EXPLORATION LICENCE 5968

BURRUNDIE, NORTHERN TERRITORY

PINE CREEK 1:250,000 SHEET SD 52-8

ANNUAL REPORT FOR YEAR ENDED

11 MAY, 1990

To be treated as a relinquishment report. PARA 27/90.
HID3
(See file EL 5968 - file 110)

N.A. KING & J.J. PERRY

JUNE 1990
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APPENDIX - DRAWINGS 1 to 5
1. SUMMARY

As considerable exploration work had already been carried out on the area covered by EL5968, we began by researching this material. From this we identified our priority areas which we felt required follow up work.

A move to joint venture the licence with Cyprus Gold did not eventuate.

A sampling program was initiated and several lines of rock chip samples were collected throughout the licence area and these are detailed in the exploration section of the Report.

The work at the Little Horseshoe North-East Anomaly was carried out with Denehurst Ltd.
Also included with them was a line of rock chip samples on the western side of the Little Horseshoe.

Field work carried out during the 1989-90 year covered all of the areas within the licence we were interested in except one area to the west of the Horseshoe leases. This area is within the two blocks of the licence that we have retained as EL5968.
2. TENEMENT HISTORY AND DESCRIPTION

Exploration Licence 5968 during the year ending 11 May 1990 consisted of 7 blocks and was an area of 22.58 sq. kilometres (Figure 1). The licence was granted to partners N.A. King and J.J. Perry on the twelfth of May 1988.

The south eastern corner of EL5968 hosts the Horseshoe minesite which has been worked for alluvial tin. To the south lies the Spring Hill minesite and to the west is the Mount Bonnie and Iron Blow deposits. Mount Wells tin mine is to the east.

The area of EL 5968 was mapped during geological surveys undertaken by the BMR in the northern half of the Northern Territory. Mapping was completed by the BMR as part of the Burrundie 1:63,360 geological sheet (Walpole and White, 1959); the Pine Creek 1:100,000 geological sheets (Stuart-Smith and Needham, 1981); and the Pine Creek 1:250,000 geological sheet (Malone, 1962). Walpole (1968) reported on the geology and mineralisation of the Burrundie area in his study of the Katherine-Darwin region. Recently a revised stratigraphy for the whole Pine Creek Geosyncline was published by the BMR (Needham et al, 1980).

From 1977 to 1978, the area of EL 5968 was covered as part of an exploration programme by Geopeko in the Burrundie area for strata-bound Au, Ag, Cu, Pb, Zn mineralisation within the Mount Bonnie and Koolpin Formations. These programmes are discussed by Goulevitch (1977, 1978) and Robinson (1978).

From November 1981 to November 1987, the area was covered by Exploration Licence 3138, a total area of 64 blocks covering 212 square kilometres which was granted to Peko-Wallsend Operations Ltd. The licence was then operated by the Golden Dyke Joint Venture and reduced to 32 blocks on November 25th, 1983. By the 25th November 1984 Peko-Wallsend had resigned as Managers of the Golden Dyke Joint Venture. The EL was reduced to 16 blocks and joint ventured to CSR Limited. CSR earned a majority interest (51%) by completing the exploration programme at its own expense. In 1985 a partial reduction of 2 blocks was approved by the Department of Mines & Energy. A further 50% reduction of 7 blocks in 1986 resulted in an area of 7 blocks until the expiry of the licence in November 1987. A total of twenty-nine mineral claims were pegged within the licence before expiry by the joint venturers CSR Limited, Dominion Gold Operations Pty Ltd and Peko-Wallsend Operations Limited. These claims are now the property of Placer Ltd.

N.A. King and J.J. Perry made application for these remaining 7 blocks on 30th December 1987, and were granted EL 5968 on 12th May 1988. The licence has now been reduced and 2 blocks remain.
FIGURE 1.

LOCATION PLAN OF EL 5968.

EL5968
7 BLOCKS
22.54 sq km
4. DETAILED GEOLOGY

Exploration Licence 5968 is located within the structurally complex Burrundie area and numerous authors, including Nicholson et al (1980), (1982) and (1984); Rolfe et al (1983); Goulevitch (1980); Heyworth (1986) and (1988) and Hamilton (1987), have described the geology of this region.

A summary of the stratigraphy encountered within EL 5968 is shown on Table 1.

The oldest unit which outcrops in the area is the Wildman Siltstone of the Mount Partridge Group. The Wildman Siltstone comprises mica phyllite and carbonaceous mudstone and forms the core of an anticlinal structure which is located just to the west of EL 5968.

