FINAL REPORT FOR
SUBSTITUTE EXPLORATION LICENCE 9670
DE MONCHAUX CREEK
NORTHERN TERRITORY
10.12.96 TO 31.05.99

Project Names: DE MONCHAUX CREEK/MANTON DAM/ACACIA

Map Sheets: DARWIN SD 52-04 1:250,000

Commodities: GOLD, LEAD, ZINC

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SUMMARY AND CONCLUSIONS

During the first year of tenure exploration activities focused on compiling previous data and reviewing the considerable amount of work done in the past. Data from past auger and RAB drilling programmes was combined and plans showing the metal distributions were prepared. Diamond holes DMCK1 to 3 were summary logged to determine if similarities existed between De Monchaux Creek and Woodcutters mineralisation.

During the second year of tenure the data was again reviewed and it was concluded that the western portion of the licence area had potential.

With the closure of Woodcutters Mine all exploration has stopped and the licence relinquished.
1. INTRODUCTION

1.1 LOCATION AND ACCESS

Substitute Exploration Licence 9670 is located approximately 65km south of Darwin along the Stuart Highway (Figure 1) and 8km north-north east of the Woodcutters deposit.

1.2 CLIMATE

The northern half of the Northern Territory is subject to heavy seasonal rains between November and April. During this period access to the licence would be possible along the Stuart Highway, however, movement along the dirt roads within the licence would be highly restricted, if not impossible. Following the Wet period long grass (1-2m) covers most of the land surface and is an encumbrance to exploration activities.

1.3 TOPOGRAPHY

The topography within SEL 9670 consists of gentle hills dominated by the north-south trending Daly Range. The range, which runs through the centre of the licence, has an elevation of approximately 60m. The area is drained by a system of well-incised creeks which typically flow east to northeast before joining with the north flowing Adelaide River.

1.4 TENURE

Substitute Exploration Licence 9670 was granted to Nicron Resources (now Normandy Woodcutters Limited) for a period of four years from 10 December 1996. The licence was granted to replace Exploration Licences 9118, 7553, 7845, 9363 and 8154 (see figure 2).

2. PREVIOUS EXPLORATION

Modern exploration began in 1974 when Magnum Exploration NL was granted EL 739. Magnum conducted a review of the BMR data collected as part of a regional search for base metals.

In 1976 Amax Exploration entered into a joint venture with Magnum and undertook geological mapping, geochemical sampling and an airborne radiometric and magnetic survey (Gellatly 1977). The geochemical work conducted by Amax included rock chip and stream sediment sampling (-120 and +16 mesh fractions). The samples were analysed for Cu, Pb, Zn, Ni, Co, Mn and U. Some Ag analyses were also performed. The geochemical sampling programme delineated two lead anomalies identified as L1 and L2. Further work, including detailed rock chip sampling, stream sediment sampling and auger drilling further defined the L1 anomaly. An attempt to RC drill the L1 anomaly was abandoned in brecciated and cavernous ground. EL 739 was relinquished after additional work on the radiometric anomalies failed to locate significant uranium mineralisation (Wyatt and Braham 1977).
Uranerz Australia Pty Ltd acquired EL 2256, the area of which is now part of SEL 9670. Uranerz explored the area for uranium utilising regional geological mapping and wide spaced RAB soil geochemistry. Their work failed to generate any uranium anomalies, however a few of the lead anomalies generated were followed up with detailed RAB sampling. Uranerz considered the results to be discouraging and the EL was relinquished in 1983 (Conrads et. al. 1982).

Burmine Ltd (Carter and Robinson 1990), carried out gold and base metal exploration over most of the area now in SEL 9670. Burmine's work consisted of a 80 mesh and bulk-leach-extractable gold (BLEG) stream sediment sampling survey and minor rock chip sampling. A gold anomaly was outlined in the De Monchaux Creek but subsequent work failed to find the source of the anomalism. Burmine relinquished their licence in 1991.

In 1992 Aztec Mining Company Ltd was granted EL's 7845 and 7553 which have now been included in SEL 9670. Work undertaken by Aztec, Nicron and Nonnandy Woodcutters Limited since 1992 includes RAB drilling, stream sediment sampling, diamond drilling, geological and geophysical interpretation and a gravity survey. The majority of this work was conducted on the Amax, L1 geochemical anomaly. The anomaly was defined at surface by rock chip sampling of gossanous quartz veins which returned maximum assays of 71.0 g/t gold, 1550 ppm Cu, 9100 ppm Pb and 1.1 % As.

