PART 3

OTTER EXPLORATION NL.

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EXPLORATION LICENCES 1271, 1276 and 1277

TANAMI REGION, NT

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APPENDIX 3
OTTER EXPLORATION
CENTRAL DESERT JOINT VENTURE
RESOURCE ESTIMATE
JIM'S MAIN

AUTHOR: Bill Makar
DATE: January 95

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</tbody>
</table>
1. INTRODUCTION

This is the first resource evaluation for Jim’s Main to be carried out by Otter Exploration personnel but the third in a series previously reported by Acacia Resources. This report should be referred to as Volume 6 of 6 in conjunction with “Acacia Resources, Central Desert Joint Venture, Resources Estimate 3, Volumes (numbered) 1 to 5 of 6”.

The following resources evaluation includes all the latest drilling carried out during 1994 on Jim’s Main prospect. The majority of the drilling tested the depth extension of known gold mineralisation on 50m spaced sections with one section 1047SN being infill drilled on a 25m spacing.

2. PREVIOUS WORK

All previous reporting on resources for Jim’s Main was carried out by Acacia Resources and was included as pre-resource mineralisation in:

GRE1
GRE1A
GRE2

3. GEOLOGY

3.1 Jim’s South - Mineralisation and Alteration

The lithology at Jim’s South is dominated by variolitic to massive basalt with small vesicles/phenocrys of plagioclase and olivine, and occasional peperite/hyaloclastite textures. Intercalated sediments range from claystone to coarse grained sandstone to granular/oolitic carbonate rock and are generally quartz poor and lithic. They are commonly derived from the basaltic volcanics but include some feldspathic-quartz sandstones and frequently contain sedimentary structures (eg. flame and slump structures etc.)

The alteration within the Jim’s South area is generally low grade, varying from chlorite-leucoxene dominated (typically green in hand specimen) to sericite-carbonate-leucoxene dominated (pale grey to beige in hand specimen). This variation in alteration and the distribution of secondary leucoxene after opaque oxide grains may give rise to “banding” within the basalt, which may be confused with sedimentary features in some instances. Quartz vein stockworking within the alteration zone commonly leads to pervasive silicification of the host rock and is frequently associated with gold.

Gold mineralisation within the Main Zone at Jim’s is hosted by shallow to steeply dipping quartz veins, within fresh to weathered basalt and sedimentary horizons. The mineralisation occurs within translucent quartz veins associated with both the chlorite-leucoxene dominated and sericite-carbonate-leucoxene dominated alteration and varies from low grade up to 109.5 g/t Au (JDH022, 125-126m). Low to medium grade Au mineralisation commonly occurs within the alteration zones adjacent to the quartz veins. The gold is frequently patchy in occurrence, with very high grades occurring adjacent to low grade mineralisation (eg. JDH022 assays for 124-127m; 0.19; 109.5; 0.72 g/t). The mineralisation may also be discontinuous between holes, with abrupt termination’s of mineralisation within 20 metre intervals.

There is evidence of faulting on the eastern and western sides of the main body of mineralisation, as well as some bedding plane slip within the ore body itself. The observation that the NE-SW faults truncate the mineralisation suggests they may be post-mineralisation, and the concordant N-S faulting may be synchronous with the mineralisation. The bedding plane slip appears to truncate the mineralisation in some sections, however it is difficult to detect in core and may go unnoticed in some instances.
Within the Main Zone there appears to be one principal ore lens that is continuous from 10000gN to 10475gN with numerous smaller lenses on either side. The main body of mineralisation has a sinuous trend with a NNE-SSW strike, which can be divided into three distinct zones by the variation in dip. The mineralisation in the southern zone (10000gN to 10100gN) exhibits a subvertical dip, which varies from slightly east in the South (10000gN) to slightly west in the North (10100gN). The mineralisation in the middle zone (10150gN to 10300gN) has a medium dip (45-60 degrees) to the West, which is open to the West on several sections. The mineralisation in the northern zone (10350gN to 10500gN) has a subvertical dip that is open in the southern section but closed and patchy to the North.

4. DATA PREPARATION

Drilling and assay data used was received from Acacia Resources, Darwin. The data was in Micromine format and was converted to Microsoft Access Database format from which binary drill hole/assay files are created as required. This work was carried out by MineMap personnel. Only RC and Diamond Drillhole data on the “New Grid” coordinates were extracted for resource evaluation work. This file was further subdivided to cover Jim’s Main prospect from 10000N to 10500N. The data set includes a total of 117 drill holes with 12,380 gold assays.

5. DATA ANALYSIS

5.1 Gold Distribution and Cut-Off Grade Consideration

In the resource modelling and the ore pod interpretation the cut off grades used were 0.5g/t Au for structural control and 0.8g/t Au and 1.2g/t Au for resource evaluation. The 1.2g/t Au lower cut off was chosen in consideration of the possibility of significant cartage distance for processing of the ore. Resource block models were built using both uncut results and with 30g/t Au top cut applied. The high grade cut (top cut) of 30g/t Au effectively cut 10 samples with the most significant statistical outlier being 189g/t Au.

Using the 0.8g/t Au Model the contained gold above 30g/t Au is 3.3%. Similarly the contained gold above 20g/t Au is 7%.

Cumulative plots of all samples within the 0.5g/t Au and 0.8g/t Au ore envelopes indicate the 2.5% of the total population or outliers, occur at greater than 20g Au with 1% of the total above 30g Au (figures 5.1.1 and 5.1.2). Histogram plots of samples within the 0.5g/t Au and 0.8g/t envelopes show a highly skewed distribution with a significant change at 30g/t Au than a long tail into the high grade gold grades (figures 5.1.3 and 5.1.4).

5.2 Specific Gravity Analysis

Limited data was made available for analysis, estimations used were generally as used in GRE2.

SG applied for Jim’s Main are tabulated below:

<table>
<thead>
<tr>
<th>Material Type</th>
<th>SG Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laterite</td>
<td>2.2</td>
</tr>
<tr>
<td>Hardcap</td>
<td>2.1</td>
</tr>
<tr>
<td>Mottled Zone</td>
<td>2.0</td>
</tr>
<tr>
<td>Clay Zone</td>
<td>2.0</td>
</tr>
<tr>
<td>Weathered Zone</td>
<td>2.5</td>
</tr>
<tr>
<td>Transitional Zone</td>
<td>2.6</td>
</tr>
<tr>
<td>Fresh Rock</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Detail analysis of the SG’s within the interpreted ore zone should be carried out as against an average SG applied on the material type only in previous resource evaluations.
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 6.22
Mean of Plot = 2.62
Number of observations in Plot = 2179
Plot/Total Statistics are equal

OTTER EXPLORATION NL

JIMS MAIN PROSPECT CUMULATIVE PLOT
0.5 INTERP LENSES, ASSAY DATA TO 200G

DRAWN : BILL SCALE 1 : 666
DATE : 12 JAN 1995 CHECKED : Fig 5.1.1
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 4.18
Mean of Plot = 2.48
Number of observations in Plot = 2177
Population Std. Deviation of total = 6.22
Mean of total = 2.62
Number observations in total = 2179
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 6.22
Mean of Plot = 2.62
Number of observations in Plot = 2179
Plot/Total Statistics are equal

