

**EL 6747 "HOWLEY CREEK"
BROCKS CREEK DISTRICT, NT
ANNUAL REPORT TO 19 FEBRUARY 1992
FOR YEAR TWO OF TENURE**

**N.R. BURN
MARCH 1992**

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EL6747

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1. SUMMARY

This report details the 1991 exploration activities completed on EL6747 in Year 2 of Tenure, ending 18 February 1992. The licence area occurs south of the Brocks Creek mineralized structure, and is about 10kms North from Cosmo Mine.

The licence, comprising four (4) blocks was granted to Dominion Gold Operations Pty Ltd on 19 February 1990 for a period of four (4) years. A reduction to two (2) blocks occurred at 19 February with the two northern blocks retained (see Fig. 2).

Exploration activities during the 1991 field season consisted of (i) re-interpretation of airborne geophysical data, (ii) aerial photogeological interpretation, (iii) mapping at 1:10,000 scale, (iv) continuous scree/lag sampling and rock chip sampling.

Mapping indicated the presence of only very minor areas of outcrop generally surrounded by low topographic rises comprising weathered in situ soil and scree areas. The bulk of the licence area comprises transported soil and alluvial cover associated with tributary creeks to the major Howley Creek which trends to the North away from EL6747.

Interpretation of the magnetic and geological data indicates the presence of repeated tight folding of underlying strata chiefly about WNW axial trends, with numerous sub-parallel faults to the fold axes, and minor cross faulting. Generally, the licence area lies over the southern limb projections of the Brocks Creek anticlinal structure. That structure contains the gold mineral occurrences known as Brocks Creek, Faded Lily and Zapopan located along a SE-trend just to the east of EL6747.

Three low order Au anomalies were detected in 1990 and will be followed up in the next year of tenure. Further soil sampling of residual soil areas will also be completed.

The southern blocks of EL6747, which contains only very small areas of outcrop/residual soils amenable to surface geochemical sampling, returned no anomalous values. It was considered that this area ranked low in prospectivity, and did not warrant RAB drill evaluation of bedrock anomalies. Hence relinquishment of the southern area occurred at the end of Year 2.

Expenditure incurred to end Year 2 of Tenure totals \$33,530 against a total covenant of \$25,000 (Year 1 - \$10,000; Year 2 - \$15,000).

1. **Summary (Cont'd)**

It is recommended the Year 3 exploration program comprising more detailed mapping, geochemical sampling, and possibly RAB drilling, costed at about \$8,000 be conducted on the retained northern two (2) blocks.

2. INTRODUCTION AND LOCATION

Application for Exploration Licence 6747 was lodged on the basis of locating classic Pine Creek-style epigenetic gold mineralization in the vicinity of Dominions' Cosmo Howley operations.

EL6747 is located 160km south of Darwin, near the abandoned Howley Siding of the North Australian Railway and consists of four (4) blocks totalling approximately 1100 hectares. The tenement lies between latitudes 13°27'S and 13°29'S, and longitudes 131°21'E and 131°28'E. See Fig. 1 and 2.

The tenement is located on the Pine Creek 1:250,000 (Sheet SD52-8), Batchelor 1:100,000 (Sheet 5170) and Burnside 1:50,000 (Sheet 5170 - II) topographical and geological sheets.

Access is via the Stuart Highway or the North Australian railway easement. Climatically, this region 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 low ranging from 90 to 120m above sea level.

3. TENURE

EI 6747 comprising 4 blocks was granted to Dominion Gold Operations Pty Ltd on 19 February 1989 for a period of four (4) years. See Figure 1 for regional location of tenement.

A 50% reduction to two (2) blocks occurred on 18 February 1992. Dominion has retained the two blocks designated graticular references 32/68 and 33/68 on the Burnside 1:50,000 (14/2-II) sheet. See Figure 2.

4. GEOLOGY

4.1 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.

4.2 Local Geology

Outcrop within EL6747 is generally restricted to the NE block where three WNW-ESE trending ridges form the southern limb of the Brocks Creek anticlinal structure. Mapping at 1:10,000 scale has located a sequence of Gerowie Tuff – Burrell Creek Formation sediments, younging to the southwest.

