

BURNSIDE OPERATIONS P/L

**ANNUAL EXPLORATION REPORT
YEAR ENDING 28th FEBRUARY 2004**

FOUNTAIN HEAD

MLN 4, 206, 1020,1034

MCN 1172, 4785

Burnside (14/2-II) 1:50,000

Ban Ban (14/3-III) 1:50,000

Title Holder:- Territory Goldfields N.L.

Distribution

DBIRD Darwin NT

Northern Gold N.L Perth WA

Burnside Operations P/L Brocks Creek

Burnside Operations P/L Perth WA

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SUMMARY

The Fountain Head tenement group is centred 135km SE of Darwin, NT and 10km east of the Brocks Creek gold treatment plant site, on the Ban Ban (14/3-III) and Burnside (14/2-II) 1:50,000 sheets.

Gold mineralisation is hosted by units of the Mount Bonnie Formation of the South Alligator Group and is associated with quartz-pyrite-arsenopyrite veins. These occur in dilatant zones in the axis of a major SE plunging asymmetric anticlinal fold.

Historically, an extended alluvial mining period was followed by trial open pit extraction under the management of Dominion Mining in 1995. Modern exploration has consisted of trenching, RAB drilling, RC drilling, diamond drilling and resource estimates.

Following the formation of the Burnside Joint Venture in April 2002, management was placed under Burnside Operations P/L. The Fountain Head deposits were subjected to a first pass review that allowed a relative ranking of its gold potential in the context of open pit resources close to Brocks Creek. It was recognised as being at the higher end of this ranking and that warranted further drill evaluation.

The expenditure reported for review and modelling work for the 2003 season was \$4,064.00.

In the 2004 season a program of RC drilling is planned to elevate the resource to the indicated category. Expenditure on this drilling program is proposed to be \$77,000.

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1.0 INTRODUCTION

The tenements form part of the Burnside Joint Venture, formed in April 2001 between Territory Goldfields NL and Buffalo Creek Mines NL to explore for and treat gold deposits within a 30km radius of the Brocks Creek gold treatment plant. The Fountain Head mining centre has been the subject of historic alluvial and reef gold mining and was subjected to trial open pit mining in 1995.

This report deals with exploration activity reported for the year ended 28th February 2004.

2.0 TENURE DETAILS

The Fountain Head tenement report group is centred 10km east of the Brocks Creek gold treatment facility and comprises MLN4, 206, 1020, 1034 and MCN 1172 and 4785. They total 879.67ha.

The tenements are registered in the name of Territory Goldfields N.L. and managed by Burnside Operations P/L on behalf of the Burnside Joint Venture. MCN1172 is subject to an application for renewal.

Table 1 Tenement Details

Tenement	Granted	Expiry	Area (ha)
MLN 4	03/05/89	02/05/14	529.9
MLN 206	18/05/71	31/12/08	16.18
MLN 1020	15/10/90	02/05/14	12.04
MLN 1034	01/12/88	30/11/13	304.2
MCN 1172	28/02/89	31/12/03*	3.1
MCN 4785	17/03/95	31/12/04	14.25

* Subject to renewal application.

3.0 LOCATION AND ACCESS

The tenement group is situated 135km SE of Darwin and 10km east of Brocks Creek. They lie on the Ban Ban (14/3-III) and Burnside (14/2-II) 1:50,000 sheets and are between latitudes 13°26' south and 13°29' south and longitudes 131°29' east and 131°32' east

The ground lies within Perpetual Pastoral Lease No. 1111, Ban Ban Springs, held by Ban Ban Springs Station Pty. Ltd.

Access is via the Stuart Highway to the Fountain Head/Grove Hill Road, and lies just north of the Darwin-Alice Springs railway reserve and the Brocks Creek access road. See Figure 1.

4.0 GEOLOGY

4.1 Regional Geology

The Fountain Head group tenements are situated within the Pine Creek Geosyncline, a tightly folded sequence of fine to coarse grained clastic basinal sediments of Lower Proterozoic age.

In the report area the sequence has been regionally metamorphosed to greenschist facies and has been intruded by late syn-orogenic to post orogenic granitoid intrusions. These intrusions imparted thermal contact metamorphic and metasomatic effects and contributed to the deposition of a range of economic minerals in structurally permissive sites.

There is a tendency for gold mineralisation to be focused in anticlines within strata of the South Alligator Group and lower parts of the Finnis River Group. This sequence evolved from initial low energy shallow basinal sedimentation to higher energy deeper water flysch facies. A water-lain tuffaceous component is present and the prospective sequence has been intruded by pre orogenic mafic sills.

Less deformed Middle Proterozoic sedimentary and volcanic sequences unconformably overlie the Lower Proterozoic. In the west of the region, Cambro-Ordovician lavas and sediments of the Daly River Group, as well as Cretaceous arenite tabletops, mask the older sequences.

