BURNSIDE OPERATIONS P/L

ANNUAL EXPLORATION REPORT

MLN 1109, MLN 833.

UNION REEFS GOLD MINE

Year Ending 31st December 2004

Pine Creek 1:100,000
Union Reef, Pine Creek 1:50,000

Buffalo Creek Mines P/L; Territory Goldfields NL

DISTRIBUTION:

DBIRD Darwin NT
Burnside Operations P/L (Northern Gold NL) Perth WA
Burnside Operations P/L (Brocks Creek Mine Office) NT
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SUMMARY

The Union Reefs gold mining centre and associated open pits, historic workings and treatment infrastructure is located 170km SE of Darwin, NT and 12km north of Pine Creek. The mining centre is enclosed by MLN1109 that totals 3,998.0ha.

The mining centre was the subject of open pit mining and treatment under the ownership of Acacia Resources Ltd and more recently by AngloGold (Ashanti) Limited. During this period the Union Reefs mill on MLN1109 treated a total of 20,225,360t @ 1.47g/t Au for the recovery of 957,523 fine oz gold.

Production ceased on 27th July 2003 and following a period of negotiations, MLN1109, along with the mine infrastructure and satellite tenements, was purchased in August 2004 by Buffalo Creek Mines P/L and Territory Goldfields NL. The latter comprise the Burnside Joint Venture (2002) and the management entity is Burnside Operations P/L.

Geologically, the mining centre is situated within a 300m wide structural corridor trending NW. The corridor comprises tightly folded and sheared pelitic to arenitic sediments of the Lower Proterozoic Burrell Creek Formation and inliers of underlying Mt Bonnie Formation. Two sub parallel lines of historic gold workings comprise the focus for the array of open pits mined in recent years.

Prior to the acquisition of the Union Reefs Project, the Burnside Joint Venture had been conducting gold exploration in the Burnside Region, centred some 50km to the north-west. Several open pit and underground deposits have been developed by exploratory drilling and include the Cosmo Howley, Zapopan, Princess Louise, North Point and Rising Tide resources. Exploratory drilling was also recently conducted on gold resources within the Joint Venture’s Pine Creek tenements.

The Joint Venture has not conducted exploration within MLN1109 during the 5 month period since purchase. Focus has been maintained on proving sufficient economic gold resources in the Burnside and Pine Creek regions to justify re-starting the Union Reefs mill. The infrastructure and environment has been on care and maintenance during this period and this is expected to continue until such time as a decision to re-commence milling may be announced.

Expenditure in terms of care and maintenance and technical reporting on MLN1109 since acquisition totals $165,000.
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1. INTRODUCTION

The Union Reefs Gold Mine had recently been subjected to a phase of open pit mining and treatment of ores under the management of Acacia Resources Ltd and AngloGold (Ashanti) Limited (Anglo).

During this phase, the total of ore milled was 20,225,360t @ 1.47g/t Au or the recovery of 957,523 fine oz gold.

The Burnside Joint Venture subsequently purchased the mill (design capacity 2.8Mt per annum CIL) and underlying tenements from Anglo in August 2004 thereby extending its commitment to bringing gold resources in the region into production.

This report summarises and examines the status of the project as contained within MLN1109 for the Burnside Joint Venture and to report on activity in the year ended December 31st 2004.

2. TENEMENT DETAILS

MLN1109 was granted on 16th December 1993 and expires on 31st December 2015.

It totals 3,998 ha and has an annual rental of $43,978. A performance bond of $500,000 is attached to the lease.

The tenement encloses MLN833 (Crosscourse pit) with a common report date. Due to its inaccessible position on the western wall of the open pit DBIRD has granted dispensation from separate reporting and is included by default in the report on MLN1109.

Several other miscellaneous licences are enclosed by the principal tenement. These comprise tailings areas, haul roads and other similar mining related purposes. See Fig. 2., 4.

3. LOCATION AND ACCESS

MLN1109 is situated 170km SE of Darwin and 12km north of Pine Creek in the Northern Territory.

Access may be attained eastwards from the Stuart Highway 13km north of Pine Creek, using the Ping Que access road for 5km. This crosses the railway and the headwaters of the McKinlay River that flows northwards just to the west of the mine. Alternative direct access may be achieved by using access tracks north from the Kakadu Highway, just NE of Pine Creek.