Dominant lithologies within the Gerowie Tuff are tuffaceous mudstones with minor siltstones, cherts and silicified tuffs. Minor dolerite scree has been observed. Mt. Bonnie Formation sediments include brown to green-brown mudstones and siltstones with minor carbonaceous mudstone which has tight, complex microscale fold features. Minor ridges of red-brown siltstones and greywackes (occasionally knotted) are classified as Burrell Creek Formation sediments.

Tombstone greywacke outcrops along the western boundary of EL6747 indicate a series of tight anticlinal and synclinal structures. This greywacke is generally massive and siliceous with occasional crossbedding and much of the original texture overprinted due to brecciation and folding.

The majority of the remaining three blocks are covered with Cenozoic alluvial/laterite and black soils, probably underlain by the Burrell Creek Formation.

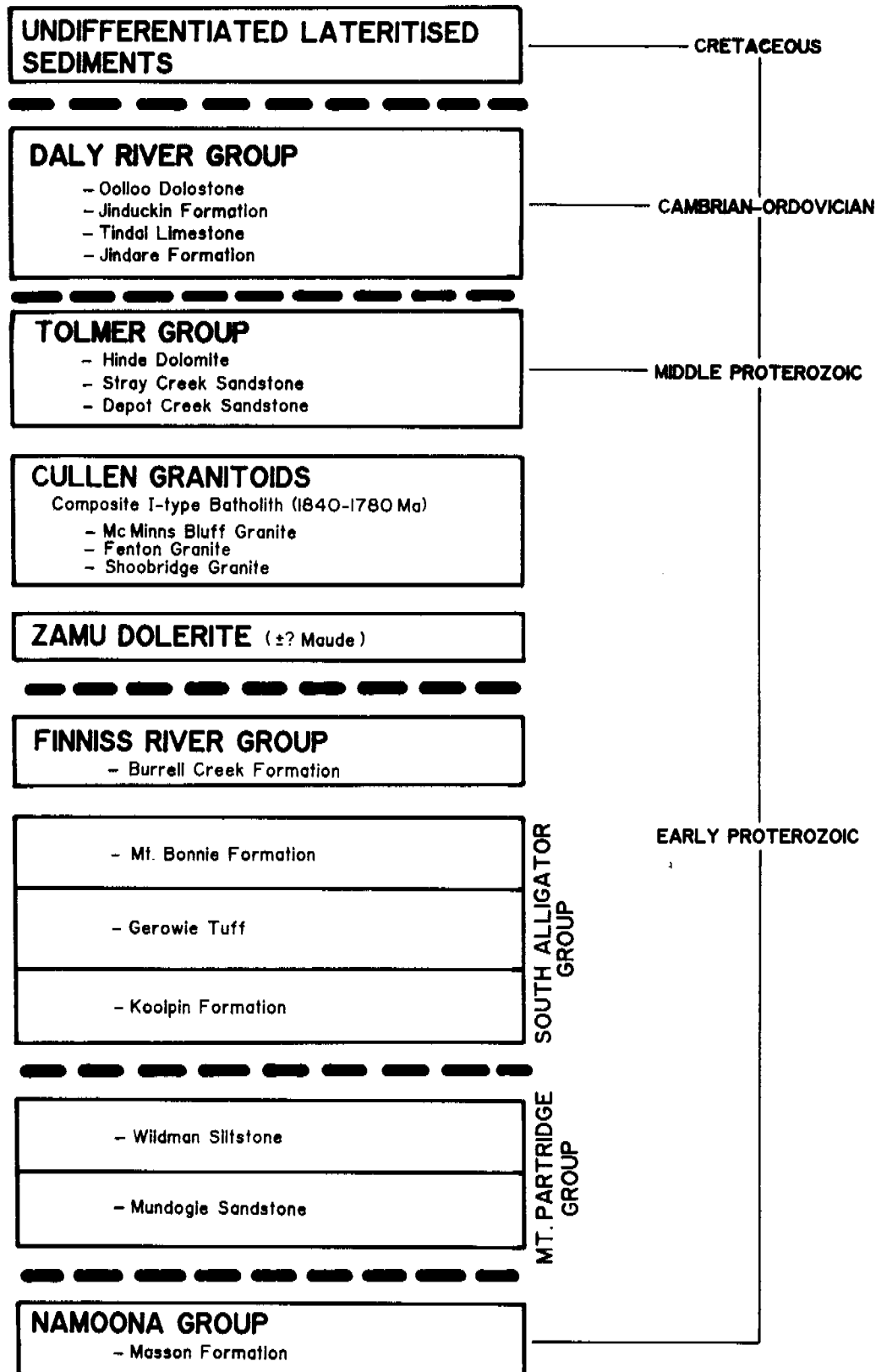
Photogeological mapping and interpretation has shown that the tombstone greywacke ridges are probably tight fold flexures on the broad synclorium between the Howley and Brocks Creek anticlinal structures.