Cainozoic sediments, laterite and Recent alluvium may obscure parts of the Pine Creek Geosyncline lithologies, but exposure of the more resistant units of the prospective sequence is generally good.

4.2 Local Geology

The mineralisation at Fountain Head occurs within the upper units of the Mount Bonnie Formation, the uppermost division of the South Alligator Group. This comprises alternating siltstone, mudstone and greywacke lithologies that have been metamorphosed to greenschist facies. In the region of Fountain Head the stratigraphy is folded along axes that strike NW-SE.

Cottle in 1937 described the geology of the old Chinese workings in some detail. This work suggested to Dominion geologists a SSE striking anticline with variable limb dips and a faulted axis. Sheeted quartz vein stockworks in the axial zone with veins predominantly dipping northeast. Development of saddle reefs. A possible lithological control to mineralisation. The Chinese preferentially worked thin, high grade veins in carbonaceous mudstones leaving the thicker, lower grade veins in greywacke.

Gold mineralisation is developed within the Fountain Head Anticline which is exposed in the face of a trial mining pit. This fold is gently plunging, asymmetric and has a tight closure. It has a steeply dipping [~70 degrees] north east limb and a more gently dipping

[50-65 degrees] south west limb. The hinge of the anticline plunges roughly 15 degrees towards 126 degrees at the pit, though regionally its plunges are 20 to 30 degrees SE.

In the local area of the defined resource, the fold axis plunges to both the NW and SE, with the mineralisation located at the culmination of a doubly plunging domal structure.

Mineralisation at Fountain Head is hosted by sub vertical shear related stockworks, fracture zones in greywackes and saddle reefs at lithological contacts. Most of the resource is in the hinge zone of the anticline with gold grade rapidly tapering off down dip on the limbs. Fracture zones within the hinge zone lie parallel to the axis of the fold and have acted as a locus for fluid channelling.

Broadly stratabound ore zones are the result of two styles of mineralisation. *Quartz stockworks* have formed only in competent greywacke units, where folding of the hinge zone and adjacent limbs has increased fracture permeability. *Saddle reefs* have commonly formed at the contact between greywacke and mudstone units, and are thickest in the hinge zone, tapering rapidly down the limbs.

The gold mineralisation is part of a quartz-pyrite-arsenopyrite mesothermal system that based on the SPOT image interpretation (Fig 3) the host anticline is structurally related to a NW striking fault system that is intersected by NE striking fractures. The Glencoe mineralised system, 2,500m to the north of Fountain Head, lies on a parallel fault system also striking NW. Further NE again, the Woolwonga deposit is developed on a NW striking faulted anticlinal system.

5.0 PREVIOUS EXPLORATION

Discovery of a gold bearing quartz reef in 1883 was followed by intensive eluvial mining until 1886. Production in this period could have been up to 20,000oz. From 1886 small scale mining of individual quartz reefs and alluvial work was carried out for a total production of around 9,870oz up to 1936.

1985-1989 Zapopan NL carried out an alluvial/eluvial mining operation. Between July 1987 and December 1989 they produced 10,104 ounces of gold from 825,187 cubic metres. In **1995** Dominion Mining Limited carried out trial open pit mining at Fountain Head (Potters Zone) to determine bulk performance at the Cosmo mill. (Van den Oever, 1995).

Modern exploration has consisted of 1,650m of trenching and 14,000m of RAB, RC and diamond drilling. This activity covered 1,200m strike of the mineralisation, and drill hole spacing locally attained 20m by 7.5m. Much of this early work was by Zapopan NL and Destiny Prospecting between 1982 and 1991 coincident with the alluvial mining period.

Despite access to 14,000m of drilling data Dominion in its 1993 assessment of the property found the deposit to have a confusing complexity that was compounded by inconsistencies in the drilling database and azimuths. Their estimates of gold reserve

based on a gold price of \$485/oz totalled 149,691t @ 3.42g Au/t and a pit with a strip ratio of 13.1:1.

During **1996** Northern Gold NL completed a RAB drilling program over MLN 4 and MLN 1034, in order to identify areas of bedrock mineralisation associated with soil anomalism away from the historic producing areas. A total of 311 RAB drill holes were completed for 2,855m. The RAB drilling resulted in the collection of 1,428 samples, which were submitted to Assaycorp, in Pine Creek, for low level gold and arsenic analysis.

During the **1996** field season, Northern Gold N.L. completed an RC drilling program over MLNs 1034 and 4 for resource evaluation. Reverse circulation drilling was undertaken in order to determine the extent and style of bedrock mineralisation around the existing open cuts. A total of 49 RC drill holes were completed for a total of 4,850 metres. All drill hole locations were surveyed by Qasco Northern Surveys and Micro Survey on the local grid. The RC drilling program resulted in the collection of 4,850 samples, which were submitted to Assaycorp, in Pine Creek, for Fire Assay Au analysis. A total of 35 samples were re-split and sent to Amdel in Darwin (Glassock, 1997).

Four samples were composited from RC drill chips and were sent to Amtec in Perth for Metallurgical Test work.