The newly refurbished Darwin-Adelaide Railway passes through the western extremities of the tenement, well to the west of the mine and mill infrastructure. The Palm Valley to Darwin-gas pipeline passes just east of the mine complex.
The Union Reefs mining centre comprises a concentration of open pits, waste dumps, tails dams and process water dams occupying an area of 4.5km by 2km. (Fig 4 and Appendix 1). Access within this zone is limited to approved roads and tracks. There are over a dozen open pits, many now backfilled with waste and some, such as the main Crosscourse Pit have been used as a tailings repository. The area was rehabilitated by Anglo prior to sale.

4. GEOLOGICAL SETTING

4.1 Regional Geology

The Union Reefs mining centre is situated within the Pine Creek Geosyncline, a tightly folded sequence of Lower Proterozoic rocks, 10km to 14km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga. The sequence is dominated by pelitic and psammitic (continental shelf shallow marine) sediments with locally significant inter-layered cherty tuff units. Pre-orogenic mafic sills of the Zamu Dolerite event (~1.87Ga) intruded formations of the South Alligator Group.

During the Top End Orogeny (Nimbuwah Event ~1.87-1.85Ga) the sequence was tightly folded, faulted and pervasively altered with metamorphic grade averaging greenschist facies with phyllite in sheared zones.

The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic batholiths into the sequence in the period ~1.84-1.80Ga. These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies, and created regionally extensive biotite and andalusite hornfels facies.

Less deformed Middle and Late Proterozoic clastic rocks and volcanics have an unconformable relationship to the older sequences. Flat lying Palaeozoic and Mesozoic strata along with Cainozoic sediments and proto-laterite cementation overlie parts of the Pine Creek Geosyncline lithologies. Recent scree deposits sometimes with proto-laterite cement occupy the lower hill slopes while fluviatile sands, gravels and black soil deposits mask the river/creek flats areas.

There is a tendency for gold mineralisation to be focused in anticlinal settings within strata of the South Alligator Group and lower parts of the Finniss River Group. This sequence evolved from initial low energy shallow basinal sedimentation to higher energy deeper water flysch facies. Dated at ~1740Ga (Sener 2004) the gold events post dated the Pine Creek Orogeny and Cullen intrusive events and has favoured suitable litho-structural sites in the biotite-hornfels contact facies. See Fig. 3.
4.2 Local Geology

The geology of the Union Reefs mining centre is dominated by the NW striking Pine Creek Shear zone, a 300m wide corridor of folded and sheared metasediment package that largely comprises Burrell Creek Formation (Finniss River Group) and structurally generated inliers of Mt Bonnie Formation (South Alligator Group). Fig. 3.

The host sequence including the Pine Creek Shear Zone is confined to the east (Allamber Springs Granite) and to the west by lobes of the Cullen Batholith. Rocks within this zone have been tightly folded and in high strain areas, subjected to fold limb failure. Axial planes and bedding tend to dip steep westerly. Spotted hornfels to garnet hornfels facies metamorphism is attributed to the influence of the Cullen intrusive event.

4.3 Gold Mineralisation

Gold bearing lodes of the Union Reefs District are confined to the Pine Creek Shear. Economic mineralisation is related to a tightly interbedded sequence of weakly carbonaceous shales and greywackes of the Burrell Creek Formation. Two lines of lode exist on which numerous historic workings are centred. The most productive structure is known as the ‘Union Line’ with a subordinate structure to the east, known as the ‘Lady Alice Line’. The lodes are typical of those characterised as ‘shear related’ but they locally host small saddle reefs.

The gold is associated with quartz-sulphide veining. The location and style of veining throughout the deposit is a complex interplay of structural and lithological controls. Three end member vein styles are recognised.

**Lode Style Veins**, are up to 4m thick, commonly discontinuous, pod-like and hosted by highly sheared, dominantly shale wall rocks. Lode style mineralisation displays the largest amount of grade variability at URGM and includes localised zones of high grade gold. The majority of the old workings at URGM are located on these systems.

**Stockwork vein systems**, are complex and largely restricted to greywacke-dominated horizons. Stockwork veining is typically of moderate gold grade.

**Sheeted vein systems**, are characterised by sub-parallel vein sets that typically occur in thinly interbedded sequences of shale and greywacke. Sheeted veining is typically of lower grade.

The Crosscourse Zone which hosted the majority of gold in the URGM field is dominated by the stockwork vein style with lode style veins concentrated in the Ping Ques and Western Lens system.
Coarse gold is a characteristic feature of the Union Reefs field and occurs as single grains and clusters up to 5mm across. Alluvial/eluvial deposits have remained an attractive feature of the area as a consequence. Some alluvials were put through the mill.

