Acacia
RESOURCES
UNION REEFS
GOLD MINE

ANNUAL MINE BASED EXPLORATION
REPORT FOR
UNION REEFS GOLD MINE
MLN 1109

For the year ending 31 December 1999

CIRCULATION:

NT Department of Mines & Energy
Mine Manager
Geology Superintendent
Geology/Mining Department
URGM File
SUMMARY

This report summarises all mine based exploration activities within the Union Reefs tenement (MLN1109) for 1999. Drilling commenced on the 20th June and was completed by the 1st October 1999.

Overall, drilling was designed to test continuity of known mineralised areas and to upgrade the Union Reefs resource. At year end a total of 119 Reverse Circulation (RC) drillholes totalling 10330m were completed. There were no diamond holes drilled over this period.
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1.0 INTRODUCTION

MLN 1109 (Union Reefs) is located approximately 15km north of Pine Creek township in the Northern Territory (Figure 1). This report details all work carried out by Acacia Resources on this tenement for the 1999 period.

2.0 LOCATION AND ACCESS

Access to the Mining Lease is gained via the Stuart Highway to the north of the Township then east along Ping Ques Road.

3.0 REGIONAL GEOLOGY

The tenement area is located in the central portion of the Pine Creek Geosyncline (Figure 2). The geosyncline contains Early Proterozoic metasedimentary rocks overlying a gneissic and granitic Archaean basement. The metasediments represent a preserved basinal sequence up to 14km thick (Needham et al., 1980), which were tightly folded and metamorphosed to greenschist facies between 1890 to 1870 Ma (Ferguson, 1980).

The Pine Creek Geosyncline was intruded by syn- to post- orogenic I-type granitoids between 1870 and 1800 Ma (Needham et al., 1980). Weakly deformed Middle and Late Proterozoic, Cambro-Ordovician and Mesozoic platform cover unconformably overlie the Pine Creek Geosyncline metasediments (Spurway, 1997).

Economic gold mineralisation is located within the inner zone of the thermal aureole spatially and temporally related to the Cullen Batholith (Klominsky, et al., 1996).

4.0 TENEMENT GEOLOGY

The Union Reefs Mining Lease (MLN 1109) is located within a corridor of Palaeoproterozoic metasediments which is flanked to the east and west by lodes of the Cullen Batholith. The north west trending corridor contains sediments (greywacke, interbedded greywacke-shale and shale) of the Burrell Creek Formation and is approximately 5km wide at the prospect (Donaldson, 1992). The Burrell Creek Formation is strongly deformed into upright to tight isoclinal folds with axial plane cleavage typically transposed onto the folded So (bedding) plane. A system of regional scale shears overprints the earlier folding event forming the Pine Creek Shear Zone (Hewson, 1997).
Gold mineralisation was believed to be hypothermal-mesothermal and involved a multi-staged (sedimentary preparation, metamorphic upgrading and hydrothermal mobilisation generated by heat of the batholith), long term process as represented by a number of quartz vein generations (Klominsky, et al., 1996).

5.0 WORK COMPLETED

5.1 DRILLING PROGRAMMES AND RESULTS

Mine based exploration drilling commenced on the 20th June 1999 and was completed by the 1st October 1999. Drilling activities were focussed at the following areas: Alta, Union North, Crosscourse (E-Lens), Ping Ques, Crosscourse South and the Millars.

A total of 119 RC holes were drilled on the Union Reef’s (MLN1109) tenement totalling 10330m. Table 1.0 provides drilling statistics from each area.

<table>
<thead>
<tr>
<th>Location</th>
<th>No. of Holes</th>
<th>RC Metres</th>
<th>Average Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore Holes</td>
<td>12</td>
<td>484</td>
<td>40.3</td>
</tr>
<tr>
<td>Alta</td>
<td>47</td>
<td>2422</td>
<td>51.5</td>
</tr>
<tr>
<td>Union North</td>
<td>9</td>
<td>1349</td>
<td>149.9</td>
</tr>
<tr>
<td>Crosscourse (E-Lens)</td>
<td>8</td>
<td>1580</td>
<td>197.5</td>
</tr>
<tr>
<td>Ping Ques</td>
<td>6</td>
<td>596</td>
<td>99.3</td>
</tr>
<tr>
<td>Crosscourse South</td>
<td>23</td>
<td>2904</td>
<td>126.3</td>
</tr>
<tr>
<td>Millars</td>
<td>14</td>
<td>995</td>
<td>71.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>119</strong></td>
<td><strong>10330</strong></td>
<td><strong>86.8</strong></td>
</tr>
</tbody>
</table>

Drill holes were designed to infill on drill patterns of the past and to target potential mineralised zones beneath and within the current $750 optimised pit shell. The $750 pit shell was used by Union Reef’s to define a mineable resource. All areas targeted in 1999 intersected significant Au grades however, Ping Ques and parts of Crosscourse South produced narrow low grade results. Boreholes were not sampled.