A review of previous exploration work by consultants Exploremin Pty Ltd in 1997 concluded the following:

- The lithological package drilled at the De Monchaux prospect is completely different to that hosting the Woodcutters (L5), L1 and L2 mineralisation.
- The pyrite-arsenopyrite at De Monchaux appears to be stratabound replacement mineralisation with little to no lead-zinc base metal mineralisation.
- There are only limited similarities between the mineralisation at De Monchaux and that in the CO position in the Woodcutters stratigraphy.
- The identification of a few, possibly, bedding parallel structures, does not allow a reinterpretation of the De Monchaux area into a model similar to that currently being defined for the Woodcutters orebody.

3. GEOLOGY

3.1 REGIONAL GEOLOGY

Substitute Exploration Licence 9670 area lies within the Rum Jungle area of the Lower Proterozoic, Pine Creek Geosyncline. This major depositional basin covers approximately 40,000 square kilometres and extends from Katherine in the south to north of Darwin in the northwest and beyond Jabiru in the northeast. The regional geology of the area was mapped at 1:250,000 and described in detail by Walpole et al (1968) and redescribed by Needham et al (1980). In Table 1 the overall stratigraphy of the Katherine-Darwin region is outlined while Table 2 displays the early
Proterozoic stratigraphy of the Rum Jungle portion of the Pine Creek Geosyncline.

Nicholson and Eupene (1984) provide the following summary of the geological history of the Pine Creek Geosyncline (p.378).

"At about 2400 to 2100m.y., arkoses, pelites, carbonates and iron formation of the Kakadu Group and Cahill Formation, outer Nanambu Complex, Fish Creek schists, parts of the Litchfield Complex and perhaps the outer Rum Jungle and Waterhouse Complexes were deposited on crystalline Archaean basement. Amphibolite facies regional metamorphism and deformation followed at approximately 21 00 to 2000 m.y. Following erosion of these rocks, Early Proterozoic sedimentation continued with, in order of decreasing age:

1. Arkose, conglomerate and dolomite (Batchelor Group);

2. Carbonaceous mudstone with lesser interbedded limestone, greywacke and basalt (Namaona Group);

3. Various clastic, mainlyfluvialite, sediments (Mount Partridge Group);

4. A heterogenous sequence of mudstone, turbidites, iron formation, limestone and volcanics (South Alligator Group); and

5. A flyschoid sequence in which greywacke and shale predominate (Finniss River Group).

The Zamu dolerite was intruded into this sequence prior to greenschist facies metamorphism and the major phase of deformation. The metamorphism is dated at about 1800 m.y. Widespread granite intrusion with associated broad refolding occurred around 1760 m.y. This concluded the development of the Pine Creek Geosyncline. Possibly in the dying stages of granite intrusion, felsic volcanics, volcaniclastics and sediments of the El Sherana and Edith River groups were deposited in fault controlled depressions in the metamorphic terrain (Stuart-Smith et al., 1984).

Sandstones of the Katherine River and Tolmer Groups were unconformably deposited on the Early Proterozoic rocks and have remained essentially undisturbed (along with younger rocks) to the present.

3.2 PROSPECT GEOLOGY

The eastern relinquished portion of the licence covers part of a north northwest trending regional anticline. Exposed fold limbs consist of Wildman Formation lithologies, dominated by resistive outcrops of Acacia Gap Quartzite. Aeromagnetics shows that the hinge zone region contains weakly magnetic rocks typical of the Wildman Formation (figure 3). It also shows a prominent set of northeast trending breaks which may be fault
related. The host rocks to gold mineralisation at the De Monchaux prospect are reported as dolomitic grey shales, probably from the top of the Whites Formation or the base of the Wildman Formation.

The western retained portion of SEL9670 contains limited areas of outcropping Whites Formation and Coomalie Dolomite, and more extensive outcrops of Acacia Gap Quartzite. Aeromagnetics suggests that the eastern portion of the retained area covers moderately magnetic Wildman Formation lithologies forming the eastern limb of the Woodcutters Anticline (figure 3).