Two dominant quartz vein orientations have been observed:-

- i) 065–070°M (radial faulting due to granite doming?) and
- ii) 130–150°, (Pine Creek Shear direction?).

Minor Cu mineralization (malachite) has been observed.

STRATIGRAPHIC COLUMN



CULLEN MINERAL FIELD STRATIGRAPHIC RELATIONS

PROJECT

STATE N.T.

ORIGINATOR F.F.

Date 5/91

DRAWN R.L.

Date 5/91

SCALE

No:

PLAN No: 2A - GIOO



Dominion Mining Limited

5. PREVIOUS EXPLORATION

The 1990 exploration program included: – air photograph interpretation, airborne geophysics geological mapping, continuous scree/lag sampling and rock chip sampling .

5.1 Geophysics

In 1987 and 1988 Aerodata flew a large portion of the Western Pine Creek Basin.

The survey of 22,663 line kilometres was originally commissioned by Golden Plateau NL and completed in May 1988. It was subsequently made available for general sale and Dominion acquired the data in late 1988.

Specifications for the survey were:-

Aircraft	Rockwell Shrike Commander 500S
Magnetometer	Scintrex V201 split beam cesium vapour Resolution: 0.04 nano Tesla Cycle rate: 0.2 seconds Sample interval: 14 metres
Spectrometer	256 channel geometrics exploranium GR800B Processed channels: Total count 0.40 – 3.01 MeV K ₄₀ 1.37 – 1.56 MeV Bi ₂₁₄ 1.67 – 1.86 MeV Th ₂₀₈ 3.02 – 6.00 MeV Volume: 33.56 litres Cycle rate: 1.0 second Sample interval: 70 metres
Data Acquisition	Hewlett Packard 9000 series computer Aerodata digital acquisition system
Flight Line Spacing	Traverse lines; 200 metres Tie lines: 5000 metres
Flight Line Direction	Traverse lines: 090 – 270 degrees Tie lines; 000– 180 degrees
Survey Height	70 metres – mean terrain clearance
Navigation	Syledis UHF positioning system

Aerodata supplied Dominion with three sets of aeromagnetic contour maps at scales of 1:10000, 1:25000 and 1:100000. Magnetic contours over EL 6747 are shown in Fig 3.