OTTER EXPLORATION NL

JIMS MAIN PROSPECT HISTOGRAM
0.5 INTERP LENSES, ASSAY DATA TO 200G

Fig 5.1.3
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 4.18
Mean of Plot = 2.48
Number of observations in Plot = 2177
Population Std. Deviation of total = 6.22
Mean of total = 2.62
Number observations in total = 2179

OTTER EXPLORATION NL

JIMS MAIN PROSPECT HISTOGRAM
0.5 INTERP LENSES, ASSAY DATA TO 60G

Fig 5.1.4
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 6.53
Mean of Plot = 3.18
Number of observations in Plot = 1653
Plot/Total Statistics are equal

Range of Values for AU

Percentage Distribution

0.000 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100

OTTER EXPLORATION NL

JIMS MAIN PROSPECT CUMULATIVE PLOT
0.8 INTERP LENSES, ASSAY DATA TO 60G

Fig 5.1.5
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 4.64
Mean of Plot = 3.07
Number of observations in Plot = 1652
Population Std. Deviation of total = 6.53
Mean of total = 3.18
Number observations in total = 1653

OTTER EXPLORATION NL

JIMS MAIN PROSPECT CUMULATIVE PLOT
0.8 INTERP LENSES, ASSAY DATA TO 60G

Fig 5.1.6
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 6.53
Mean of Plot = 3.18
Number of observations in Plot = 1653
Plot/Total Statistics are equal

OTTER EXPLORATION NL
JIMS MAIN PROSPECT HISTOGRAM plot
0.8 INTERP LENSES, ASSAY DATA TO 200G

DRAWN: BILL | SCALE 1:
DATE: 12 JAN 1995 | CHECKED:

Fig 5.1.7
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 4.64
Mean of Plot = 3.07
Number of observations in Plot = 1652
Population Std. Deviation of total = 6.53
Mean of total = 3.18
Number observations in total = 1653

OTTER EXPLORATION NL

JIMS MAIN PROSPECT HISTOGRAM plot
0.8 INTERF LENSES, ASSAY DATA TO 60G

Fig 5.1.8
5.3 Regolith and Geological Interpretation

The regolith interpretation used were as received in digital format from Acacia Resources, Darwin at the end of November 1994.

Limited geological data was available and ore interpretations made were based on discussions held with Acacia Project and Site Geologists. Both cross sections and plans were interpreted at the selected cut-offs. Initial interpretation was carried out using 0.5g/t Au for structural control in identifying the main mineralising trends, from which the 0.8g/t Au and 1.2g/t Au interpretation were completed.

5.4 Twin Drill Holes

A total of five RC-DDH and one RC-RC hole were twinned in the Jim's Main Prospect. Visual and statistical data displays a bias towards the RC drilling (table 5.4.1 and 5.4.2, and figure 5.4.1) within the main ore zone the average width is broader and the average grade higher in the RC intercepts as compared with the Diamond Drill holes. The overall correlation between the high grade values is poor. In the narrow secondary mineralised lenses the grades are more erratic.

<table>
<thead>
<tr>
<th>Table 5.4.1 Twin Sample Comparisons: RC - DDH</th>
</tr>
</thead>
<tbody>
<tr>
<td>For all twinned sample pairs</td>
</tr>
<tr>
<td>Number of Samples</td>
</tr>
<tr>
<td>Max Au Value</td>
</tr>
<tr>
<td>Mean Au</td>
</tr>
<tr>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Samples &gt;= 1ppm</td>
</tr>
<tr>
<td>Number of Samples</td>
</tr>
<tr>
<td>Mean Au</td>
</tr>
<tr>
<td>Metal (ppm*m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5.4.2 Twin Sample Comparisons: RC - RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>For all twinned sample pairs</td>
</tr>
<tr>
<td>Number of Samples</td>
</tr>
<tr>
<td>Max Au Value</td>
</tr>
<tr>
<td>Mean Au</td>
</tr>
<tr>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Samples &gt;= 1ppm</td>
</tr>
<tr>
<td>Number of Samples</td>
</tr>
<tr>
<td>Mean Au</td>
</tr>
<tr>
<td>Metal (ppm*m)</td>
</tr>
</tbody>
</table>

The false cross-section in Figure 5.4.1 displays the twin drill holes for visual comparison.
6. COMPUTER BLOCK MODEL-RESOURCE ESTIMATE

6.1 Resources Parameters

To confirm the search ranges for the ellipsoidal 3D inverse distance weighting (IDW) algorithm in the block modelling of Jim's Main Snowden Associates Pty Ltd were commissioned to carry out a simple 3D directional variogram study. (Appendix 2). They were provided with the total assay data and the constrained assay data within the 0.5g/t Au and 0.8g/t Au interpreted pods along with the string files of the cross-sectional pod interpretations. They were also provided with hard copies of cross sections and interpreted level plans. They were requested to analyse the data along the main interpreted N-S strike direction of the ore zone and also to search along the direction of the interpreted flexure or cross cutting structural features noted in the level plan interpretation.

North of section 10350N insufficient data was available to define meaningful full variograms.

Results of the study conclude that the search ranges for the ellipsoidal directions for interpolating the model are:

- Horizontal plane: strike of 20°N, range 85m
- East West plane: apparent dip of 50° towards the west, range 65m
- Downhole variogram: 90° azimuth - 60° dip, range 17m corresponds to the across dip directions

Based on the results received the modelling parameters were modified to the recommended search ranges and the block models were re-run. Resulting block model grade varied by 0.01g/t Au.

Listed below are the main parameters used in defining the Block Model.

**Main Parameters**

<table>
<thead>
<tr>
<th>Base Point</th>
<th>Cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easting</td>
<td>10060</td>
</tr>
<tr>
<td>Northing</td>
<td>9875</td>
</tr>
<tr>
<td>Datum Elev</td>
<td>2000</td>
</tr>
<tr>
<td>Rotation</td>
<td>-13°</td>
</tr>
</tbody>
</table>

| Size in X Direction | 5 (M) |
| Size in Y Direction | 10 (M) |
| No. Cells in X     | 60    |
| No. Cells in Y     | 60    |

Number of benches/flitches: 32 (@5m heights)
Number of assays/qualities: 3 (Gold (Au), Relative Density (Rel Den) and Ore Type.)

**Algorithms**

- Au - Ellipsoidal 3D IDW (inverse distance weighting)
- Rel_Den - Triangulation
- Ore Type - Triangulation

**Parameters Ellipsoidal Search Algorithm**

- Minimum number samples within ellipsoidal envelope before cell value is calculated: 1
- Weighting Power: 2.5

- Size
  - X = Radius (E) 65m (search down dip towards the West)
  - Y = Radius (N) 85m (search along strike)
  - Z = Radius RL 17m (search across the dip)
Rotation about the:
Z axis (strike) 7°
Y axis (dip) 50°
X axis (plunge) 0°

The block model was rotated -13° (013° grid) around the base point to minimise the size of the block model to encompass the entire resource.

32 flitches were defined in the model with the top flitch being at the 420 RL.

Three assays/qualities were selected for modelling. Both the flitch heights (bench thickness) and the background values for the assay/qualities are injected into each cell when an empty Block Model is generated.