Major faults are present within the retained area. The most dominant fault is the northeasterly Giants Reef Fault which has an apparent dextral displacement of stratigraphy of approximately 7 kilometres. The northern part of the retained licence area is inferred to contain the continuation of the Woodcutters Fault which is displaced to the northeast by the Giants Reef Fault. Base metal mineralisation is present along this faulted part of the fault at the Acacia South and Manton prospects.

4. WORK CARRIED OUT WITHIN SEL 9670

4.1 EL9363

- RAB drilling. 145 holes were drilled and samples assayed for Au, Cu, Pb, Zn, Ni, and Mn. Assay results were low for Au with a single isolated anomaly of 77 ppb. Base metal values were also insignificant.


4.2 EL7553

4.2.1 Year One

- Stream sediment sampling. 98 – 40 mesh samples and 10 BLEG samples were collected from all drainages within the licence. Only background values were obtained.
- Bedrock RAB drilling. 207 bottom hole samples were analysed and elevated Pb (max 470 ppm), Zn (max 1440 ppm), As (max 420 ppm) and Au (max 0.09 g/t) were obtained.
- Rock chip sampling to follow up the RAB anomaly found spotty high grade Au (71.0 g/t max) with associated anomalous base metals (Cu 1550 ppm max, and Pb 9100 ppm max)
- Costeaming. 4 costeans were excavated over the RAB/rock chip anomaly. Channel sampling located mineralised zones with anomalous Au (4m @ 14.8 g/t max) which often had associated but not necessarily coincident elevated Pb and As. Cu and Zn was background only.
- RC drilling (total 316m) confirmed spotty high grade Au (6m @ 7.8 g/t including 1m @ 34.1 g/t max) with elevated but not always coincident Pb and As.

For details refer to Butler 1992 (CR 24214)

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4.2.2 Year Two

- Diamond drilling. 3 holes were drilled on the Amax L1 anomaly to evaluate the Au and base metal mineralisation at depth and to obtain structural and stratigraphic information. Results were disappointing with the most significant intersection being:
  
  DMCD1 173-177m @ 1.25 g/t

- A gravity survey conducted to aid the geological interpretation found a distinct gravity low over the De Monchaux Creek prospect.

- Gold analyses. RAB samples from Year One were reanalysed using a low detection limit fire assay. Two main areas of anomalous Au (>10 ppb) were highlighted.

For details refer to Ormsby, W.R., 1994 (CR 24084)

4.2.3 Year Three

- RAB drilling. 88 holes were drilled to follow up previously identified anomalies. Values for all elements assayed (Au, Cu, Pb, Zn, Ni, Co, As) were background or only slightly elevated.

- RC drilling on the De Monchaux North anomaly. 5 holes were drilled for 282m on a section line across the anomaly but recorded a maximum Au value of only 0.64 g/t over 2m

- RC infill drilling on the De Monchaux anomaly. 7 holes totalling 294m recorded only one interval greater than 1 g/t Au (DCRC12 2m @ 4.57 g/t from 38m).

- Soil sampling. 110 –40 mesh samples defined a strong Au anomaly (>100 ppb Au) 50-100m wide over a 300 m length.

- Rock chip sampling confirmed the soil sampling results.

- Petrology. A petrological analysis of 13 core samples determined that the highest Au values occurred in tourmalinites.

Details can be found in Butler, I.K., 1995 (CR 15120)

Butler, I.K., 1992. Annual Report for Year One, Exploration Licence 7553, De Monchaux Creek Area, NT, 16/12/91 to 15/12/92. CR 24214


Butler, I.K., 1995. Annual Report for Year Two Exploration Licence 7845 and Year Three Exploration Licence 7553, De Monchaux Creek Area, Northern Territory, 17.12.93 -16.12.94. CR 15120

Butler, I.K., 1996. Annual Report for Year Three Exploration licence 7845 and Year Four Exploration Licence 7553, De Monchaux Creek Area, Northern Territory, 17.12.94 16.12.95. CR 20220


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4.3 EL7845

4.3.1 Year One

• RAB drilling. 181 holes were drilled to follow up anomalous base metal results obtained by Uranerz. Bottom hole samples were collected and assayed for Cu, Pb, Zn and As with selected samples re-assayed for Au. 2 areas of anomalous Au were detected at the De Monchaux Creek prospect (90 ppb) and the northern portion of the grid (120 ppb). The highest Pb (700 ppm) and Zn (400 ppm) values were obtained from sample 570284 on the De Monchaux Creek anomaly while the highest Cu value (300 ppm) was encountered on the northernmost RAB line.
• Stream sediment samples. 3 BLEG samples and 7 –40 mesh samples were assayed with significant Au (1.42 ppb) only recorded from 1 BLEG sample.
• Diamond drilling (see section 4.2.2 above)
• Gravity survey. (see section 4.2.2 above).