Resource estimates were conducted using Gemcom software. The following is a report by M.Stokes.

Mineralised lenses were interpreted on each drill hole section, and located in 3D on relevant drill hole intersections. These intersections were connected to build a 3-D solid body within which most of the mineralisation is contained. This solid body was constructed to contain regions of geological similarity as well as mineralisation continuity. Towards the west end of the deposit, the mineralisation occurs mostly as sub vertical veins. Towards the east the lode develops into a broad zone of mineralisation within the axial hinge zone of the Fountain Head Anticline. Block modelling was carried out within the mineralised solid for measured and indicated resource categories. Blocks outside of the lode zones were interpolated as an inferred resource category. Estimation of the measured and indicated categories used only assay data from within the lode zone, whereas the inferred category used all assay data. Farrelly C,1996 Report Northern Gold NL Ore Reserves Northern Gold NL Company report unpublished.

A top cut of 20 g/t Au was applied to all assays for modelling. Assay data has been collected from 1m intervals in all cases, except occasional samples collected near surface when collaring drill holes. A bulk density of 2.4 t/m³ was used for material above 78.75 RL, and 2.65 below 78.75 RL. These values were used by Dominion Gold Mines Ltd when mining and treating ore from Fountain Head. Similarly, recovery data from Dominion has been used on face value, and will be subject to independent verification.

A block model was defined using blocks 2.5m North x 5m East x 2.5m Vertical. The model was interpolated from 131.25 m RL to -38.75 m RL.

A rock type model was created defining material with the lode zone, and with material above surface defined as air with zero specific gravity.

Grade estimation used ordinary kriging into the block model with varying searches for each category. Measured category material was defined within the lode zone by kriging with a search of 20m long strike, 3m across strike, and 20m vertical. Indicated material used a search of 40m x 5m x 40m. Inferred material used the same parameters as for inferred, but addressed those blocks outside the defined lode zone solid. The blocks comprising the model were divided into 36 separate domains prior to kriging. This division was based upon regions of similar dip and strike. Each domain was interpolated separately. The inferred resource material was interpolated by changing the target rock type field to that material outside the lodes zones. Results are as follows in Table 2.

Table 2 Fountain Head Resource(Stokes 1996)

		Tonnes	g/t Au
Measured	>0.70 g/t	1,115,590	1.801
Indicated	>0.70 g/t	166,950	1.553
Inferred	>0.70 g/t	318,620	1.402
Resource Total		1,601,160	1.696
		Ounces =	87,294

In **1999-01** rehabilitation programs were carried out in compliance with the conditions of the Mining Act and the Mine Management Act. Drill holes within MLN 1034 were capped with concrete plugs and buried at a depth of 0.3 metres below surface level. No field work was reported during 2001.

In **2002-03** under the management of the Burnside JV, the gold resources were subjected to a technical review that ranked the Fountain Head leases relatively highly compared to others in the region known to contain gold resources.

6.0 EXPLORATION DURING 2003-04

Management of the tenements passed to Burnside Operations P/L in April 2002 as part of the arrangement under the Burnside Joint Venture.

The objective of the joint venture is to explore, develop, mine and treat gold ores within the joint venture area of influence. Fountain Head is ranked as one of the more important tenement groupings in the Joint Venture schedule.

In 2003 the Fountain Head deposit was subjected to a more detailed technical review and preliminary geological modelling to assist in drill planning for testing the principal mineralised strike in 2004.

An interpretation of a Landsat SPOT image was carried out in parallel with annual reporting and added to the understanding of the geological setting of the Fountain Head gold deposits.

Exploration expenditure on this geological review and interpretation was \$4,064.00.

7.0 PROPOSED EXPLORATION 2004-05

A program of RC drilling has been budgeted for the Fountain Head prospect. The proposal comprises 15 holes for an advance of 1,278m. One diamond core tail is included with 50m of coring. This program will allow the resource model to be completed in more detail. With assays and surveys this work is estimated to cost \$77,000.

8.0 REFERENCES

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- MOTTRAM, N., (1999-2000). MLNs 4, 206, 1020 and 1034, MCNs 1172 and MCN 4785, 1998/99 Annual Reports to 28th February 1999 and 2000. Unpublished report by Northern Gold N.L. for the Northern Territory Department of Mines and Energy.
- RUSSELL, R., (1990). Howley Alluvial Mining Project. Geological Background and Exploration History 1986 to 1990. Metana Minerals N.L.
- SHAW, J.A., (2003) Annual Exploration Report, Fountain Head Group, Year Ending 26th February 2003. Burnside Operations P/L for DBIRD.
- VAN DEN OEVER, P., (1995). Fountain Head Trial Pit Report May 1995. Unpublished Dominion Gold Operations Pty. Ltd. internal report.

APPENDIX TWO

Extracts from Dominion Mining Ltd Report
Mt Bonnie Project Appraisal
(Offering by Zapopan NL 1993.)