The search distance and direction for the triangulation algorithm selected for Relative Density and Ore-Type are set during model building phase.

The grade interpolation parameters for the Ellipsoidal Search Algorithm selected were set to take into account the wide drill hole spacing along strike and to take into account the complexities of the main ore zone.

A weighting power of 2.5 was selected to prevent smearing of high grade values across wide lenses and not to constrict the search of the high grade values along the strike and dip.

6.2 Resource Calculation Methodology

MineMap a mining based software was used for block modelling of the Jim’s Main.

The general methodology was to model in plan using the selected grade interpolation algorithm injecting gold values within the cells where cell centres are constrained within the interpreted ore string. Two passes, one for the main lens and one for the secondary lenses with selected drill assay data were run. For the relative density (SG) and ore types the Block Model was re-run injecting the constrained cells with the string value. (Only cells whose cell centre lie within the selected strings are assigned the string value).

A series of Block Models were generated at the lower cut-offs of 0.5, 0.8 and 1.2 g/t Au with separate Block Models for uncut gold values and for gold cut to 30g/t Au.

Due to the coarse size of the cells used for modelling and the narrow stringy nature of some of the ore lenses not the entire pod was injected with gold value. This is due to the fact that the cell centres have fallen outside the interpreted ore string.

6.3 Geological Computer Resource Estimate Classification

The classification of the gold resources of the Jim’s Main Prospect falls within two categories. INDICATED and INFERRED.

The gold mineralisation associated with the Main Ore Zone from surface to the 295 RL Bench has been classified as an INDICATED RESOURCE as good continuity has been demonstrated along strike even though the section spacing is at 50m.

Gold mineralisation associated with the secondary lenses and stingers and with the main zone below the 295 RL Bench has been classified as an INFERRED RESOURCE as there was lack of continuity both along strike and dip.
6.4 Geological Computer Resource

Tabulated below are the computer generated resources estimated for Jim's Main at the interpreted cut-off showing the comparison between the uncut resource and with a top cut of 30g/t Au applied.

<table>
<thead>
<tr>
<th>Lower Cut</th>
<th>Top Cut</th>
<th>Indicated</th>
<th>Inferred</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Applied</td>
<td>Tonnes</td>
<td>Grade</td>
<td>Tonnes</td>
</tr>
<tr>
<td>0.5g/t</td>
<td>30g/t</td>
<td>1,401,375</td>
<td>2.83</td>
<td>281,875</td>
</tr>
<tr>
<td>0.5g/t</td>
<td>uncut</td>
<td>1,401,375</td>
<td>2.89</td>
<td>281,875</td>
</tr>
<tr>
<td>0.8g/t</td>
<td>30g/t</td>
<td>1,126,825</td>
<td>3.26</td>
<td>163,575</td>
</tr>
<tr>
<td>0.8g/t</td>
<td>uncut</td>
<td>1,126,825</td>
<td>3.37</td>
<td>163,575</td>
</tr>
<tr>
<td>1.2g/t</td>
<td>30g/t</td>
<td>871,500</td>
<td>3.71</td>
<td>115,650</td>
</tr>
<tr>
<td>1.2g/t</td>
<td>uncut</td>
<td>871,500</td>
<td>3.78</td>
<td>115,650</td>
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<td></td>
<td></td>
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<td>1,683,250</td>
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<td>1,683,250</td>
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<td>1,290,400</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>3.66</td>
</tr>
</tbody>
</table>

Comparing a top cut of 30g/t Au to uncut values the gold grade is decreased by approximately 2.8% for the 0.8g/t Au Block. The difference in ounces is approximately 4,300oz.

In GRE2 a pre-resource potential of 1,970,000 tonnes @ 2.76g/t Au was quoted.

7.0 CONCLUSION

A geological resource estimate based on the Block Modelling techniques using MineMap software at a cut-off grade of 0.8g/t Au applying a 30g/t Au top cut, has been defined here as:

TOTAL RESOURCE 1.29Mt @ 3.12g/t Au consisting of:-

- Indicated Resource 1.13Mt @ 3.27g/t Au; and
- Inferred Resource 0.16Mt @ 2.2g/t Au.

(As required by the Australian Institute of Geoscientists (AIG and AusIMM) to meet the Australian Guidelines for the statement of resources.)

8.0 RECOMMENDATIONS

The recommendation for further work at Jim's Main will upgrade the current resource category from indicated to a measured status and to provide block models for detailed pit optimisation for final pit designs and mine planning.

Recommendation for further resource work includes:

a) Infill RC and diamond core drilling on 25m spaced sections.

b) Some additional diamond core drilling on the 50m spaced sections to test extent of high grade ore zones still open at depth.

c) Further SG analysis to confirm the SG's within the interpreted ore pods.

d) Preliminary mining studies to identify the depth potential of an open pit which will assist in targeting drill holes.

e) 3D geological modelling to assist in ore body interpretation.
9.0 REFERENCES

P. A. Ruxton, 1994
Geological Resource Estimate 2

J. A. Horton, 1994
Resource Estimate 3

D. M. Sewell, 1995
## JIM'S MAIN PROSPECT

### RESOURCE TABULATION BY CATEGORY AND BENCH

**MODEL:** JIM08_30 md (0.8g/t ore interpretation with a 30g/t TOP CUT applied)

<table>
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## JIM'S MAIN PROSPECT

### RESOURCE TABULATION BY CATEGORY AND GRADE

**MODEL:** JIM08_30 md (0.8g/t ore interpretation with a 30g/t TOP CUT applied)

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<td>TONNES</td>
<td>GRADE</td>
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<td><strong>163575</strong></td>
<td><strong>2.17</strong></td>
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</table>
# JIM'S MAIN PROSPECT

## RESOURCE TABULATION BY GRADE AND MATERIAL TYPE (SG)

**MODEL:** JIM08_30 (0.8g/t ore interpretation, 30g/t TOP CUT applied)

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<th>GRADE RANGE</th>
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<th>HARDCAP: 2.1 TONNES GRADE</th>
<th>MOTL/DCLAY: 2.0 TONNES GRADE</th>
<th>WEATHERED: 2.5 TONNES GRADE</th>
<th>TRANSITIONAL: 2.6 TONNES GRADE</th>
<th>FRESH: 2.8 TONNES GRADE</th>
<th>TOTAL TONNES GRADE</th>
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</thead>
<tbody>
<tr>
<td>0.8 - 3.00</td>
<td>0</td>
<td>0</td>
<td>319000</td>
<td>137500</td>
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<td>3.00 - 10.00</td>
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<td>319000</td>
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<td>10</td>
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<td>0</td>
<td>2500</td>
<td>11.37</td>
<td>6675</td>
<td>14.04</td>
<td>17525</td>
</tr>
</tbody>
</table>

**TOTAL** | 0                           | 1050                        | 486500                      | 2.92                        | 303750                      | 3.64                        | 1290400           |
APPENDIX 2
APPENDIX 3
OTTER EXPLORATION NL

JMS MAIN PROSPECT 0.8g/t MODEL
SHOWING THE 270RL FLITCH

DRAWN: RM  SCALE: 1:2000
DATE: 9 MAY 1995  CHECKED:

JM270RL
OTTER EXPLORATION NL

JIMS MAIN PROSPECT 0.8g/t MODEL
SHOWING THE 350 RL FLITCH

DRAWN : BM  SCALE : 1:2000
DATE : 9 MAY 1985  CHECKED : 350rl
OTTER EXPLORATION NL

JIMS MAIN PROSPECT 0.0g/t MODEL
SHOWING THE 300 RL FLITCH

DRAWN : EM  SCALE 1 : 2000
DATE : 6 MAY 1995  CHECKED :
OTTER EXPLORATION NL

JIMS MAIN PROSPECT 0.6g/t MODEL
SHOWING THE 400 RL FLITCH

DRAWN: BM  SCALE: 1 : 2000
DATE: 9 MAY 1992  CHECKED: 400rl
APPENDIX 4
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<th>Page</th>
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<tbody>
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<tr>
<td>2. PREVIOUS WORK</td>
<td>4</td>
</tr>
<tr>
<td>3. GEOLOGY</td>
<td>4</td>
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<td>4. DATA PREPARATION</td>
<td>9</td>
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<tr>
<td>5. DATA ANALYSIS</td>
<td>9</td>
</tr>
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<td>5.2 SG Analysis</td>
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<td>21</td>
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<tr>
<td>8. RECOMMENDATIONS</td>
<td>21</td>
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<td>9. REFERENCES</td>
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APPENDIX

1. Dogbolter Main Resource Tables.
2. Dogbolter Main Prospect: Variogram Study and Dogbolter Statistical Plots
4. MineMap Modelling Algorithms
5. Dogbolter Main Cross Section (20m intervals from 16300N to 16720N).
6. Dogbolter Main Level Plans from 400 RL to 290 RL at 10m intervals.

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<th>Figure</th>
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<tr>
<td>1.1</td>
<td>Prospect Location and Access</td>
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<tr>
<td>1.2</td>
<td>Dogbolter Prospect</td>
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<td>4.1</td>
<td>Dogbolter Main Prospect Drillhole Location</td>
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<td>5.1.1</td>
<td>Lognormal Probability Plot: All Au &gt;0.1g/t</td>
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<td>5.1.2</td>
<td>Lognormal Probability Plot: Au in 0.5g/t envelope</td>
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<td>5.1.3</td>
<td>Lognormal Histogram: All Au &gt;0.1g/t</td>
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<td>Lognormal Histogram: Au in 0.5g/t envelope</td>
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<td>5.1.5</td>
<td>Lognormal Cumulative Plot: Au in 0.8g/t envelope</td>
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<td>5.1.6</td>
<td>Cumulative Plot: Au in 0.8g/t envelope</td>
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<td>6.1</td>
<td>Dogbolter Main Long Section of contoured gold values.</td>
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</table>
1. INTRODUCTION

This is the first resource evaluation for Dogbolter Main to be carried out by Otter Exploration personnel but the fourth in a series previously reported by Acacia Resources.

Infill drilling at the Dogbolter Main to 20m spaced sections during the latter half of 1994 was undertaken to confirm the indicated resource status. The following resource evaluation includes all data up to the end of 1994 with the resource drilled out to 20m x 20m spacing.

2. PREVIOUS WORK

Previous reporting on resources for Dogbolter Main was carried out by Acacia Resources.

GRE1 - 08.6520
GRE1A-08.6521
GRE2 - 08.7024
GRE3 - 08.7030

3. GEOLOGY

Dogbolter Main Zone is situated approximately 10 kilometres south and along strike of the Tanami Gold Mine and is hosted by the early Proterozoic Mt Charles Beds of the Tanami Complex. The mineralisation is on the eastern limb of a broad 6-7km wave length syncline between the Coomarie Dome to the west and the Frankenla Dome to the east (Tunks, et. al., 1994).

The stratigraphy comprises intercalated sediments and basalts in which bedding attitudes vary only slightly from 012°/50°W. The basalts are variably pillowed, massive vesicular locally, to hyaloclastic breccias which are intensely fractured. The sediments comprise interbedded claystones, siltstones and sandstones which are extensively limonitised. The fine-grained nature of the sediments containing variable proportions of the Bouma sequence, together with intercalated massive and pillow basalts are indicative of a low energy subaqueous depositional environment.

Gold mineralisation is generally associated with steeply dipping massive quartz veins, brittle fractures and stockworking, however not all of the vein material contains gold. Mineralised quartz veins are fractured and brecciated and locally contain vughy textures after replacement of carbonate. Several of the better grade intercepts (>50g/t) from DDH008 and DDH010 are conspicuously associated with narrow (mm to cm) size geothitic to manganiferous fractures and veins. Trace disseminated malachite, pyrite and chalcopyrite are associated with the vein gold mineralisation in several holes.

4. DATA PREPARATION

Drill and assay data was received in Micromine digital format from Acacia Resources, and was converted to Microsoft Access Database format from which files compatible to MineMap software are created. Only RC and diamond drill holes on the ‘Old Grid’ coordinates were extracted for resource evaluation work (figure 4.1).

64RC and 42RC/diamond core holes comprising a total of 11620 gold assays of 1m interval form the data set.
Otter Exploration CDJV

Dogbolter Prospect Locations

Showing RC & Diamond Drillholes (Old Grid)

Drawn: BM  Scale: 1:10000
Date: 7 Feb 1995  Checked:  

Figure 1.2
OTTER EXPLORATION CDJV

DOGBOLTER MAIN PROSPECT

RC & DIAMOND DRILLHOLES LOCATION (OLD GRID)

DRAWN : BM  
SCALE 1 : 2500  
DATE : 7 FEB 1995  
CHECKED :  

FIGURE 4.1
5. DATA ANALYSIS

5.1 Gold Distribution and Cut-Off Grade Consideration

For the resource estimate a **TOP CUT** of 60g/t Au was applied. 60g/t Au was also applied as the top cut in GRE3.

In applying a top cut of 60g/t Au it effectively cut 17 gold assays (2% out of a total of 861) within the 0.8g/t Au envelope with the most statistically significant outlier being 354.5g/t Au.

Using the 0.8g/t Au block model the contained gold above 60g/t Au is ~15% or ~15,300oz.

Statistical analysis of the Dogbolter Main was carried out by Snowden Associates Pty Ltd, (Appendix 2). The data set included all assays used in the Dogbolter Main Resource estimate and the assays constrained within the 0.5g/t Au envelopes (figure 5.1.1, 5.1.2, 5.1.3 and 5.1.4). No analysis was carried out on assays within the 0.8g/t Au envelopes. The 97.5th percentiles for the data within the 0.5g/t Au envelope are 30.5g/t. The log normal probability plot (figures 5.1.1 and 5.1.2) both show a change in the slope at the 80 to 85g Au range.

Lognormal cumulative and cumulative plots (figure 5.1.5 and 5.1.6) of the assay data within the 0.8g/t envelopes also show a change in the slope at the 85g/t Au.

Interpretations for Dogbolter Main were carried out at 0.5g/t Au and 0.8g/t Au cut-offs. The 0.5g/t Au interpretation provided structural control in delineating the mineralised envelope. Resource interpretation for block modelling was carried out at 0.8g/t Au. Block models were built using both uncut results and with 60g/t Au top cut applied.