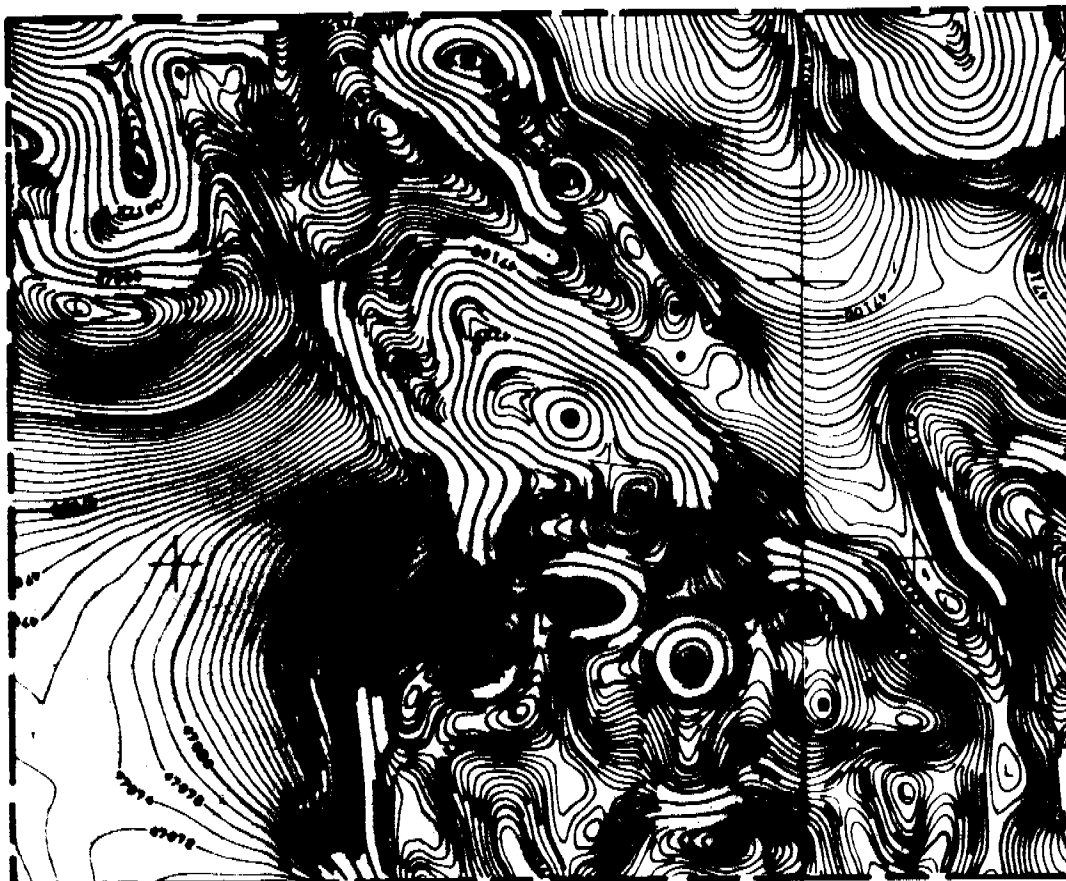
8512500mN

13°27'

13°27'30"

13°28'

8510000mN



13°29'

8507500mN

13°27'

795000mE

131°22'

131°22'30"

131°23'

AIRBORNE MAGNETIC CONTOURS
EL6747 - HOWLEY CREEK

PROJECT BROCKS CREEK

STATE

Geologist N. Burn

Date Feb. '91

MAPN C.S.D.S.

Date Feb. '91

SCALE 1:25 000

FIGURE NO:

PLAN NO: 2P-P4



DOMINION MINING LIMITED

5.2 Geological Mapping and Geochemistry

Geological mapping of the four blocks was carried out at 1:10,000 scale. See Plate 1.

Eleven geological traverses were completed with data compiled and integrated with photogeological interpretation. Areas with minor outcrop occur through a large proportion of this licence and use was made of scree covered areas to map dominant lithologies, thus extending the fact geological cover of EL6747.

Continuous scree/lag sampling was completed over eleven lines for 2100m,. Procedure for this sampling method was to collect 3–5kg of scree continuously over a 25m interval. Seven rock chip samples were also collected.

See Plate 1 for scree and rock chip sample locations.

All scree and rock chip samples were assayed by Analabs in Darwin by analytical technique 313, 50g Fire Assay fusion with AAS finish (DL 0.005ppm).

5.3 Aerial Photography

During May 1989, Airesearch Mapping Pty Ltd of Darwin flew the Woolwonga–Cosmo Howley tenements held by Dominion and produced sets of 1:25,000 and 110,000 air photos.

The relevant air photo runs for EL6747 are AM521 Run 5 (043–046) and AM520 Run 4 (175–178).

6. 1991 EXPLORATION PROGRAM

During the 1990 field season, geological mapping with soil and continuous scree sampling was completed over the licence area. Results from this first pass exploration program detected three low order Au anomalies up to 0.112 ppm Au.

Exploration work completed in 1991 included:

- Aerial photogeological interpretation
- Refinement of the 1990 geophysical interpretation
- Geological mapping with ground traverses
- Re-assessment of 1990 soil and continuous scree sampling

Results of mapping and sampling are fully shown in Plate 1. Previous scree sampling indicated anomalous zones on low topographic rises, with widths of ± 25 metres with 50ppb gold (versus background of ~5 ppb Au). Large areas of low relief, generally covered with transported soils and/or alluvium, remain unsampled at the end of Year 2.

7. CONCLUSIONS AND RECOMMENDATIONS

During the 1990 field season, geological mapping with scree and rock chip sampling was completed over scree/outcrop areas.

Results from this first pass program and review of literature (Archibald and others, 1990) indicates the potential for economic mineralization along major or secondary fault splays within the Zapopan-Brocks Creek shear zone which trends ESE through the NE block e.g. erratic, sheeted quartz veining at the John Bull workings located 1.5km to the ESE.

