EL 4415 - WOOLWONGA SOUTH
PINE CREEK DISTRICT
NORTHERN TERRITORY

ANNUAL REPORT
FOR FIFTH YEAR OF TENURE
10TH APRIL 1988 - 9TH APRIL 1989

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FIGURE 1: TENEMENT LOCATION MAP: EL 4415

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TABLE 1: EARLY PROTEROZOIC STRATIGRAPHY OF THE PINE CREEK/ADELAIDE RIVER AREA
1. SUMMARY

This report covers the 1988 exploration activities completed by Dominion Mining Limited and previous holders, Territory Resources NL, on the three blocks of EL 4415 A and B known as Woolwonga South.

The exploration licence covers ground south of Dominion’s Woolwonga prospect. Previous investigations have shown areas of anomalous gold mineralization and the possible southern extension of mineralized Woolwonga-related structures.

During 1988 Territory Resources NL placed EL 4415 A and B on sale by tender and Dominion purchased the licence on 15 November 1988. As such, no field exploration by Dominion was possible in the fifth year of tenure.

Exploration activity proposed by Dominion in 1989 will include an aeromagnetic survey, extensive soil sampling and geological mapping. Soil anomalies are to be followed up by costeans across residual soil anomalies and RAB drilling across alluvial/colluvial areas.
2. **INTRODUCTION**

Exploration licence 4415, granted on 10th April 1984, consists of three blocks in the Ban Ban Springs locality.

Title was granted to Ken Day Pty Ltd whose exploration program was directed at evaluating the alluvial gold potential of areas relinquished from the current licence area.

The discovery of the hard rock gold prospect at Woolwonga, with its possible southern extensions, greatly enhanced the potential of the licence so Territory Resources conducted a program in 1987 aimed at hard rock mineralization.

Financial difficulties during 1988 forced Territory Resources into receivership and Dominion purchased the exploration licence under tender.
3. **LOCATION AND TENURE**

Exploration Licence 4415 is located approximately 130 km southeast of Darwin and 20 km northeast of Hayes Creek, centred on the Margaret River within the Ban Ban Pastoral Lease (See figure 1).

The exploration licence was granted on 9th April 1984 to Ken Day Pty Ltd and comprised 25 blocks. Initial reduction (50%) occurred in September 1986, with the remaining 12 blocks partially reduced to 9 blocks in April 1987. Title of the licence was transferred to Territory Resources NL in August 1987. A further reduction to 3 blocks took place in April 1988.

Relinquishment of three further blocks in April 1988 left 3 remaining blocks for the exploration licence.

Mineral claims 2414-29 were pegged over graticular block 1366 before relinquishment in April 1988.

Further reductions have been deferred until the expiry date for the EL following the sixth year of tenure.

Dominion Gold Operations purchased the exploration licence and mineral claims from Territory Resources NL on 15th November 1988.
4. **Geology**

4.1 **Regional Geology**

The geology of the Pine Creek Basin has been well documented by the BMR, eg. Wallace et al (1985), Needham et al (1980).

The Lower Proterozoic sequence was deposited by alternating shallow marine and continental environments in an intracratonic basin setting. Following intrusion by conformable dolerite sills, a major period of deformation and regional metamorphism related to granitic intrusion caused a series of tight, upright folds. Early Proterozoic stratigraphy of the Pine Creek/Adelaide River area is listed in Table 1.

4.2 **Local Geology**

Within the exploration licence boundaries, outcrop is generally poor and the area is underlain by the Mt Bonnie Formation of the South Alligator Group and the Burrell Creek Formation of the Finniss River Group.

Tertiary alluvial and colluvial sediments occur along the course of the Margaret River system with overlying Quaternary silts and black soil plains (Ormsby 1988).