5.2 Specific Gravity Analysis

The SG data used in the Dogbolter Main resource evaluation emulate the SG's applied for Dogbolter Main in GRE3.

SG applied for Dogbolter Main are tabulated below:

<table>
<thead>
<tr>
<th>Material Type</th>
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<tr>
<td>Transporter Laterite</td>
<td>2.4</td>
</tr>
<tr>
<td>Hardcap</td>
<td>2.4</td>
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<tr>
<td>Mottled Zone</td>
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<tr>
<td>Clay Zone</td>
<td>2.0</td>
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<tr>
<td>Weathered Zone</td>
<td>2.5</td>
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<tr>
<td>Transitional Zone</td>
<td>2.6</td>
</tr>
<tr>
<td>Fresh Rock</td>
<td>2.8</td>
</tr>
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</table>

At present the SG's applied to the mineralised zones are the average for the material type that the mineralised zone lies within. The mineralised zones are observed to be hard fractured quartz vein and silicified quartz breccias; applying the average SG understates the mineralised zone SG, and hence the mineral tonnage and contained gold (in all zones except the Transitional, and Fresh Rock types.) A detailed analysis of the SG's of the mineralised zones is required.
LOG Normal Probability Plot
Dogbolter - All Au > 0.1 g/t

Probability

Grade > 0.1 g/t
LOG Normal Probability Plot

Dogbolter Au in 0.5g/t envelope
LOG Normal Histogram
Dogbolter - All Au data > 0.1g/t

Frequency Count

Grade > 0.1 g/t
LOG Normal Histogram

Dogbolter Au in 0.5g/t envelope
LOGNORMAL CUMULATIVE PLOT

Population Std. Deviation of Plot = 0.5867
Mean of Plot = 0.3411
Number of observations in Plot = 861
Population Std. Deviation of total = 0.6277
Mean of total = 0.3256
Number observations in total = 865

OTTER EXPLORATION CDJV

DOG BOLTER MAIN LOG NORMAL CUMULATIVE PLOT
DATA WITH IN 0.8g/t ENVELOPE

DRAWN : BM  SCALE  1 : 666
DATE : 6 FEB 1995  CHECKED :

Fig 5.1.5
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 11.48
Mean of Plot = 5.41
Number of observations in Plot = 855
Number of observations with no values = 4
Population Std. Deviation of total = 18.54
Mean of total = 6.46
Number observations in total = 861

Range of Values for AU

Percentage Distribution

OTTER EXPLORATION CDJV

DOG BOLTER MAIN CUMULATIVE PLOT
DATA WITH IN 0.8g/t ENVELOPE

Fig 5.1.6
5.3 Regolith and Geological Interpretation

The regolith interpretation were used for sectional analysis and in block modelling the SG value. Data was received in digital format from Acacia Resources, Darwin. Limited geological data was available.

Resource interpretations in both cross-section and plan were carried out at 0.5g/t Au and 0.8g/t Au. The initial interpretation was carried out at 0.5g/t Au for structure control in identifying the main mineralising trends, from which the 0.8g/t Au pod were delineated for use in block modelling.

From plan and cross sectional interpretation of the Dogbolter Main the majority of mineralisation lies within a planar lens striking ~350° to 355° g N and dipping 60° to 70° east, traced from 16320gN to 16680gN and down dip to the 375RL. South of 16480gN and down dip of the 375RL the zone bifurcates into two limbs. The hanging wall limb weakens and breaks up with depth developing into a series of pods below the 350RL. The footwall limb persists with depth breaking up below the 300RL. South of 16440gN a footwall pod develops paralleling the main zone, weakening below the 350RL and redeveloping below the 310RL. The overall strike length of this pod is in the order of 120m. South of 16340gN to 16300N a separate southern lens has been interpreted; striking ~345°gN and dipping ~70° east with an average width of ~3m.

A series of minor footwall and hanging wall lens are intersected by drilling along the main mineralised zone.

Two cross cutting structural features have been identified as mineralised zones. A footwall feature which develops at 16400gN striking ~330°gN off the main zone, the second is a hanging wall shear striking ~25°gN from about 16560N. This second feature is on the same attitude as the Dogbolter NE prospect.

6. COMPUTER BLOCK MODEL-RESOURCE ESTIMATE

A simple variogram study was carried out by Snowden Associates Pty Ltd (Appendix 2) to define the search ranges to apply to the ellipsoidal search radii for block modelling Dogbolter Main.

Listed are the search ranges for the ellipsoidal directions for interpolating the block model for the data within the 0.5g/t Au envelope.

<table>
<thead>
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<th>Range</th>
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<tr>
<td>Horizontal Plane</td>
<td>350°N, range 33m</td>
</tr>
<tr>
<td>Down Hole</td>
<td>270°N, dip - 60°, range 5.8m</td>
</tr>
<tr>
<td>Down Dip</td>
<td>80°, -30°, range 20m</td>
</tr>
</tbody>
</table>

Down Hole corresponds to across the dip direction.

The mineralised body is interpreted (contour of composited gold values within the 0.8g/t envelope) to plunge gently north at 10° (figure 6.1)
6.1.1 Block Modelling Parameters

Listed below are the main parameters used in defining the Block Model.

**Main Parameters**

<table>
<thead>
<tr>
<th>Base Point</th>
<th>Cells</th>
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<tr>
<td>Easting (old grid) 10100</td>
<td>Size in X Direction 5 (M)</td>
</tr>
<tr>
<td>Northing (old grid) 16250</td>
<td>Size in Y Direction 10 (M)</td>
</tr>
<tr>
<td>Datum Elev (M) 1000</td>
<td>No. Cells in X 45</td>
</tr>
<tr>
<td>Rotation 0°</td>
<td>No. Cells in Y 50</td>
</tr>
</tbody>
</table>

Number of benches/flitches: 29 (@5m heights)
Number of qualities: 3 (Gold (Au), Relative Density (Rel_Den) and Ore_Type.)

**Algorithms - (Appendix 3)**

- Au - Ellipsodial 3D IDW (inverse distance weighting)
- Rel_Den - Triangulation
- Ore_Type - Triangulation

**Parameters Ellipsodial Search Algorithm**

Minimum number samples within ellipsoidal envelope before cell value is calculated 1
Weighting Power: 2.5

Size

- **X** = Radius (E) 20m (search down dip towards the West)
- **Y** = Radius (N) 33m (search along strike)
- **Z** = Radius RL 5.8m (search across the dip)

Rotation about the:
- Z axis (strike) 350°
- Y axis (dip) 60° (east)
- X axis (plunge) 10° (north)

29 flitches were defined in the model with the top flitch being at the 410 RL.

Three qualities were selected for modelling. Both the flitch heights (bench thickness) and the background values for the assay/qualities are injected into each cell when an empty Block Model is generated.

The search distance and direction for the triangulation algorithm selected for Relative Density and Ore_Type are set during the model building phase.

The grade interpolation parameters for the Ellipsodial Search Algorithm selected were defined by simple variogram analysis of the Dogbolter Main assay data by Snowden Associates (Appendix 2).

