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</tr>
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<td></td>
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<td>2A-G100</td>
</tr>
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<td>4</td>
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<td></td>
</tr>
</tbody>
</table>

**TABLES**

| 1 | EARLY PROTEROZOIC STRATIGRAPHY OF THE PINE CREEK/ADELAIDE RIVER REGION |
1. SUMMARY

This report details the 1990/91 exploration activities completed on EL6493 in Year 2 of tenure, ending 20 June 1991.

This licence, comprising four (4) blocks, was granted to Northern Gold NL on 21 June 1989 for a period of four (4) years. Under a farm-in agreement with R M Biddlecombe, Northern Gold retained 85% of the title and management of the joint venture.

Dominion Gold Operations Pty Ltd purchased a tenement package from Northern Gold, including the 85% holding in EL6493, on 8 Feb 1991 with the transfer registered on 7 May 1991. Approval for deferral of reduction to two (2) blocks was granted 21 May 1991 with reduction now due on 21 June 1992.

Previous exploration completed by Northern Gold included regional mapping, rock chip and stream sediment sampling in the search for Au, basemetal and Sn-Ta mineralization. Results from this first pass programme indicated four low order Au and basemetal soil anomalies.

Due to the extended wet season and delays to transfer of ownership recognition, the Dominion exploration programme is only now in progress. This comprises regional mapping at 1:25,000 scale and stream geochemistry (sills and pan concentrates) sampling. An aerial photography survey was flown in April 1991 by Airsearch Pty Ltd to produce a series of 1:25,000 scale colour photographs covering the licence area.
2. LOCATION AND TENURE

EL6493 is located 165km south of Darwin, approximately 5km S of Cosmo Howley Mine, and is located on the Fenton 1:50,000 (14/5-1) sheet. See Figs. 1 and 2.

Access is via the Stuart Highway, Ooloo Road and Douglas Station tracks. Climatically, EL6493 experiences a wet season (November to April) and a dry season (May to October). Average annual rainfall is 1249mm and the mean temperature is approximately 28°C.

Local relief is generally minor, ranging from 90 to 110m above sea level.

The licence was granted to Northern Gold NL on 21 June 1989 for four (4) years. A deferral of reduction after the second year of tenure to retain four blocks until 20 June 1992 was granted on 21 May 1991.
3. GEOLOGY

3.1 Regional Geology

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

The Early Proterozoic sequence was deposited by alternating shallow marine and continental environments in an intracratonic basin setting. Following intrusion by conformable sills, a major period of deformation and regional metamorphism, related to granite intrusion, produced a series of tight, upright folds.

Early Proterozoic stratigraphy of the Pine Creek/Adelaide River area is listed in Table 1 and shown in Fig. 3.

3.2 Local Geology

EL6493 is predominantly covered by soil and laterite. In the eastern part of the licence the Fenton Creek system dissected this laterite cover and exposes a sequence of sandstone, greywacke and micaceous schists assigned to the Wildman Siltstone, with a minor outcrop of leucogranite intruding the sequence. See Fig. 4.

Mapping by Northern Gold indicated little structural data due to poor exposure with foliation in the schists trending E–W and dipping to the south and a weak N–S cleavage.

Scattered outcrops of Tindal Limestone (SW portion) and tourmaline quartz veins were also mapped.
<table>
<thead>
<tr>
<th>GROUP</th>
<th>FORMATION</th>
<th>MEMBER</th>
<th>LITHOLOGIES</th>
<th>THICKNESS m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zamu Dolerite</td>
<td></td>
<td></td>
<td>Massive, medium to coarse grained. Quartz actinolite, tourmaline</td>
<td></td>
</tr>
<tr>
<td>Finnis River</td>
<td>Burrell Creek</td>
<td></td>
<td>Greywacke, siltstone, mudstone, rare chert iron formation and conglomerate</td>
<td>3000</td>
</tr>
<tr>
<td>South Alligator</td>
<td>Mt Bonnie</td>
<td>Upper</td>
<td>Mudstone, siltstone, chert, iron formation</td>
<td>100–250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower</td>
<td>Greywacke, mudstone, siltstone, chert, carbonaceous mudstone, rare conglomerate</td>
<td>50–150</td>
</tr>
<tr>
<td>Gerowie Tuff</td>
<td></td>
<td></td>
<td>Chert, mudstone, siltstone, minor carbonaceous mudstone</td>
<td>200–400</td>
</tr>
<tr>
<td>Koolpin</td>
<td>Upper</td>
<td></td>
<td>Carbonaceous mudstone, mudstone, siltstone</td>
<td>50–150</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td></td>
<td>Iron formation, mudstone, minor siltstone</td>
<td>130–150</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td></td>
<td>Micaceous mudstone, siltstone, minor carbonaceous mudstone</td>
<td>0–250</td>
</tr>
<tr>
<td>Mt. Partridge</td>
<td>Wildman Siltstone</td>
<td></td>
<td>Mudstone, phyllite, siltstone, carbonaceous mudstone, sandstone</td>
<td>200–400</td>
</tr>
<tr>
<td></td>
<td>Mundogie Sandstone</td>
<td></td>
<td>Quartzite, arkose, pebble conglomerate, mudstone, siltstone</td>
<td>500</td>
</tr>
</tbody>
</table>
STRATIGRAPHIC COLUMN

