NORTH FLINDERS MINES LTD / ROEBUCK RESOURCES N.L.
TENNANT CREEK JOINT VENTURE

REPORT ON CRUSAIDER GROUP
RELINQUISHMENT REPORT E.L.7431
BLACK ANGEL

FOR PERIOD TO SEPTEMBER 1993

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NORTH FLINDERS EXPLORATION
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1. **INTRODUCTION**

The Crusader Group is located approximately 40 kms north-west of Tennant Creek and 6 kms SW of the Warrego Mine (Fig. 1). Access is via the sealed Warrego Road and the access road to the N.T. Gas Pipeline. There are a number of bush tracks, which traverse the area, but access is restricted to the dry season. This report is based on the field work of Roebuck Resources N.L. geologists Keith Fox, Sam Warne and Peter Allchurch.

The report was prepared by North Flinders Exploration and it documents exploration carried out on the relinquished blocks of E.L. 7431 in the period to September 1993. The Crusader Group is one of a number of Tennant Creek Prospects that are the subject of a farmin agreement dated the 16th April 1991 between North Flinders Mines Ltd and Roebuck Resources N.L. Roebuck Resources N.L. managed the Joint Venture to Jan 1993, when NFM took over management.

During the reporting period a work programme involving "M" sampling of the eastern portion of the relinquished block was undertaken and geological mapping of suboutcrop in the SW of the relinquished blocks.

2. **TENEMENT DETAILS**

Exploration Licence 7431 (Black Angel) was granted on the 9th of August 1991 and on the second anniversary it was reduced from four graticular blocks to two.

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<th>Tenement</th>
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<td>01/08/95</td>
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3. **HISTORY AND PREVIOUS WORK**

3.1. **Mining History**

There are no significant workings on the relinquished blocks, but they are located 4 - 5 kms along strike east of White Devil Mine (fig 2.) which in recent times was the lowest cost of production gold mine in Australia. The initial gold discovery was associated with E - W trending vertically inclined lenticular ironstone bodies from 0.5 - 25 m wide and 10 - 400 m. in length. To the east of the ironstone lode was lower grade gold mineralization within a chlorite - magnetite stringer alteration zone.
3.2. Previous Exploration

Previous exploration in the Crusader Area has focused on magnetic anomalies with a number of dipole anomalies, for example Navigator 3, 4, 7, 8, 9, 10 and 11 and Explorer 173, 174 and 176 being evaluated by Geopeko and M1, M2 and M9 being explored by Metana. No record of exploration of the relinquished block was found.

4. EXPLORATION PROGRAMME 12 MONTHS to Sept. 1993

4.1 Survey

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

4.2 Geological Mapping and Rock Chip Geochemistry

Preliminary field reconnaissance in the region showed that outcrop was restricted to a south southwest of the relinquished blocks. (fig 3.) Suboutcrop consisted of silicified sediments, in places jasperoidal with broadly distributed laterite. Cleavage within the sediments is generally east west. From an examination of the aeromagnetics it is possible to interpret an embayment of granite (Red Bluff Granite) in the sediments. There is NNE trending white quartz veining on the common boundary of the two graticular blocks.

4.3 "M" Sample Geochemistry

Following an orientation survey, 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. A total of 84 "M" samples were collected on 300 x 300m. centres in the reporting period from the east portion of the relinquished block. (fig 3.) Gold values ranged from 1-48 ppb, Bi from <1 - 8 ppm, Cu from < 5 to 42 ppm, and arsenic from < 5-35 ppm. The "anomalous" gold values 23 and 48 ppb are not associated with corresponding high bismuth.
5. CONCLUSIONS and RECOMMENDATIONS

The results of the "M" sampling of the relinquished blocks of E.L. 7431 were not sufficiently encouraging to warrant further exploration and the blocks were relinquished.