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EXPLORATION LICENCE NO. 4650 "CHILLING CREEK" N.T.
REPORT ON AREA RELINQUISHED AT END OF FIFTH YEAR
(AUGUST 21ST, 1989)

1. INTRODUCTION AND SUMMARY

EL4650 is located 200km south of Darwin, N.T., and originally spanned the northern common boundary of the Fergusson River and Port Keats 1:250 000 scale map sheets, in the Wingate Mountains region. The local geology consists of various units of the Lower Proterozoic Pine Creek Geosyncline.

This report describes the work done by Carpentaria Exploration Company Pty Ltd on the area relinquished from EL4650 at the end of the fifth year of the Licence. The work consisted mainly of searching for gold by helicopter-borne stream sediment sampling, and following up anomalies by later helicopter visits, or by vehicle if the terrain permitted.

In the course of this work, the Bubbles Prospect was found. This is a long but apparently narrow and intermittent quartz-sulphide vein in the southern part of the recently relinquished area, hosted in the Chilling Sandstone. Rock samples assaying up to 10.2 g/t Au were obtained here, but investigations showed that the vein is not likely to approach economic size, and in any case further exploration or mining would be extremely expensive in this inaccessible and deeply dissected sandstone plateau terrain.
2. LOCATION AND ACCESS

EL4650 lies 200km south of Darwin in the Daly River region of the Northern Territory, in the southern part of the "Elizabeth Downs" pastoral lease. The original extent of the EL covered parts of the Hoyle and Wingate Mountains 1:100 000 scale map areas, which are respectively within the Port Keats and Ferguson River 1:250 000 scale map areas. Terry's Prospect, in the centre of the western retained portion of EL4650, can be reached in under four hours drive from Darwin. Most of the Licence area is trackless and the few existing tracks become impassable during the annual wet season. The southern sandstone areas of the Wingate Mountains are inaccessible to 4WD vehicles and are best reached by helicopter or on foot.

3. TENURE

EL4650 originally covered 1124 km² (349 blocks). The Licence was applied for on May 14th, 1984, and granted on August 22nd that year for a term of six years, to Mount Isa Mines Limited. The title was later transferred to Carpentaria Gold Pty Ltd, a sister company.

The annual expenditure commitments were set at $15 000 for the first year, $110 000 for the second year, $55 000 for the third year, $35 000 for the fourth year and $25 000 for the fifth year.

The Licence was successively reduced to 173 blocks at the end of the second year, 86 blocks at the end of the third year, 43 blocks at the end of the fourth year, and 22 blocks at the end of the fifth year.

The successive reductions and the area retained for the sixth (current) year are shown on Drawing No.1/6598.

Within the retained area of EL4650, four mineral claims (MCN2588 to MCN2591) were pegged over the Terry's Prospect gold occurrence.

4. GEOLOGY

EL4650 is situated in the southwestern part of the exposed Pine Creek Geosyncline. The reader is referred to the above BMR map and to the published 1:250 000 and 1:100 000 scale maps of the area for full descriptions. The most recent publication is the NTGS Explanatory Notes on the Wingate Mountains 1:100 000 scale geology map 5069, published in 1989.
5. **PREVIOUS EXPLORATION**

No other companies appear to have searched specifically for gold within EL4650, though it is assumed that the surroundings of the Fletcher's Gully Mine, near the eastern block of EL4650, would have been prospected at various times.

Planet Management and Research Pty Ltd investigated a low order nickel-copper anomaly in the Wangi Basics west of Terry's Prospect in the late sixties, under A to P 2343.

Suttons Motors Pty Ltd, the former pastoral lease holder, was involved in mineral exploration joint venture agreements in the region with several companies in the late seventies and early eighties. Included among those are Mobil Energy Minerals Australia Inc. for uranium and base metals (EL's 1597 and 1965), Gem Exploration and Minerals Limited (Gemex) for diamonds, and (briefly) Geopeko for platinum and chromite.

The information from Mobil's detailed minus 200 mesh stream sediment sampling and Gemex's much broader spaced heavy mineral sampling was of great value to Carpentaria Exploration Company.

NTGS open file reports covering the above work are listed in the Reference section of this report.

6. **WORK BY CARPENTARIA EXPLORATION COMPANY PTY LTD**

6.1 Introduction

Carpentaria's work with in EL4650 has been concentrated on the area still retained, mainly on the gold occurrence at Terry's Prospect. This work is described fully in the earlier annual reports on EL4650, and is not discussed in this report.