Drillhole locations are presented in Figures 3,4 at 1:10,000 scale. Plans 1 to 3 display drillholes with collar id’s at 1:2,500 scale, and are found at the back of this report. Drill Logs and assay results are presented on CD-Rom. Details for locating information on CD-ROM are presented in Appendix 4. Drill collar ledger is located in Appendix 1, with Significant Assays shown in Appendix 2.

The following is a summary of the objectives and results of each programme.
(Note: Only Mine Grid coordinates are mentioned in this report. Deviation from Magnetic North to Local Mine Grid is –28.5°).
5.1.1 Alta Exploration

The Alta prospect is defined as the area between 8500N to 8900N and 4650E to 5000E. Drilling proceeded over two stages, the first focusing on testing mineralisation at depth by infilling 1998 drillholes on a 25m x 25m grid. Overall, the drilling programme improved geological understanding and converted a portion of the inferred Alta resource into an indicated category.

The second programme infilled shallow mineralisation on a 12.5m x 20m grid down to the 1150RL. Drilling was close spaced and designed to assist future grade control planning and to improve Union Reefs understanding of grade distribution down dip and along strike.

Significant results received (Appendix 2) from both stages confirmed shallow mineralisation along strike from Union North with visible gold found in some RC chips. The lodes appear to 'pinch and swell' along their strike length with Au grades erratically distributed within them.

Mineralisation consists mostly of stockwork zones of narrow (<50cm) quartz veins parallel and perpendicular to bedding / cleavage. A sericite – arsenopyrite alteration halo generally extends for up to 1m away from the stockwork zones, but rarely exceeds 1.0g/t Au (Payne, 1998).

Zones are structurally complicated and previous core drilling confirmed the presence of deformed and folded quartz-sulphides. Six main lodes were located within this complex zone, with surface outcrops striking NNE with a near vertical dip. Two of these lodes appear to be the extension of the previously identified R and S lenses of Union North.

Some evidence suggests that minor NW striking faults are present, however the extent and exact location at this stage is unknown.

5.1.2 Union North Exploration

Nine RC holes tested the continuity of R & S lens mineralisation along strike and down dip at the northern limits of the deposit. Drilling covered an area from 8100N to 8900N, and 5000E to 5350E.

Drilling intersected numerous thin, sheeted vein sets in a pale green, weakly chloritic ground mass. Continuity of R & S lenses were confirmed with the majority of gold intersection occurring beneath the current $500 reserve pit shell. The distribution of grades within each lens appears erratic however; the global grade (approximately 1.2g/t) for each lens is consistent along strike and down dip.

Data derived from this drilling programme enabled mine planning engineers to establish a final pit design for Union North.
5.1.3 Crosscourse (E-Lens) Exploration

Eight RC drillholes targeted E-Lens mineralisation to provide increased geological data along the margins of the orebody and to improve the reliability of the grade composites between the 950RL and 1100RL for resource modelling. The programme covers an area between 6630N to 6770N and 4870E to 5050E.

Each RC drillhole encountered a large number of crosscutting sulphide rich veins within a greywacke unit, forming a series of stockworks named E-Lens. E-Lens mineralisation appears to be folded with the axis plunging 40° to 50° to the north, and described as containing minor to massive quartz veining, with chlorite, pyrite and lesser amounts of arsenopyrite. Based on excellent gold assay results, E-lens remains consistent at depth as predicted by past modelling. Visible gold was not observed in the RC chips but assays as high as 132g/t Au (over one metre) were recorded. See Appendix 2 for Significant Assays.

5.1.4 Ping Ques Exploration

Six east-dipping holes were drilled from within the Crosscourse Pit targeting Ping Ques mineralisation beneath the east wall (figure 3). Drillholes intersected numerous “teardrop-shaped” ore bearing lenses however these rapidly deteriorated into scattered quartz pods within a carbonaceous shear zone. Consequently, gold mineralisation was poorly developed.

5.1.5 Crosscourse South Exploration

Drilling targeted areas where insufficient drillhole data (density) existed from previous programmes, covering an area between 5600N to 6000N and 4800E to 4950E. Seven RC holes were completed to define and test deeper mineralisation in preparation for the Crosscourse South cutback.

