EL5971

MT. SHOOBIDGE AREA, NT
ANNUAL AND FINAL REPORT
YEAR ENDING 27 JUNE 1991

Distribution:

NTDME, Darwin
Dominion Mining Ltd, Darwin
Dominion Mining Ltd, Perth
RM Biddlecombe

October 1991

NR Burn
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1. **SUMMARY**


This licence, comprising fifteen (15) blocks, was granted to RM Biddlecombe on 29 June 1988 for a period of three (3) years. Under a farm-in agreement, management and 85% of the title was transferred to Northern Gold.

Dominion Gold Operations Pty Ltd purchased a tenement package from Northern Gold, including the 85% holding in EL5971 on 8 Feb 1991 with the transfer registered on 7 May 1991.

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

Due to the extended wet season and delays to transfer of ownership recognition, the Dominion exploration programme was in progress at expiry. This comprised regional mapping at 1:25,000 scale and stream geochemistry (silts and pan concentrates) sampling. An aerial photography survey was flown in April 1991 by Airesearch Pty Ltd to produce a series of 1:25,000 scale colour photographs covering the licence area.

EL5971 is now located within SEL7507, granted on 10 Oct 1991. All further exploration details for the 1991 field season will be reported in the Year 1 Annual Report for SEL7507.
2. **LOCATION AND TENURE**

EL5971 is located approximately 160km south of Darwin and 13km W of the Cosmo Howley Mine, and is shown on the 1:100,000 Tipperary and 1:50,000 Fenton tenement sheets. See Fig. 1. Access is via the Stuart Highway, Dorat Road and Douglas Station tracks.

Climatically EL5971 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 rugged, ranging from 120–240m above sea level.

The licence was granted to RM Biddlecombe on 29 June 1988 for three (3) years. Reduction to eight blocks occurred on the second anniversary (29 June 1990). Title was transferred to Dominion Gold Operations following the purchase of a Northern Gold tenement package which was registered on the 7 May 1991.
3. **GEOLOGY**

3A. 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 shown in Fig. 2.

3B. Local Geology

Outcrop within EL5971 consists of a sequence of Lower Proterozoic sediments of the Burrell Creek Formation, overlain unconformably by Cambrian Limestones (Tindall Limestone) and Cretaceous sediments of the Petrel Formation. The Shoobridge Granite, a medium-grained hornblende-biotite granite intrudes the Burrell Creek Formation sediments in the eastern part of the tenement.

The Burrell Creek Formation is this licence comprises mudstone with intercalated tombstone greywacke and, to the east, blocky greywacke. The greywacke is schistose adjacent to the Shoobridge Granite, and has developed a foliation parallel to, and dipping away from the granite contact. See Fig. 3 for geology.

The lithologies generally strike north to north west and dip mainly to the east. In the north west, the mudstones are folded into two minor anticlines with axial planes trending north–south and plunging to the north.

Large areas in the south western part of EL5971 are covered by soil and laterite.
4. **PREVIOUS EXPLORATION**

A search of the Mines Department open files by Northern Gold revealed that no modern precious or base metal exploration has been carried out over the area covered by EL5971. However, during the late 1960's United Uranium investigated lateritized Cretaceous sediments for their iron-ore content (Northern Territory Geological Survey Company Reports 67/39, 67/41, 68/08, 68/15). These sediments have also been prospected for their Mn content in two areas adjacent to EL5971.

Northern Gold completed a first-pass exploration program designed to test EL5971 for gold and base metal mineralization.

EL5971 was mapped and 3 rock chip samples (4408-4410) were collected and submitted to Australian Assay Laboratories (AAL) in Pine Creek for the following analysis:

- Au: fire assay
- As, Ag, Mo, Cu, Pb, An: ICP

A total of 71 stream sediment samples (4051–4064, 4080–4124, 7013–7024) were collected from EL5971. About 2kg of sediment, sieved to -6mm was collected from the best available trap site. Samples were submitted to AAL in Pine Creek for the following analysis:

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

Rock-chip samples collected during geological reconnaissance returned low results for all elements assayed (Au <0.01 ppm, Ag <1 ppm, Mo <2 ppm. As highest result 118 ppm, Cu 126 ppm, Pb 120 ppm and Zn 10 ppm).

The stream sediment sampling program has delineated a number of anomalous areas as described below:

**Anomaly 1:** A broad anomalous area of Au, Pb, As and Mo in the eastern part of the tenement, including a 56.8 ppb Au result. The anomaly covers a sequence of Proterozoic sediments and two samples of quartz float from the area (samples 4408, 4409) failed to return anomalous geochemistry.
Anomaly 2: A 9.2 ppb Au stream sediment assay, with no corresponding pathfinder element anomalies. The anomaly is located in an area of soil cover.

Anomaly 3: Contains anomalous values of As (46 ppm), Cu (51 ppm), Pb (72 ppm) and Zn (65 ppm) and drains an area which is predominantly soil covered.

Anomaly 4: Anomalous in As (49 ppm), Pb (130 ppm) and Zn (78 ppm) drains an area of laterite covering Proterozoic sediments.

Anomaly 5: Anomaly 5 is situated in the north west corner of EL5971 and contains anomalous levels of Cu (54 pm), Pb (59 ppm) and Zn (62 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 5 (No. 126–130), 6 (No. 047–52) and 7 (No. 064–68).

5.2 **Geophysics**

Acquisition and interpretation of airborne magnetic and radiometric data flown by Aerodata (1990) will be used to determine structural targets for ground mapping at 1:25000 scale and associated stream/soil geochemistry.
6. CONCLUSIONS AND RECOMMENDATIONS

Review of government open files, Northern Gold exploration and the Dominion data base indicate the tenement area is a relatively unexplored region of the Pine Creek Basin with the potential for gold and basemetal mineralization.

The Dominion exploration programme (now in progress under SEL7507) includes interpretation of recently acquired Aerodata geophysical data, regional mapping at 1:25,000 scale and stream and soil geochemistry.
7. **EXPENDITURE**

Expenditure covenant for Year 3 was $10,000.

Expenditure for EL5971 recorded for the 12 months ending 30 June 1991 as given below, is $7,700. Note that as an exploration program was in progress some recent expenditure item (e.g. assays) have not been included in these figures. These will be included in Year 1 expenditure for SEL7507.

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<td><strong>TOTAL</strong></td>
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</tbody>
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8. REFERENCES

"EL5971 Annual Report to 27 June 1990"
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Needham, R.S., Crick, J.H. & Stuart-Smith, P.B. (1980)

"The Geology of the McKinlay River Area, Northern Territory, Australia". Bureau of Mineral Resources. 1:100,000 Geological Sheet 5271.