Very little structural data is evident from surface outcrop. Interpretation of aeromagnetic data (Ormsby 1988) shows a number of NW-SE trending anticlines and synclines with NE-SW trending cross structures. The implied southern extension of the mineralized Woolwonga anticline passes through EL 4415 while an interpreted anticlinal structure passes midway between the Woolwonga and Glencoe anticlines.
<table>
<thead>
<tr>
<th>GROUP</th>
<th>FORMATION</th>
<th>MEMBER</th>
<th>LITHOLOGIES</th>
<th>THICKNESS M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finiss River</td>
<td>Burrell Crk</td>
<td></td>
<td>Greywacke, siltstone, mudstone, rare chert iron formation and conglomerate.</td>
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<tr>
<td>South Alligator</td>
<td>Mt Bonnie</td>
<td>Upper</td>
<td>Mudstone, siltstone, chert, iron formation.</td>
<td>100-250</td>
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<tr>
<td></td>
<td></td>
<td>Lower</td>
<td>Greywacke, mudstone, siltstone, chert, carbonaceous mudstone, rare conglomerate.</td>
<td>50-150</td>
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<tr>
<td>Gerowie Tuff</td>
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<td></td>
<td>Chert, mudstone, siltstone.</td>
<td>200-400</td>
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<tr>
<td>Koolpin</td>
<td>Upper</td>
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<td>Carbonaceous mudstone, mudstone, siltstone.</td>
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<tr>
<td></td>
<td>Middle</td>
<td></td>
<td>Iron formation, mudstone, carbonaceous, mudstone, siltstone.</td>
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<tr>
<td></td>
<td>Lower</td>
<td></td>
<td>Micaceous mudstone, siltstone, minor carbonaceous mudstone.</td>
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<td>Mount Partridge</td>
<td>Wildman</td>
<td></td>
<td>Mudstone, phyllite, siltstone, carbonaceous mudstone, sandstone.</td>
<td>200-400</td>
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<tr>
<td></td>
<td>Siltstone</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mundogie Sandstone</td>
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<td></td>
<td>Quartzsite, arkose, pebble conglomerate, mudstone, siltstone.</td>
<td>500</td>
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</table>

NB Thickness given above are for Type Areas only.
5. **PREVIOUS EXPLORATION**

Previous exploration in EL 4415 carried out by Ken Day Pty Ltd and Territory Resources NL concentrated on alluvial and hard rock mineralization targets south of the remaining blocks.

During the fourth year of tenure, Territory Resources completed a photogeological interpretation, aeromagnetic and Geo-flite surveys, and reconnaissance rock chip, stream silt and heavy mineral sampling programs.

Conventional panning outlined two areas with alluvial potential which were followed up by a rock chip program. Thirty-five rock chip samples of quartz veins and scree were collected and assayed for Au. Significant results include 7.2 g/t Au, 2.0% As and 2.0 ppm Ag from a mullock heap adjacent to a 1.5m deep pit on the crest of a hill. Other significant results were 1.02 g/t Au, 100 ppm As and 0.38 g/t Au, 1.05% As, 5 ppm Ag.

Eleven stream silt samples were collected, screened to minus 200# and analysed for Au, As, Ag, Cu, Pb and Zn. Gold assays were all <0.01 ppm except for a sample located south of the previously defined rock chip anomaly.

Aeromagnetic interpretation revealed a number of NW-SE trending anticlinal and synclinal fold axes and NE-SW trending faults.

The Geo-flite survey was based on multispectral analysis to identify possible mineralised zones by detecting associated alteration and weathering zones. Only part of one 'potentially mineralized' target was identified within EL 4415.

No exploration activities were conducted over the licence area during the fifth year of tenure due to Territory Resources financial difficulties.
6. CONCLUSIONS AND RECOMMENDATIONS

Exploration conducted by Territory Resources in 1987 defined three anomalous zones of gold mineralisation. Conclusions drawn from an aeromagnetic survey indicated the Woolwonga anticline extended south into the licence and an inferred anticline lies halfway between the Woolwonga and Glencoe anticlines. A Geoflite survey indicated potential mineralisation within a zone coincident with the inferred anticline and one of the previously defined geochemical anomalies.

Dominion in 1989 will focus their exploration on targets previously defined by Territory Resources and targets generated by an aeromagnetic and radiometric survey.

Exploration activities proposed include air photo analysis, extensive soil sampling of residual soil area, costeaning of any soil anomalies and RAB drilling of alluvial/colluvial wash area. An RC percussion drill rig may be mobilised from the adjacent Woolwonga prospect if necessary.
7. EXPENDITURE

**Direct**

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<tr>
<td>Geophysics</td>
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<td>Equipment</td>
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**Indirect**

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<td>Drafting</td>
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<td>Supplies</td>
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</table>

**Total** 13,166.08
7. **Expenditure**

**Direct:**
- Aerial Photography 477

**Indirect:**
- Salaries and Wages 3,314
- Vehicles 1,545
- Drafting 729
- Camp 7,183
- Supplies 72
- Other 3,869

**Total** 17,189
8. REFERENCES