A weighting power of 2.5 was selected to prevent smearing of high grade values across the width of the mineralised lenses and to confine the search of the high grade values along the strike and dip. A comparison of the weighting factor was carried out (Appendix 3) using the powers of 2, 2.5 and 3. The block model grades varied by less than 0.01g/t Au for the 0.8g/t Au block model using uncut gold grade and gold grades cut to 60g/t Au.
6.2 Resource Calculation Methodology

"MineMap" a mining based software was used for block modelling of the Dogbolter Main.

The general methodology was to model in plan using the selected grade interpolation algorithm injecting gold values within the cells where cell centres are constrained within the interpreted ore string. One pass using selected drill hole data was run. For the qualities of relative density and ore-type a set of string files was created for each quality with each string assigned a value to represent the representative quality. The block model was re-run for the respective qualities with the constrained cells being assigned the string value. Again only cells whose cell centre lie within the selected strings are assigned a value.

A series of block models were generated at the cut-offs of 0.5g/t Au and 0.8g/t Au with separate block models generated for uncut gold values and for high grade gold assays cut to 60g/t Au.

Due to the coarse cell size used for modelling a percentage of an ore pod may not be injected with a value. This occurs where lenses are interpreted to pinch out or narrow with the cell centre falling outside the string.

6.3 Geological Computer Resource

Results of block modelling the Dogbolter Main indicates the significance of the high grade gold values, or a high nugget effect associated with the resource. In applying a top cut of 60g/t Au for the 0.8g/t Au block models the resource grade is cut by ~1.0g/t Au or ~15%.

Tabulated below is the computer generated resource estimated for Dogbolter Main at the given cut-offs showing the comparison between the grades of the uncut resource and with a top cut of 60g/t Au applied.

<table>
<thead>
<tr>
<th>Lower Cut (Au)</th>
<th>Top Cut Applied (Au)</th>
<th>Total Tonnes</th>
<th>Grade g/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5g/t</td>
<td>60g/t</td>
<td>693 150</td>
<td>4.30</td>
</tr>
<tr>
<td>0.5g/t</td>
<td>uncut</td>
<td>693 150</td>
<td>5.00</td>
</tr>
<tr>
<td>0.8g/t</td>
<td>60g/t</td>
<td>445 575</td>
<td>5.89</td>
</tr>
<tr>
<td>0.8g/t</td>
<td>uncut</td>
<td>445 575</td>
<td>6.96</td>
</tr>
</tbody>
</table>

In applying a top cut of 60g/t Au the gold grade is decreased by approximately 15% for the 0.8g/t Au block model. The difference in ounces is ~15,300oz.

The 20m spaced infill drilling has not effected the final resources estimate significantly at the Dogbolter Main and is within 5% of the previous estimate; confirming continuity in the mineralised zone.

In GRE3 a combined indicated and inferred resource of 0.47Mt @ 6.9ppm was reported.
7. CONCLUSION

A geological resource estimate based on block modelling techniques using "MineMap" software at a cut-off grade of 0.8g/t Au applying a 60g/t Au top cut, has been defined as:

<table>
<thead>
<tr>
<th><strong>A GEOLOGICAL RESOURCE</strong> of</th>
<th><strong>0.44Mt @ 5.9g/t Au</strong> consisting of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured Resource</td>
<td>0.34Mt @ 6.22g/t Au</td>
</tr>
<tr>
<td>Indicated Resource</td>
<td>0.09Mt @ 4.68g/t Au</td>
</tr>
<tr>
<td>Inferred Resource</td>
<td>0.01Mt @ 6.1g/t Au</td>
</tr>
</tbody>
</table>

* As required by the Australian Institute of Geoscientists (AIG and AusIMM) to meet the Australian guidelines for the statement of resources.

The resource reported as "measured category" is associated with the main mineralised lens which demonstrates continuity along strike and with depth to the 305RL. The resource reported as "indicated category" is associated with the main mineralised zone below the 305RL, the hanging wall limb of the main zone below the 350RL, the footwall zone and the southern lens. The resources associated with the "inferred category" are the minor hanging wall and footwall lenses.

8. RECOMMENDATION

Recommendations for further work at the Dogbolter Main are:

1. Additional RC drilling to test for strike extensions of the southern lens.

2. RC drilling to test an inferred NW footwall shear/mineralised zone striking ~330 from 16440 old gN to 16720 old gN.

3. RC drilling to test along the strike of the NE shear identified at 16540 old gN. This trend has the same attitude as Dogbolter NE prospect.

4. Preliminary mining studies to identify the limits of an open pit, which will assist in targeting drill holes.

5. 3D geological modelling to assist in ore body interpretation.

6. SG analysis of the mineralised units.

9. REFERENCES

J A Horton 1994, Resource Estimate (GRE3)

APPENDIX 1
## DOGBOLTER MAIN PROSPECT

### RESOURCE ESTIMATE

**MODEL:** DM\_08CUT (0.8g/t Au interpretation with 60g/t TOP CUT applied)

<table>
<thead>
<tr>
<th>BENCH</th>
<th>MEASURED</th>
<th>INDICATED</th>
<th>INFERRED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TONNES</td>
<td>GRADE</td>
<td>TONNES</td>
<td>GRADE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;410&quot;</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
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<tr>
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<td>0</td>
<td>0.00</td>
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<tr>
<td>&quot;400&quot;</td>
<td>12500</td>
<td>5.18</td>
<td>600</td>
<td>1.74</td>
</tr>
<tr>
<td>&quot;395&quot;</td>
<td>14500</td>
<td>4.76</td>
<td>1000</td>
<td>1.60</td>
</tr>
<tr>
<td>&quot;390&quot;</td>
<td>16500</td>
<td>9.24</td>
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<td>10.18</td>
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<tr>
<td>&quot;385&quot;</td>
<td>19500</td>
<td>11.00</td>
<td>500</td>
<td>6.29</td>
</tr>
<tr>
<td>&quot;380&quot;</td>
<td>20500</td>
<td>13.25</td>
<td>2500</td>
<td>2.33</td>
</tr>
<tr>
<td>&quot;375&quot;</td>
<td>15500</td>
<td>8.57</td>
<td>5000</td>
<td>3.03</td>
</tr>
<tr>
<td>&quot;370&quot;</td>
<td>13500</td>
<td>7.90</td>
<td>6000</td>
<td>8.89</td>
</tr>
<tr>
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<tr>
<td>&quot;360&quot;</td>
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<td>5500</td>
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</tr>
<tr>
<td>&quot;355&quot;</td>
<td>7875</td>
<td>3.36</td>
<td>5250</td>
<td>2.64</td>
</tr>
<tr>
<td>&quot;350&quot;</td>
<td>9625</td>
<td>4.72</td>
<td>4250</td>
<td>4.13</td>
</tr>
<tr>
<td>&quot;345&quot;</td>
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<td>2375</td>
<td>4.37</td>
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<tr>
<td>&quot;340&quot;</td>
<td>16000</td>
<td>4.61</td>
<td>5500</td>
<td>4.44</td>
</tr>
<tr>
<td>&quot;335&quot;</td>
<td>22625</td>
<td>4.11</td>
<td>2375</td>
<td>4.50</td>
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<tr>
<td>&quot;330&quot;</td>
<td>26825</td>
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<td>0.00</td>
</tr>
<tr>
<td>&quot;315&quot;</td>
<td>23925</td>
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<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>&quot;310&quot;</td>
<td>20600</td>
<td>5.77</td>
<td>1400</td>
<td>5.81</td>
</tr>
<tr>
<td>&quot;305&quot;</td>
<td>13900</td>
<td>3.98</td>
<td>2800</td>
<td>3.22</td>
</tr>
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<td>0.00</td>
<td>19900</td>
<td>4.69</td>
</tr>
<tr>
<td>&quot;295&quot;</td>
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<td>0.00</td>
<td>9500</td>
<td>7.09</td>
</tr>
<tr>
<td>&quot;290&quot;</td>
<td>0</td>
<td>0.00</td>
<td>8100</td>
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<tr>
<td>&quot;285&quot;</td>
<td>0</td>
<td>0.00</td>
<td>5500</td>
<td>4.93</td>
</tr>
<tr>
<td>&quot;280&quot;</td>
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<td>0.00</td>
<td>2800</td>
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</tr>
<tr>
<td>&quot;275&quot;</td>
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<td>0.00</td>
<td>1400</td>
<td>2.05</td>
</tr>
<tr>
<td>&quot;270&quot;</td>
<td>0</td>
<td>0.00</td>
<td>700</td>
<td>1.55</td>
</tr>
<tr>
<td>TOTAL</td>
<td>339450</td>
<td>6.22</td>
<td>95575</td>
<td>4.70</td>
</tr>
</tbody>
</table>

