NORTH FLINDERS MINES LTD - ROEBUCK RESOURCES NL

TENNANT CREEK JOINT VENTURE

FINAL RELINQUISHMENT REPORT

THREE WAYS EL7276

FOR PERIOD TO 20th FEBRUARY, 1994

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SUMMARY

This report contains a detailed account of exploration undertaken by both Roebuck Resources N.L. and North Flinders Exploration on behalf the Tennant Creek Joint Venture between the two companies.

EL7276 Three Ways comprising three graticular blocks was granted on 20th February 1991 for a period of three years.

During this period the exploration programme comprised acquisition and interpretation of 1:25 000 scale aeromagnetics, 300m x 300m 'M' sampling programme, and mapping and rockchipping in the vicinity of the Explorer 12 aeromagnetic anomaly.

Results were disappointing and the ground has been relinquished.
LIST OF FIGURES

FIGURE 1. Locality Plan

FIGURE 2. Geology of the Tennant Creek Goldfield

FIGURE 3. EL7276 Three Ways Regional Aeromagnetics

FIGURE 4. Three Ways Group, EL7276 - Three Ways, Contoured Surface 'M' sample analyses

FIGURE 5. Three Ways - Explorer 12 Bedrock Geology Sketch
1 INTRODUCTION

This report is the final relinquishment report for EL7276 Three Ways and contains details of all exploration undertaken for Au-Cu-Bi mineralisation on the tenement by the North Flinders Mines/Roebuck Resources joint venture since February 1991.

The joint venture between the above parties was signed in April 1991 with NFM sole contributing $1.2M towards exploration (and Roebuck exploration managers), to earn a 60% participating interest in the regional joint venture tenements. NFM assumed management of ongoing exploration in the joint venture in January 1993.

The report is a compilation of work by a number of geologists, namely Keith Fox, Sam Warne, Peter Allichurch (RoR), Mike Hatcher, Bruce Taylor, Andrew Cooper and Rohan Halfpenny (NFE).

2 LOCATION AND ACCESS

Three Ways EL7276 is located immediately south of Three Ways Roadhouse and straddles the Tennant Creek-Darwin Stuart Highway (Figure 1).

Access to the licence is north 25km along the highway from Tennant Creek.

3 TENEMENT DETAILS

Three Ways EL7276 was granted on the 21st February 1991 for a period of three years (expiry date 20/2/94). The licence comprised three (3) graticular blocks located side by side between longitudes 134°11' and 134°14' and latitudes 19°26' and 19°27'.

In the central graticular block an area of 800m x 800m is excluded as MR174 covering the Three Ways Roadhouse.

4 REGIONAL SETTING

EL7276 is broadly located in the centre of the Tennant Creek Inlier as defined by Le Messurier & others (1990). The regional geology (Figure 2) consists of early Proterozoic Warramunga Group sediments (siltstone to greywacke) folded about east-west trending open to tight macroscopic folds with a pervasive axial plane slaty cleavage. Intruding the sediments are large, generally elongate east-west early Proterozoic granitic rocks which have been generally dated at 1850Ma (Figure 2). Granite does outcrop in the Tennant Creek area, but is generally overlain by a varying thickness of Warramunga Group sediments. The thickest part of the sediment pile is interpreted to occur north of the Warrego Mine, in an area characterised by a high aeromagnetic response.
In the general area of EL7276 outcrop is poor, and restricted to the eastern part of the licence, but combined with a study of the 1:25 000 scale regional aeromagnetics, the regional geology is interpreted as Warramunga Group sediments, underlain at relatively shallow depths by granite formed along the northern margin of the Tennant Creek Granite Complex.

5 PREVIOUS EXPLORATION

EL7276 contains the Explorer 12 dipole magnetic anomaly which is located 600m south of Three Ways Roadhouse, east adjacent to the Stuart Highway. This magnetic anomaly was initially targeted by Geopeko (EL214 report 73/197) who ran a ground magnetic survey over the area to accurately locate the aeromagnetic anomaly prior to testing with a diamond drillhole. The hole was collared in and terminated in quartz-feldspar porphyry.

