet" season and the prolonged 1992/1993 wet meant fieldwork was delayed until April.

This report is based on the field work of Roe Buck Resources N.L. geologists Keith Fox, Sam Warne and Peter Allchurch and NFM geologists Andrew Cooper, Bruce Taylor, R. Halfpenny, and M. Hatcher.

The Nobles South Licence is one of a number of Tennant Creek Prospects that are subject to a farm-in agreement dated the 16th April 1991 between North Flinders Mines Ltd and Roe Buck Resources N.L. NFM took over management of the Joint venture from the 1st Jan 1993.

2. TENEMENT DETAILS

The Nobles South Group consists of three Exploration Licences 7410 (Nobles South) 7650 (Juno East) and 7793 (Plum South) the details of which are summerised in table 1. below.

| TABLE 1 |
| NOBLES SOUTH Exploration Licences |

<table>
<thead>
<tr>
<th>E.L.</th>
<th>Granted</th>
<th>Expire</th>
<th>Blocks</th>
<th>Covenanted</th>
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<tr>
<td>7410</td>
<td>16/09/91</td>
<td>15/09/97</td>
<td>15</td>
<td>$ 22,000</td>
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<tr>
<td>7650</td>
<td>28/02/92</td>
<td>27/02/94</td>
<td>1</td>
<td>$ 7,000</td>
</tr>
<tr>
<td>7793</td>
<td>13/08/92</td>
<td>12/08/97</td>
<td>4</td>
<td>$12,000</td>
</tr>
</tbody>
</table>

E.L. 7410 was reduced from 15 to 8 gratricular blocks at the second anniversary of the tenement. The location of the relinquished blocks are shown in figure 2.
3. **HISTORY AND PREVIOUS WORK**

3.1 **Mining History**

Exploration Licence 7410 is located south of two of the Tennant Creek Districts highest grade and most profitable mines, Juno and Nobles Nob.

**JUNO**

The mine reportedly produced 455,000 tonnes @ 57.37 g/t Au 0.5% Bi 0.33% Cu from two mineralised zones within a single elliptical shaped ironstone. The No2 orebody was located from approximately 180m to 230m from the surface, it was up to 30m wide and approximately 30m long.

The deposit had no surface expression and was discovered when drilling a dipole magnetic anomaly. Associated with the mineralised ironstone were significant chlorite - magnetite, talc and dolomite alteration zones.

**NOBLES NOB**

In contrast to Juno, Nobles Nob orebodies were shallow from 15m-80m, that is in the oxidised zone, had no magnetic signature, and were related to outcropping quartz-hematite ironstones. The main orebody, the western lense was 46 m. long, 26m. wide and 85m. deep.

The mine produced 1.99m tonnes at 17.3 g/t Au over a 36 year production history.

3.2 **Previous Exploration**

Within E.L. 7410 there are two groups of mineral leases that cover Geopeko’s Explorer 33 and 34 magnetic targets. Exploration has been directed at these targets, but no record of exploration of the relinquished blocks has been found.
4. **EXPLORATION PROGRAMME 12 MONTHS TO AUGUST 1993.**

4.1 Survey

A Magellan NAV1000 GPS unit was used for locating ground positions to within an estimated 30m. radius and no grid was surveyed as part of the current exploration programme. All rockchip samples and "M" sample surveys were located with the Magellan GPS.

4.2 Geological Mapping and Rock Chip Geochemistry

Within the northeastern part of Nobles South EL7410 (AMG 7817988N, 433 221E) highly sheared quartz + hematite ironstone is associated with a 1km elongate east-west trending ridge of high magnetics. A number of expired leases were located over the area and there was evidence of an old grid. Interpretation of the regional 1:25 000 aeromagnetics indicates the ridge is part of a line of high magnetics located south of Nobles Nob. Structural interpretation of the magnetics in the Juno-Nobles Nob area suggests the ridge may be the eastern extension of the Eldorado-Juno line of lode which has been offset 2.5km south by dextral faulting. For this reason the area in the eastern part of the EL including a portion of the relinquished blocks was considered prospective.

The sample locations and assay results of rockchip samples from the relinquished blocks is shown in Figure 3. The outcrop consists of sheared clear quartz + hematite ironstone developed along the northern margin of outcropping porphyry, with sediments bounding the lode to the north. The ironstone has a maximum width of 5m and strikes east-west and outcrops discontinuously over a strike of 400-500m. Quartz within the ironstone is clear and fine grained, with a saccaroidal texture indicative of high temperature porphyry type veins. Rare aggregates of weathered ?talc also occur. In close proximity and north of the ironstone, two milky east-west trending quartz veins outcrop. The veins have a colour and texture similar to late stage quartz infilling along major faults in the Tennant Creek area (eg Navigator Fault). This implies a fault, possibly with a long history of activity in the area.

The rockchip results were disappointing, with high values of 3ppb Au, 10ppm Cu and <1ppm Bi. Several hundred metres west along strike a north angled RC percussion drillcollar was located. Preliminary examination indicates the hole is collared in front of the zone of interest and consequently the zone has not been adequately drill tested.

4.3 "M" Sampling

Following an orientation survey in 1992, Roebuck Resources adopted "M" sampling, a proprietary surface geochemical technique developed by Consultant Geochemist Dr. N. Marshall for arid environments as their first pass exploration tool. Like all geochemical tools especially innovative methods there have been some unexplained results from the method and further research and evaluation is required.

In October 1992 Roebuck Resources conducted an "M" sampling programme within the west of E.L. 7410. A total of 222 samples were collected from a 20 sqm area with samples collected on a 300 x 300 m. grid. A total of 21 samples were collected from the relinquished SW block of E.L. 7410. (fig 4.)

Several of the gold assays are greater than 20ppb Au and are considered anomalous. Copper, bismuth and arsenic values for this type of sample were not considered anomalous.
5. CONCLUSIONS and RECOMMENDATIONS

The results of the "M" sampling in the SW of E.L.7410 and rockchip sampling in the east did not indicate any obvious targets for future exploration.

6. REFERENCES


FIGURE 1 LOCALITY PLAN

- WARREGO
- NIRVANA
- MARSANNE
- WHITE DEVIL
- DARK KNIGHT

- SEMILLON
- ORLANDO
- 'THE SMELTER'
- GECKO

- IVANHOE
- THREE WAYS
- Barkly Highway

- TENNANT CREEK
- NEW MOON
- METALLIC HILL

- ARGOR
- PEKO
- GOLDEN FORTY
- EL 7650
- JUNO
- COMSTOCK

- TENNANT CREEK
- TC-8

- ALICE SPRINGS
- NOBLES SOUTH GROUP
- NOBLES NOB
- EL 7410
- EL 7453
- EL 7793

Legend:
- Roads
- Mine Location
- Tenement/Prospect Location

0 20
KILOMETRES