## DOGBOLTER MAIN PROSPECT

### RESOURCE ESTIMATE

**MODEL:** DM\_08CUT (0.8g/t Au interpretation with 60g/t TOP CUT applied)

<table>
<thead>
<tr>
<th>BENCH</th>
<th>MEASURED</th>
<th>INDICATED</th>
<th>INFERRED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TONNES</td>
<td>GRADE</td>
<td>TONNES</td>
<td>GRADE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8-3.0</td>
<td>132600</td>
<td>2.02</td>
<td>41275</td>
<td>1.95</td>
</tr>
<tr>
<td>3.0-10.0</td>
<td>150225</td>
<td>5.34</td>
<td>44275</td>
<td>5.12</td>
</tr>
<tr>
<td>10</td>
<td>56625</td>
<td>18.41</td>
<td>10025</td>
<td>14.16</td>
</tr>
<tr>
<td>TOTAL</td>
<td>339450</td>
<td>6.22</td>
<td>95575</td>
<td>4.70</td>
</tr>
</tbody>
</table>

DMRESRC.XLS
## DOGBOLTER MAIN PROSPECT

### RESOURCE TABULATION BY GRADE AND MATERIAL TYPE (SG)

**MODEL:** DM_08CUT (0.8% ore interpretation, 60g/t TOP CUT applied)

<table>
<thead>
<tr>
<th>GRADE RANGE</th>
<th>LATERITE: 2.4 TONNES</th>
<th>LATE/HRDCAP: 2.4 TONNES</th>
<th>MOTL/DICLAY: 2.0 TONNES</th>
<th>WEATHERED: 2.5 TONNES</th>
<th>TRANSITIONAL: 2.5 TONNES</th>
<th>FRESH: 2.8 TONNES</th>
<th>TOTAL TONNES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8 - 3.00</td>
<td>0 0.00</td>
<td>5400 1.96</td>
<td>84000 1.87</td>
<td>30625 1.97</td>
<td>10400 2.40</td>
<td>50400 2.09</td>
<td>180825</td>
</tr>
<tr>
<td>3.00 - 10.00</td>
<td>0 0.00</td>
<td>19800 5.67</td>
<td>74500 5.44</td>
<td>40625 4.80</td>
<td>14300 5.23</td>
<td>46900 5.33</td>
<td>196125</td>
</tr>
<tr>
<td>10</td>
<td>0 0.00</td>
<td>12000 10.56</td>
<td>48000 19.07</td>
<td>5525 15.24</td>
<td>2600 21.13</td>
<td>11200 14.37</td>
<td>68625</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0 0.00</td>
<td>26400 5.13</td>
<td>206500 7.16</td>
<td>76875 4.44</td>
<td>27300 5.67</td>
<td>108500 4.76</td>
<td>445875</td>
</tr>
</tbody>
</table>
APPENDIX 2
Dear Bill

DOGBOLTER STATISTICAL PLOTS

Attached please find the Log-normal and Log probability plots of the Dogbolter data within the 0.5g/t envelope and for all the data provided (above 0.1g/t mineralisation indicator).

The lognormal plot of the data without an envelope shows a mixture of populations and no simple lognormal distribution of grade which means that some form of domaining of the data is required. The log probability plot of all the data is smooth, but curves downwards at the lower tail of the distribution suggesting that the data includes a high proportion of very low grade data.

The lognormal plot of the data within a 0.5g/t envelope is an improvement on the complete data lognormal plot. The distribution is more lognormally distributed, although there is a sudden increase in frequency after the 0.5 g/t grade. This is also reflected as an inflection point on the log probability plot. These observations suggest that too strict a boundary may have been applied in the 0.5g/t envelope and that perhaps a few of the edge lower grades should be included in the envelope or else the envelope contains mixed populations. Using the 0.5g/t envelope, the associated top cuts and range parameters, however, is an improvement on using the corresponding information without applying an envelope for your application.

The 97.5% value of 40.7g/t for the envelope top cut should have read 30.5g/t. I apologise for this misreading.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

Jacqui Coombes
LOG Normal Probability Plot
Dogbolter Au in 0.5g/t envelope
LOG Normal Histogram
Dogbolter Au in 0.5g/t envelope
LOG Normal Probability Plot
Dogbolter - All Au > 0.1 g/t

Probability

Grade > 0.1 g/t
LOG Normal Histogram
Dogbolter - All Au data > 0.1 g/t

Frequency Count

Grade > 0.1 g/t
To: Bill Makar
Company: OTTER EXPLORATION
Fax Number: 089 411 459
From: Jacqui Coombes
Date: 30 January 1994
Number of Pages: 2

Message:

DOGBOLTER PROSPECT: Variogram Study

Dear Bill

As per your requirements, a series of variograms on the Dogbolter prospect data have been run in order to define continuity ranges for the 3D block modelling evaluation.

All variograms were calculated on 1m composites.

The first suite of variograms were run using only the data included in the 0.5g/t Au envelopes. These variograms exhibited ranges in the order of 30m along strike (350°N azimuth) and 5.8m downhole (270°N azimuth; -60° dip). The down dip variograms were poorly defined. This would indicate that the range in the down dip direction is less than the data density within the 0.5g/t Au envelope (ie. maximum grade continuity cannot be greater than 20m down dip).

The best indicator variograms for the data within the 0.5g/t Au envelope at an indicator grade of 1.47g/t (median of data within the 0.5 g/t Au envelope) follow:

Horizontal (350°N azimuth):
- nugget: 0.7
- sill 1: 0.28
- range 1: 33m

Downhole (270°N azimuth; -60° dip):
- nugget: 0.5
- sill 1: 0.2
- range 1: 3m
- sill 2: 0.28
- range 2: 5.8m
Down dip (80°, -30°):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>nugget</td>
<td>0.7</td>
</tr>
<tr>
<td>sill 1</td>
<td>0.28</td>
</tr>
<tr>
<td>range 1</td>
<td>20m</td>
</tr>
</tbody>
</table>

The second suite of variograms were run using the Dogbolter data above a 0.1g/t mineralisation indicator. A median of 0.78g/t was used to establish median indicator variograms. These variograms exhibited longer ranges (strike range in the order of 80m, downhole range in the order of 13m and down dip ranges in the order of 25m).