UNDIFFERENTIATED LATERITISED SEDIMENTS

CRETAUCEOUS

Daly River Group
- Ooloo Dolostone
- Jinduckin Formation
- Tindal Limestone
- Jindere Formation

Cambrian-Ordovician

Tolmer Group
- Hinde Dolomite
- Stray Creek Sandstone
- Depot Creek Sandstone

Middle Proterozoic

Cullen Granitoids
Composite I-type Batholith (640-1780 Ma)
- Mc Minns Bluff Granite
- Fenton Granite
- Shoobridge Granite

Zamu Dolerite (± Moule)

Early Proterozoic

Finniss River Group
- Burrell Creek Formation

- Mt. Bonnie Formation
- Gerowie Tuff
- Koolpin Formation

South Alligator Group

- Wildman Siltstone
- Mundagie Sandstone

Mt. Partridge Group

Namoona Group
- Masson Formation

Cullen Mineral Field Stratigraphic Relations

Project

State

Originator F. F. Date 5/91

Drawn P. L. Date 5/91

Scale

Figure No. 3

Plan No. 2A - GIOO
4. PREVIOUS EXPLORATION

Northern Gold completed a first-pass exploration programme designed to test EL6493 for gold, base metal and Sn-Ta mineralization.

EL6493 was mapped and 8 rock chip samples were collected and submitted to Australian Assay Laboratories (AAL) in Pine Creek for the following analysis:

- Au: Fire Assay
- As, Ag, Cu, Pb, Zn, Mo: ICP
- Sn, Ta: XRF

Soil sampling was carried out over the licence on a 600m x 100m (consisting of 4 x 25m composites) grid, with sample lines running at 090° (parallel to tenement boundaries). About 2kg of soil sieved to -6mm was collected for each of the 227 samples. Duplicate samples were collected every 20 samples. Samples were submitted to AAL in Pine Creek for analysis as detailed below:

- Au: bulk cyanide leach
- As, Ag, Cu, Pb, Zn, Mo: ICP
- Sn, Ta: XRF

Rock chip samples collected during geological reconnaissance returned generally low assay results (Au <0.01 ppm, Ag <1 ppm, As highest assay 131 ppm, Cu 65 ppm, Pb 73 ppm, Zn 22 ppm, Mo 7 ppm, Sn 37 ppm and Ta <10 ppm).

Soil sampling delineated four (4) minor Au and basemetal anomalies which require some follow up investigation and are listed below:

1. Area 900m x 100m, trending NW with best results of 9 ppb Au, 45 ppm Sn and 66 ppm Zn.
2. E–W trending zone 800m x 500m with best results of 280 ppm Cu, 115 ppm Pb, 84 ppm Zn and 5 ppm Mo.
3. N–W trending zone, approx. 1km long with anomalous results of 87 ppm As, 194 ppm Cu and 6 ppm Mo.
4. Area 800m x 100m, trending NW with anomalous Sn values (up to 24 ppm).
5. 1990/91 WORK PROGRAM

5.1 Aerial Photography

During April 1991 Dominion commissioned Airesearch Mapping Pty Ltd of Darwin to fly the Shoobridge-Fenton tenements held by Dominion and produce sets of 1:25000 scale air photos. The relevant air photo runs are AM529 Runs 7 (No. 056-59) and 8 (No. 082-86).

5.2 Geophysics

Acquisition and interpretation of airborne magnetic and radiometric data flown by Geoterrex (1987) will be used to determine structural targets for ground mapping at 125000 and associated stream and soil geochemistry.
6. CONCLUSIONS AND RECOMMENDATIONS

During the 1990 field season, no field exploration was completed by Northern Gold NL.

With the purchase of EL6493 by Dominion an exploration programme which re-evaluates the Northern Gold anomalies, regional mapping at 1:25000 scale using the recently flown aerial photography and detailed stream and soil geochemistry will be undertaken. In Year 3 of tenure, a commitment of $5,000 is envisaged.
7. **EXPENDITURE**

Expenditure covenant for Year 2 was $4,500.

Expenditure for EL6493 recorded for the 12 months ending 30 June '91 as given below, is $7,700. Note that as the exploration program is in progress some recent expenditure items (e.g. assays), have not been included in these figures. These will be included next year with Year 3 Expenditure.

**EL6493 EXPENDITURE TO 30 JUNE 1991**

<table>
<thead>
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<th>Category</th>
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<tbody>
<tr>
<td><strong>Direct</strong></td>
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<td>Aerial Photography</td>
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<tr>
<td>Geophysics</td>
<td>2898</td>
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<tr>
<td>Equipment</td>
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<tr>
<td>Data Acquisition</td>
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<tr>
<td><strong>Indirect</strong></td>
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<tr>
<td>Salaries &amp; Wages</td>
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<tr>
<td>Vehicles</td>
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<tr>
<td>Travel</td>
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<tr>
<td>Drafting &amp; Computing</td>
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<tr>
<td>Field Supplies</td>
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<td>Office</td>
<td>113</td>
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<td><strong>Administration</strong></td>
<td>1024</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>$7,700</td>
</tr>
</tbody>
</table>
8. REFERENCES

"EL6493 Annual Report to 20 June 1990"
Northern Gold NL

Needham RS, Crick JH & Stuart-Smith PB (1980)

Wallace DA, Stuart-Smith PG, Needham RS and Roarty MJ (1985)