Geologists have carefully modeled 26 lodes in the area. These weakly sulphidic lenses range in width from 1m to 75m and in strike length from 30m to 200m. The down dip extension of the best lode (E lens) is undefined but in excess of 300m. Most other lenses have a plunge component, usually to the north, of 100m to 150m.

The lenses comprise quartz, carbonate, chlorite sericite and broken or brecciated wall rock. Most major veins are bedding-parallel but several linkage vein sets occur and some areas are characterised by sheeted vein sets and deformed stockwork veinlets. Boudins are common. Post mineral faulting has not had an adverse effect on ore block mineability, despite the deformation history being complex.

The local pathfinder mineral for gold is arsenopyrite, but pyrite, pyrrhotite, sphalerite, galena and sparse copper minerals are also present.

The principal styles of sulphide mineralisation include quartz-visible gold banded veining (rare), low sulphide auriferous pyritic veining (common), weakly banded auriferous arsenopyrite-pyrite veining (common), low grade disseminated arsenopyrite-bearing breccias or mylonitic shears (localised), and small semi massive base metal pods that are erratic.

The wider lodes have sharp, feather-edge contacts with wall rock, however many of the narrow structures show diffuse contacts. Visual control during mining is subtle in the stringy zones and in areas of ramifying veinlets. Conditional simulation techniques were used to smooth the composited data and create a mineable ore block mark-out during the grade control process.

The metasediment host rocks to the veins are variably stratified and generally dip steeply (85 degrees) towards the west. Stratification is well defined with strong continuity down dip. The greywacke units are generally 3m to 20m thick and the shale packages generally 1m to 30m thick. The units are interbedded and intercalated. The shales generally are poor quality rock due to chloritic and phyllitic developments, vertical foliations and laminations. The greywacke packages in contrast are fair quality competent rock.

5. PREVIOUS EXPLORATION

Gold was discovered at URGM in December 1873 by prospectors Adam Johns and Phil Saunders (Jones, 1987). Most of the claims were held by European and Chinese miners until 1892, but most had been purchased by Chinese miners by 1894.

Diamond drilling programs were completed at URGM between 1905 and 1964 (Brown, 1906; Jensen, 1915; Shields, White and Ivanac, 1967) and included two government-
funded holes drilled in **1905–1906**, believed to be the first exploration holes in the Northern Territory (Hellsten, Wegmann and Giles, 1994).

Drilling during the **1960s** by the Bureau of Mineral Resources identified a resource at Crosscourse.

Between **1984** and **1988**, 25 exploration holes were drilled by Enterprise Gold Mines NL at Ping Que and Crosscourse (Hellsten, Wegmann and Giles, 1994).

In **1988**, Mineral Horizons drilled 68 percussion holes along the northern half of the Union and Lady Alice lines of mineralisation.

In **1991** The Shell Company of Australia Limited (Shell) carried out detailed soil sampling, geophysical surveys, rotary percussion and diamond drilling. Shell transferred its mineral interests to Acacia Resources Limited (Acacia), which was then floated as a public company, in November 1994.

In February **2000**, AngloGold acquired Acacia and operated the mine until closure in July **2003**. Rehabilitation of the mine site was undertaken by Anglo.

In August **2004**, the Burnside Joint Venture purchased the project tenements and infrastructure from AngloGold. At the same time the JV sold the Brocks Creek mill to Tanami Gold NL.

The mining phase is briefly summarised by tables in Appendix. 1.

### 6. EXPLORATION YEAR ENDED 31ST DECEMBER 2004

Since acquiring the Union Reefs Project, including MLN1109 in August 2004, the Burnside Joint Venture has escalated its exploration drilling and technical review activities in the Burnside region and at Pine Creek. The main objective is to identify sufficient gold ores to justify re-opening the mill at Union Reefs.

As part of this objective the Joint Venture has been actively maintaining the operating readiness of the infrastructure and applying care and maintenance protocols.

It is estimated that since acquisition of the project the Joint Venture has expended a total of $165,000 on staffing, care and maintenance, power, repairs, technical reporting and environmental monitoring within MLN1109.

### 7. FORWARD PROGRAM 2005

During 2005, care and maintenance protocols at Union Reefs will be on-going. During the year it is anticipated that a favourable economic setting will allow start up of milling operations. In that event there will be an escalation of mining and exploration activity. A minimum program costing of the order of $50,000 will be undertaken during this year.
8. REFERENCES


APPENDIX ONE

Union Reefs Gold Mine
Tables Showing previous production by Pit
Plan showing water monitoring points