Members of the South Alligator Group are the most common outcrop lithologies within the licence area and include the Koolpin Formation, Gerowie Chert and the Mount Bonnie Formation which all have potential for stratabound gold mineralisation.

The lowermost formation is the Koolpin which can be divided into three units; Lower, Middle and Upper.

The Lower Koolpin (Psk1) unit comprises carbonaceous mudstone, mudstone and siltstone, and Nicholson (1982) distinguishes it from the Wildman Siltstone by the higher percentage of carbon. This increase in carbon is hard to recognise in the field due to tropical weathering and poor outcrop.
The Middle Koolpin (Psk2) unit is economically more significant because stratatabound gold mineralisation has been discovered in this at Cosmopolitan Howley (Kavanagh, 1984). The Middle Koolpin comprises an alternating sequence of mudstone and iron formation which has been termed Banded Iron Formation (BIF) by most authors. Five BIFs are reported (Nicholson et al, 1982 and Kavanagh, 1984) and range in thickness from 5 to 15 metres thick. Information from diamond drilling shows BIFs to be alternating laminae of quartz, chert, actinolite, stilpnomelane, garnet, biotite, siderite, dolomite, pyrite, pyrrhotite, arsenopyrite, hematite and magnetite.

However, when the BIFs are exposed in outcrop they are represented by a cherty and iron oxide laminae rock. Nodules of sugary quartz are said to be characteristic of this unit (Goulevitch, 1980).

The Upper Koolpin (Psk3) unit comprises mainly carbonaceous mudstone and siltstone which are often silicified in outcrop and resemble the Lower Koolpin unit (Nicholson, 1984).

The Koolpin Formation is overlain by the Gerowie Tuff (Pcg). The contact is marked by chert or tuffaceous mudstone, and may correspond to the last strongly carbonaceous mudstone (Nicholson, 1984). Nicholson describes three types of chert present in the Gerowie Tuff; sugary textured chert, micaceous chert and albicic chert. The mudstone beds consist of quartz, sericite, biotite and rarely carbonaceous material. Known stratiform mineralisation in the Gerowie Tuff includes base metals, gold and arsenic concentrations.

The South Alligator Group is intruded by the Zamu Dolerite and the McMinns Bluff Granite, a post-orogenic granite forming part of the Cullen Batholith.
The Zamu Dolerite forms prominent ridges throughout EL 5968. However, where the Zamu Dolerite is chloritised or carbonatized, it forms valleys between the more resistant South Alligator Group. Gold has been located in the Zamu Dolerite in the vicinity of EL 5968 (Nicholson, 1984). Three styles of mineralisation are present:

i. Within quartz veins in chloritised dolerite (Nicholson, 1984)

ii. With sulphide accumulations along sill margins, and

iii. With disseminated pyrite and arsenopyrite in granophyric phrases (Wilkinson, 1982).

The third type of mineralisation corresponds to an epigenetic origin for gold and there are descriptions of gold-sulphide mineralisation within the Koolpin Banded Iron Formations (Phillips et al, 1984).

Within EL 5968 the Zamu Dolerite is represented by at least one major sill with several minor sills. The apparent thickness of the main sill is up to 400 m and it has an approximate dip of 60 to 80 degrees, indicating a true thickness of approximately 300 m. The sills in the Golden Dyke Dome area would appear to be thinner (up to 200 m thick) and they include three sills plus several smaller sills up to 10 m thick.

The major Zamu Dolerite sill in EL 5968 has been structurally thickened at a number of locations, and in particular, in the noses of anticlines and synclines. Numerous faults displace the Zamu Dolerite sill while a major NW oriented strike fault, believed to be part of the Pine Creek Shear Zone, produces a repetition of the sequence across the licence area.
<table>
<thead>
<tr>
<th>GROUP</th>
<th>FORMATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnis River</td>
<td>Burrell Creek</td>
<td>(Greywacke, siltstone, mudstone, rare chert, iron formation, conglomerate)</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>Mount Bonnie Fm.</td>
<td>(Mudstone, siltstone, chert, iron formation)</td>
</tr>
<tr>
<td>Alligator</td>
<td>(Upper)</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>(lower)</td>
<td>(Greywacke, mudstone, siltstone, chert, carbonaceous mudstone, minor conglom-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>erate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gerowie Tuff</td>
<td>Chert, mudstone, siltstone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Koolpin Fm. (Upper)</td>
<td>Carbonaceous mudstone, siltstone</td>
</tr>
<tr>
<td></td>
<td>(Middle)</td>
<td>(Iron formation, mudstone, carbonaceous mudstone, siltstone)</td>
</tr>
<tr>
<td></td>
<td>(Lower)</td>
<td>(Carbonaceous mudstone, mudstone, siltstone, limestone)</td>
</tr>
<tr>
<td>Mt Partridge</td>
<td>Wildman Siltstone</td>
<td>Mudstone, phyllite, siltstone carbonaceous mudstone and sandstone (forms the</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td>core of an anticline).</td>
</tr>
</tbody>
</table>
FIGURE 2.