4.3.2 Year Two

• RAB drilling. (see section 4.2.3 above)
• RC drilling. (see section 4.2.3 above)
• Soil and rock chip sampling (see section 4.2.3 above)
• Petrology. (see section 4.2.3 above)

4.3.3 Year Three

• RAB drilling. 33 holes were drilled at the south end of the licence to explore soil covered areas to the south of the De Monchaux anomaly. Bottom hole samples were analysed for Au, Cu, Pb, Zn, Ni, Co, As, Mn, and Fe but all samples returned only background or only slightly elevated values.
For details see Butler, I.K., 1996 (CR 20264)


Butler, I.K., 1995. Annual Report for Year Two Exploration licence 7845 and Year Three Exploration Licence 7553, De Monchaux Creek Area, Northern Territory, 17.12.93 -16.12.94. CR 15120

Butler, I.K., 1996. Annual Report for Year Three Exploration licence 7845 and Year Four Exploration Licence 7553, De Monchaux Creek Area, Northern Territory, 17.12.94 16.12.95. CR 20220


4.4 EL 8154

4.4.1 Year One

- Soil sampling. 185 samples were collected to the southwest of the known Au occurrence. Results indicated that the highly anomalous values reported by Burmine are due to surface enrichment.
- Geological mapping.
- Costeaneing. 7 costeans were excavated but sampling revealed no economic Au mineralisation.
- Rock chip sampling. A small sampling programme found only low level anomalous Au (0.10 g/t) in a pyritic conglomerate southwest of the main Au occurrence.

For details see Scriven, 1994 (CR 13524)

4.4.2 Year Two

- Vacuum drilling. Bottom of hole bedrock samples were assayed for Au, Cu, Pb, Zn, As, Mn, Co, Ni, and Fe. Results for Au were poor with only 5 samples returning assays greater than or equal to 10 ppb. Base metal values were also insignificant.

For details see Berthelsen, 1995 (CR 19939)

4.4.3 Year Three

- RAB drilling. 100 holes were drilled for 700m on east-west lines spaced 400m apart and at 100m centres. Au assays were low with a single isolated anomaly of 77 ppb. Base metal values were also insignificant.

For details see Williams, 1996 (CR 20896)


Berthelsen, R.R., 1995. Annual Report for Exploration Licence 8154, Year Two, Acacia Area, 01/09/94 31/08/95. CR 19939

Williams, K.A., 1996. Annual Report for Exploration Licence 8154, Year Three, Acacia Area, 01/09/95 - 31/08/96. CR 20896

4.5 EL 9118

4.5.1 Years One and Two

- BLEG sampling. 14 soil and stream sediment samples returned disappointing values ranging from 0.15 – 0.85 ppb. Cu and Ag values were also subdued.

Williams, K.A., 1996. Annual Report for Exploration Licence 9118, Heathers Lagoon Area, 23/06/95 22/06/96. CR 20722


5. REFERENCES

Berthelsen, R.R., 1995. Annual Report for Year Two, Exploration Licence 8154, Acacia Tree, Northern Territory, 01.09.94 to 31.08.95. Normandy Woodcutters Limited unpublished report.


Carter, D.N., 1989. Exploration Licence 5648 Daly Range, Northern Territory. Annual Report for the period 29.06.88 to 28.06.89. CR90/5 79.


Williams, K.A., 1996. Annual Report for Year Three, Exploration Licence 8154, Manton Dam Area, Northern Territory, 01.09.95 to 31.08.96. Nicron Resources Ltd unpublished report.


Williams, K.A., 1996. Annual Report for Year One, Exploration Licence 9118, Heathers Lagoon Area, Northern Territory, 23.06.95 to 22.06.96. Nicron Resources Ltd unpublished report.


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