The follow up Year 3 exploration programme will include further mapping at smaller scales (1:10,000), geochemical sampling (rock chip, soil, continuous scree) and if results are favourable, a small RAB drill program to test beneath transported overburden.

Unless favourable results are received from the initial phases of the proposed Year 3 program, expenditure during Year 3 will be limited to about \$8,000.

8. EXPENDITURE

Total expenditure covenant to end of Year 2 was \$25,000. Expenditure incurred to end Year 2 (28 Feb '92) totals \$33,530 as tabled below.

EL6747 EXPENDITURE YEAR 2 OF TENURE

	Year 1	Year 2	Total
Assays	767	0	767
Aerial Photography	151	0	151
Geophysics	1614	1078	2692
Equipment	0	325	325
Data Acquisition	704	135	839
Salaries and Wages	8032	3218	11250
Consultants	1872	0	1872
Travel and Accommodation	608	431	1039
Vehicles	4807	346	5153
Drafting & Computing	821	981	1802
Field Camp Rental & Prov.	706	195	901
Field Supplies & Equip.	1880	0	1880
Darwin Office & Consum.	862	705	1567
Administration	2176	1116	3292
TOTAL	\$25000	\$ 8,530	\$33,530
COVENANT	\$10,000	\$15,000	\$25,000

9. REFERENCES

Archibald N.J. and Bettenay L.F. (August 1990)

"A summary of the geology and economic potential of the Zapopan-Brocks Creek area, Adelaide River region, Northern Territory."

Burn, N.R. (Mar 1991)

EL6747 "Howley Creek", Pine Creek District NT, Annual Report to 19 February 1991 for Year One of Tenure.

Dominion Gold Operations Pty Ltd.

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

"Regional Geology of the Pine Creek Geosyncline" in proceedings of the International Uranium Symposium. International Atomic Energy Agency, Vienna. p1-22.

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

"The Geology of the McKinlay River Area, Northern Territory, Australia". Bureau of Mineral Resources. 1:100000 Geological Sheet 5271.

FACT GEOLOGY AND
GEOCHEMISTRY

ORIGINATOR: N. Burn
DATE: Oct 90
REVISION: 1
REVISION: 2
SCALE: 1:10,000
PLATE NO: 2P-66
PLAN NO: 2P-66

- Legend
- Vertical strata
 - Dip and strike
 - Quartz vein orientation
 - Vertical quartz vein orientation
 - Cleavage
 - Cleavage S₂
 - Stockwork
 - Outcrop
 - Soil scree contact
 - Boundary between transported and residual soil
 - E.L. Boundary
 - Creeks and drainage
 - Highways and main roads
 - Tracks
 - Railway
 - Bridge
 - Cutting
 - Embankment
 - Pitch of mineral elongation lineation

- Abbreviations
- Alv Alluvial
 - bx breccia
 - with
 - c.Smd carbonaceous Mudstone
 - Clv Calluvium
 - Cu Copper
 - fe ferruginous
 - go gossanous
 - gr grey
 - knt knotted
 - mass massive
 - mr minor
 - phyl phyllite
 - Qz Quartz
 - sc scree
 - Sgw Greywacke
 - Smd Mudstone
 - S₀ bedding
 - Ssl Siltstone
 - str strong
 - stwk stockwork
 - su subvolcanic
 - tf tuffaceous
 - Tmb Sgw Tombstone greywacke
 - tn thin
 - trans transported
 - v very
 - Vdi Dolerite
 - x cross (bedding)
 - yl bw yellow-brown
 - // parallel
 - Assay (ppm)
 - Soil/Scree Line
 - Sample No.
 - Rock Chip Sample Location

Insels

A	B	C	D
283450 0.006	283460 0.006	283470 0.006	283480 0.006
283450 0.006	283460 0.006	283470 0.006	283480 0.006
E	F	G	H
283490 0.006	283500 0.006	283510 0.006	283520 0.006
283490 0.006	283500 0.006	283510 0.006	283520 0.006
I	J	K	
283530 0.006	283540 0.006	283550 0.006	
283530 0.006	283540 0.006	283550 0.006	

Sheet Index

W01	W02	W03	W04
W01	W02	W03	W04
W01	W02	W03	W04
W01	W02	W03	W04