PLAN IDENTIFYING ANOMALOUS AREAS AND AREAS PEGGED WITHIN EL 5968.

TOPOGRAPHICAL SURVEY 1:50,000 BURRUNDIE
5. EXPLORATION

During the first year of the exploration licence, considerable effort had been put into researching the work of previous explorers in an attempt to identify areas of priority and to develop our exploration concept.

As already stated in "tenement history and description", the exploration licence area was previously covered by EL 3138 and a brief summary of the exploration activity that is relevant to the area is detailed in the annual report of EL 5968 year ending 11 May 1989.

5.1 EXPLORATION IN 1988-89.

Exploration began by conducting extensive library research as the geology of this area has been well documented and considerable exploration work had already been carried out by the joint venturers of EL 3138.

As sampling carried out by Geopeko was designed to detect gold particles of greater than 630 microns and as CSR's exploration work was targeted towards locating disseminated gold mineralisation within the Zamu Dolerite, the gold-bearing potential of the remaining Koolpin Formation and the Gerowie Tuff/Kapalga Formations may have been overlooked.

During the field season of 1988 considerable effort was given to familiarisation of the topography and geology of the licence area. The boundaries of existing tenements within the EL were identified (see Figure 2).

As a result of research, areas of interest were identified that require follow up exploration. This included the area two kilometres west of the Horseshoe which was found to be anomalous in As and Au (Nicholson and Radford, 1982). It appears that there has not been any follow up work since that time.

The anomalies contained in the gossanous outcrops and the Zamu Dolerite sills at the Little Horseshoe and associated North East anomaly had not been adequately defined and required follow up work. A detailed rock chip and soil sampling programme was commenced in priority areas.
5.2 EXPLORATION IN 1989-90

A decision had been made in the 88-89 season to joint venture EL 5968 so that greater resources could be pooled into the exploration work.

Negotiations with Cyprus Gold were underway at the time but eventually no agreement was entered into.

Denehurst Ltd was invited to look at the licence area with the view of a possible joint venture if the assays gave results that warranted further investigation.

Together with Denehurst we looked at two areas, Little Horseshoe North East and the western side of the Little Horseshoe.

The work carried out at the Little Horseshoe North East Anomaly comprised of a line of rock chip samples along the strike, several lines of soil samples across the strike and channel sampling in the costeans.

A series of rock chip samples were also taken on the western side of the Little Horseshoe anticline.

The samples were assayed for Cu, Pb, Zn, Ag, Sn, As and Au in p.p.m. and these assays were provided by Denehurst. The sample locations along with assay figures are given on drawings 1 to 3 of this report.

From the results of these assays the Company decided that it had no further interest in the project.
Other exploration on EL 5968 was conducted by King and Perry who carried out a rock chip sampling programme in the two priority areas called Little Horseshoe and Horseshoe East.

At Little Horseshoe we continued where we left off with Denhurst and sampled further southwards along the western side of the anticline testing Cerowie Tuff and the quartz and iron formations in the Koolpin Formation.

Two samples were also taken from the banded iron formation on the eastern side.

Drawing 4/5968 shows the location and the assay figures.

At Horseshoe East, the northern group of samples were taken from Dolerite and the other samples were taken within the Koolpin Formation. Drawing 5/5968 shows the location and the assay figures.

6. CONCLUSION

The assay results for the samples taken were not encouraging enough to warrant any further work on the blocks covered by the sampling programme. Samples were not taken from the northern-most two blocks as the western block is covered mostly with mineral claims and the eastern block is granite with alluvium.

Five blocks have now been surrendered and EL 5968 now comprises the two most southern blocks of the original area covered.
7. EXPLORATION LICENCE 5968 BURRUNDIE

EXPENDITURE STATEMENT FOR YEAR ENDED 11 MAY 1990

WAGES

Research 600
Field 3,318
Drafting 1,480
Secretarial 1,000

6,398

SUPPORT INFRASTRUCTURE

Mail, travel, accom. 1,215

FIELD OPERATIONAL COSTS

Field supplies, vehicle fuel and maintenance. 1,960

ASSAYS

1,670

OVERHEADS

Office, telephone, vehicle. 4,287

TOTAL

15,530

Denehurst contribution - 2,912
King & Perry contribution - 12,618
8. REFERENCES.