6 EXPLORATION PROGRAMME

6.1 Survey

A magellan Nav1000 GPS unit was used to locate positions in the field and no gridding was undertaken during the course of the exploration programme.

6.2 Aeromagnetic Survey

During 1992 the multiclient Aerodata 1:25 000 scale aeromagnetic and radiometric data was obtained. Processing by Geophysical Exploration Consultants Pty Ltd (Melbourne) resulted in the digital datafiles being reformatted and grided and contoured plots at 1:100 000 and 1:25 000 scale produced. A plan of the aeromagnetics is shown in Figure 3.

6.3 'M' Sampling

A large portion of the Tennant Creek Goldfield is soil covered and after a comprehensive analysis of previous surface sampling geochemical techniques used in the Tennant Creek area, Roebuck Resources introduced a new sampling technique - 'M' sampling. Specific details pertaining to the collection and analysis of 'M' samples remain confidential to Nick Marshall, the proprietor, and the Roebuck Resources exploration team.

On EL7276 a total of 126 'M' samples were collected on a GPs positioned grid spacing of 300m x 300m covering an area of 11.34km². The results are shown in Figure 4.

The results show:

1. gold values in the ferruginous 'M' samples ranged from less than 1ppb (detection limit) to a maximum of 2.57ppb and a standard deviation of 3.05ppb,

2. bismuth had a range of values from <1ppm to 6ppm, a mean of 1.23ppm and a standard deviation of 1.23ppm,
3. copper values had a mean of 10.9ppm and a standard deviation of 9.6ppm over a range of .1 to 68ppm, and

4. arsenic values ranged from <10ppm to 60ppm with a mean of 19.5ppm and a standard deviation of 9.8ppm.

The 'M' sampling survey delineated an east northeast trending gold, copper and bismuth anomaly extending from the Three Ways Roadhouse to the northeast corner of EL7276. The anomaly is associated with peak gold values of 17 and 24ppb.

6.4 Explorer 12

In the vicinity of this magnetic dipole, several hundred metres east of the Stuart Highway, a low rounded hill contains a number of quartz + hematite ironstone lodes. A sketch of the bedrock geology and the location and results of a number of rockchips are shown in Figure 5.

The geology consists of a host sequence of poor to moderate outcropping Warramunga Group siltstone and greywacke with an east-west trending steeply north dipping foliation (probably slaty cleavage). The ironstone lodes trend east-west parallel to the foliation and also north northeast. This latter orientation is moderately well defined, probably reflecting brittle dilatant structures. The ironstones vary in composition from quartz +/- hematite +/- jasper and may exhibit a crude layering of these minerals (cf. wrigglite - skam). Adjacent to the lode, sediment is silicified.

Rockchipping returned disappointing results with a high of 19ppb gold obtained from quartz wrigglite.

6.5 Lease Application

It was initially decided to peg two leases; an eastern lease over the Explorer 12 magnetic anomaly and a further lease to cover a continuation of the magnetic anomaly to the west. The eastern lease was not granted (as it was pegged over aboriginal land) and the western lease application (800m x 500m) is being processed.
7 REFERENCES


Fig. 2: Geology of the Tennant Creek Goldfield (after Fox, 1990)
NFM–Roebuck Resources JV
THREEEWAY – EXPLORER 12
Bedrock Geology Sketch

LEGEND

Composite rockchip sample number and location
Note: Number prefixed by 332

Strike and dip of slaty cleavage
Extent of outcrop

ROCKCHIP RESULTS

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<th>Sample No</th>
<th>Au (ppb)</th>
<th>Cu (ppm)</th>
<th>Bi (ppm)</th>
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N.F. M. 1:500

Telegraph Pole
AMG 417 197E
7849 574N

Q ± hem ± jasper
Festone, bx

Q ± hem ± jasper
Festone

Foliated slst/greywacke,
bx in part

Q + mnr hem Festone
Band colored greywacke
Silicified slst/greywacke

206

203
Q wriggite;
mnr hem

201
Q ± hem ± jasper
Festone

202

204

205

1:500

metres