In the areas of the Licence which have been successively relinquished up until the end of the fifth year, the main work done was an extensive helicopter-borne stream sediment sampling programme. Follow up work was done at various times, either by 4WD vehicle or helicopter, and included taking check stream sediment samples and rock chip sampling. Within the area relinquished on 21/8/89 is the Bubbles Prospect, a minor gold occurrence described in Section 6.3.
6.2 Stream sediment sampling

Following a short orientation survey by helicopter in April 1985, a major helicopter-borne stream sediment sampling programme was carried out over the entire EL, plus adjacent EL's 4693 and 4746, in June, 1985. A third helicopter-supported programme was carried out in September that year to follow up a series of minor anomalies.

A Bell JetRanger helicopter from Rotor Services Pty Ltd of Darwin was used on each occasion.

From the results of the orientation survey, it was decided to take bulk cyanide leach (BCL) samples for gold analysis from the more important creeks together with minus-80 mesh samples at those sites, and to take only minus-80 mesh samples from the smaller sized creeks.

BCL samples totalled approximately 300 for the 1985 surveys, and the minus-80 mesh samples approximately 600. Those samples taken in the recently relinquished portion of EL4650 are shown here on Drawing No. 32593.

The BCL samples were nominally of 5kg weight, but in practice ranged from 4kg to 15kg. These samples were sieved to -6mm, and were taken to represent the "typical" sediments found at the given site, and were not taken from deep holes or other trap sites.

The minus-80 mesh samples were collected in calico bags after being roughly sieved with a kitchen strainer (about 2mm mesh). The sieving out of the minus-80 fraction was done at the laboratory.

Both sets of samples were assayed by Australian Laboratory Services Pty Ltd in Brisbane.

The minus-80 mesh fraction was assayed for Cu, Pb, Zn, Co, Ni, Bi, Cd Cr, Mo, Ag, Fe, and Mn.

Gold results (in parts per billion) and arsenic results (in ppm) are plotted on the maps included with this report. Anomalous values for other elements are also noted, where appropriate.

Several low order gold anomalies occur in the northern part of the area being relinquished. Ground checking of these found minor veins as the possible sources in some cases.
Considerable areas were not sampled by Carpentaria in the course of the helicopter work. Instead, the minus-200 mesh results for arsenic from Mobil's work under EL1965 were relied on as gold indicators, and some of these anomalies were investigated, including the anomaly leading to the Bubbles Prospect.

6.3 Bubbles Prospect

This area is located about 12km SSW from Terry's Prospect, at latitude 14°12'; longitude 130°31'.

Gold mineralization was found here by following up an arsenic stream sediment anomaly defined by Mobil (65 ppm As).

The prospect is named after the author's daughter Mary, whose nickname is "Bubbles".

Drawing No. 32611 shows the distribution and gold assay values of rock samples collected in this area, while the stream sediment geochemistry is given on Drawing No. 32582.

Anomalous gold values occur in outcrops and float rocks along a 1.3km belt in the valley of Bubbles Creek, which parallels the northeast strike of the Chilling Sandstone country rock. Much weaker gold anomalies were also obtained from gossanous creek float a further 2km NE of the main prospect area (max value 0.8 g/t Au, average of ten samples = 0.3 g/t Au).

The Bubbles Creek area, gold occurs with arsenopyrite in a 0.5m quartz vein cutting a basic sill in the Chilling Sandstone, exposed in a small creek bed outcrop. Assays of the vein itself have returned values of 3 and 5 g/t Au, while the basic wall rock is not anomalous. A few hundred metres upstream from this site, quartz vein float samples have assay 10.2, 4.60, 6.0 and 2.85 g/t Au.

Further south at "Overhang Gully" the mineralization takes the form of a number of limonitized sulphide veins ramifying through the sandstone, which shows some sericitisation. The gold values here are mostly less than one gram per tonne. Malachite, arsenopyrite and tourmaline were noted in one narrow (30cm) quartz vein outcrop, which assayed 1.2 and 0.62 g/t AU.

Examination of rock shedding from the sides of the steep Bubbles Creek valley south of "Overhand Gully" indicated no further mineralized material there.
The mineralization appears to be related to a sparse quartz vein and fracture system which post-dates the basic sill and which has caused some local alteration of the country rock. The position of the sill may have influenced the location of the veins.

Although the vein system has considerable length, the widths, discontinuities and gold grades do not suggest much economic potential.

7. CONCLUSION

In the area of EL4650 being relinquished on 21st August 1989, the only noteworthy gold mineralization is at the Bubbles Prospect. This is an interesting occurrence, but does not appear, from CEC's investigations, to be worth further exploration.

P.C. Simpson
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