Most holes intersected wide zones of quartz-sericite alteration in a low sulfide system characterised by sparse amounts of arsenopyrite and pyrite mineralisation in greywacke. Results received appear to push the mineralised halos out and extend lodes further southwards than previously modelled. The main central zone of mineralisation remains wide with consistently well developed mineralisation along its strike length and down dip.

5.1.6 Millars Exploration

The Millars area is located between 5050N to 5300N and 4900E to 5010E, and covers the southern extension of a mineralised system known as the “Union Line of Lodes”. Historically, the lodes have extended from surface, producing significant ounces with grades up to 157g/t.
UNION REEFS GOLD MINE
1999 COLLAR LOCATION
SOUTH-CENTRAL AREAS

FIGURE 4

SCALE  1:10000
DATE  25-Nov-1999
DRAWN  M.WOZGA
Better than expected grades were intersected throughout the deposit, with the highest and widest zones (7m@12.65g/t) located directly beneath the historical Millars Pit. Mineralisation is directly associated with abundant quartz, sericite, massive pyrite-arsenopyrite veining within predominantly intercalated shale/greywacke horizons. Further drilling will be required to evaluate the extent of these recent intersections.

5.1.7 Boreholes

Four water bores and eight piezometer holes were drilled at Orinoco and Dam “A” prospects. Two bores produced flow rates of 1.5 to 2.5 liters per second (lps) respectively however, the rapid pull-down and disappointing flow rates achieved preclude any real use for the “bore field” other than potable water.

5.2 SAMPLING

5.2.1 Sampling Methodology

Samples were collected via riffle splitter from a cyclone fixed to the drilling rig. The two-tier riffle splitter contained 12 riffle compartments of 40mm width. Sieving of samples produced by the drill rig demonstrated that 85% of the sample was finer than 2mm. The port size on the bits used on RC47 hammers were approximately 25mm in diameter.

Re-sampling and check sampling was conducted on dry samples with a splitter, with 24 compartments of 25mm width. Wet samples due to water down hole or rain were spear sampled, producing a 4-6kg sample for analysis. Diamond sampling involved taking half-core at selected one metre intervals.

5.2.2 Drillhole Assay Data

Samples were analysed for gold using the 50-gram fire assay technique. 8-10 kg’s were collected via a riffle splitter. These samples were then ground to -2mm via Boyd Crusher at Amdel, Darwin, and then a 4kg sample was split from this sample for grinding to -75mm via a Mixermill 4000. The 50-gram fire assay charge was then measured from this pulp. As, Ag, Cu, Pb, Zn were not analysed.

5.2.3 Assay Standard Results

Laboratory performance was monitored with the use of reliable standards of the same or similar matrix as samples derived from RC drilling. In 1999, Gannett Holding Pty Ltd supplied standards for analysis to Union Reefs. These individually packaged standards were proven reliable and consistent throughout the season.
On average two individual standards were included for each drillhole and dispatched to Amdel laboratories for analysis. Scatter (precision) plots for each standard used in 1999 are displayed in Appendix 3.

5.3 DATA COMPILATION

5.3.1 Drillhole Geology Logs

All reporting of drillhole data were collected via Pentium Laptops using Drillpad software by the mine based exploration geologists. Gold data were collected digitally via E-mail, with gold results merged into the database using Datashed software.

All S.I.F files containing gold assays are available for viewing on the attached CD-Rom (See Appendix 4, for instructions and Appendix 5 for list of geological codes used during downhole geological logging).

5.3.2 Drillhole Surveying

All RC coordinates from the 1999 drilling season were setout using EDM survey equipment along know Mine Grid points. Microsurvey Ltd provided the service. Final survey pick-ups (after drilling) were conducted on all drillholes. Collar coordinates are presented in Appendix 1, and locations displayed graphically in Figures 3 & 4 and Plans 1 to 3.

6.0 ENVIRONMENTAL

Mine based exploration was conducted in a fashion that restricted environmental disturbance to a minimum. Drillholes were capped with PVC caps and rubbish removed upon completion. Some sample bags were removed from drill sites as part of the rehabilitation process. This process will continue in 2000, once the wet season is over.

7.0 EXPENDITURE - YEAR ENDING 31 DECEMBER 1999

For the 1999 season, mine based exploration expenditure at Union Reefs (MLN 1109) totalled $774,074.
8.0 REFERENCES