The best indicator variograms for the Dogbolter prospect data at an indicator grade of 0.78g/t (median above mineralisation indicator of 0.1 g/t) follow:

**Horizontal (350°N azimuth):**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>nugget</td>
<td>0.5</td>
</tr>
<tr>
<td>sill 1</td>
<td>0.35</td>
</tr>
<tr>
<td>range 1</td>
<td>25m</td>
</tr>
<tr>
<td>sill 2</td>
<td>0.2</td>
</tr>
<tr>
<td>range 2</td>
<td>80m</td>
</tr>
</tbody>
</table>

**Downhole (270°N azimuth; -60° dip):**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>nugget</td>
<td>0.5</td>
</tr>
<tr>
<td>sill 1</td>
<td>0.35</td>
</tr>
<tr>
<td>range 1</td>
<td>4m</td>
</tr>
<tr>
<td>sill 2</td>
<td>0.2</td>
</tr>
<tr>
<td>range 2</td>
<td>13m</td>
</tr>
</tbody>
</table>

**Down dip (80°; -30°):**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>nugget</td>
<td>0.85</td>
</tr>
<tr>
<td>sill 1</td>
<td>0.15</td>
</tr>
<tr>
<td>range 1</td>
<td>25m</td>
</tr>
</tbody>
</table>

The 95 and 97.5 percentiles for the data within the 0.5g/t Au envelope are 19g/t and 40.7g/t respectively.

The 95 and 97.5 percentiles for all the Dogbolter prospect data are 7g/t and 13.5g/t respectively.

Should you have any further queries regarding the above please do not hesitate to contact us.

Yours sincerely

[Signature]

Jacqui Coombes
APPENDIX 3
## DOGDOLTER MAIN PROSPECT

### RESOURCE COMPARISON BY WEIGHTING POWER

**MODEL:** DM_08CUT (0.8g/t ore interpretation, 60g/t TOP CUT applied)
**MODEL:** DM_08 (0.8g/t ore interpretation UNCUT)

<table>
<thead>
<tr>
<th>MODEL</th>
<th>WEIGHTING POWER 2</th>
<th>WEIGHTING POWER 2.5</th>
<th>WEIGHTING POWER 3</th>
</tr>
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<tr>
<td></td>
<td>TONNES</td>
<td>GRADE</td>
<td>TONNES</td>
</tr>
<tr>
<td>DM_08CUT</td>
<td>445,575</td>
<td>5.90</td>
<td>445,575</td>
</tr>
<tr>
<td>DM_08*</td>
<td>445,575</td>
<td>6.96</td>
<td>445,575</td>
</tr>
</tbody>
</table>

* Assay values within 0.01g/t Au
APPENDIX 4
7.2. Triangulation

The triangulation algorithm is normally only used in laminar deposits for modelling from a plan view perspective. It is illustrated in Fig. 7.1, and operates as follows:

1) Samples are scanned for valid values (a sample is discarded if it does not have a value for the parameter that is being analysed). The samples are also scanned for proximity to each other with subsequent samples discarded if they are within 0.5 m (or feet) from an already validated sample.

2) A unique triangulation is assigned to samples within the model area and search frame, for each seam/stratigraphic unit.

3) Structure or quality values are calculated cell by cell for each seam. The centroid of a cell is first determined and then the triangulation is scanned to find a triangle that bounds the centroid.

4) The particular parameter value is then derived from the plane of the triangle. The plane is defined by the values of the parameter which make the vertices of the triangle.

Triangulation preserves the integrity of data by interpolating linearly between known data points. It is particularly appropriate for structure in laminar models, where the data points provide a good coverage of the deposit area. An extrapolation option is provided but this should be used with caution and only to extend data for short distances.

Sometimes the triangulation resulting from the raw drillhole data may not be satisfactory. Long, narrow triangles often produce a distorted surface in the resultant model (such as rapid changes in elevation). Always check that the triangulation is satisfactory before proceeding with a model build. This is achieved by producing a triangulated drillhole plan using the GEOPLAN module which will display the

MinEqMap  Release 3.00.00 of April 27, 1993
triangulation of each seam to be modelled.

If the triangulation is unsatisfactory, use TRIEDIT to edit the triangulation so that it follows the structure/profile required.

![Diagram showing triangulation interpolation method]

**Figure 7.1 Triangulation Interpolation Method**

### 7.3. Inverse Distance to a Power and Weighting Factors

This interpolation method uses an averaging algorithm which is a function of the distance between drillholes within a given search radius. There is a choice of four different approaches to the use of this algorithm. They are:

- Linear Average
- Two-Dimensional Inverse Distance weighted to a power
- Three-Dimensional Inverse Distance weighted to a power using a spherical search distance
- Three-Dimensional Inverse Distance weighted to a power using an ellipsoidal search distance
To specify that you wish to use the inverse distance to a power interpolation method (I.D.W.), run DEFINE and select the algorithm and parameters. The parameters include the maximum search distance, weighting and shape of the search envelope.

If you do not want weighting in any direction, then choose the linear average algorithm. This still uses a 2D maximum search distance but uses a very simply formula, expressed as:

\[
\text{Quality of a Cell} = \frac{\sum_{i=1}^{n} \text{Quality of Sample}_i}{n}
\]

If the deposit characteristics are such that weighting is justified, the theory and use of weighting factors is briefly described hereunder.

Weighting can be applied as a function of the distance between the cell centre and corresponding sample qualities and/or according to a direction in relation to the deposit (e.g. strike and dip). The weighting factor specified for a direction alters the effect of the drillhole data on the derived results in that direction according to the distance from the point/cell being considered.

For the 2D and 3D Spherical methods, 16 sectors (directions) have been allotted for which weighting factors can be defined, as shown in Fig 7.2. Specify the weighting required for each segment in the weighting factor table included in the DEFINE algorithm parameter specification.
Figure 7.2 Relationship of Weighting Factor Directions to Model Orientation

The actual weighting factor used will depend on the nature of the ore body, the density and variability of data and the level of averaging you wish to obtain. The formula in which the weightings are applied is expressed as:

\[
\text{Quality of a Cell} = \frac{\sum_{i=1}^{n} \text{Quality of Sample}_i}{\sum_{i=1}^{n} (\text{Distance to Sample}_i)^w}
\]

Where \( W \) is the "weighting factor" (in actual fact, it is the power for the distance) and \( n \) is the number of drillholes within the set search distance.

When \( W = 1 \), an inverse linear relationship is implied and this will
normally be the case for drillhole data which is reasonably uniform in its coverage of the deposit and adequately reflects the degree of variation in values.

For values of $W$ greater than 1, the effect of more distant drillhole data on the derived value for the point considered (i.e. cell centre) is relatively less than for $W = 1$.

For values of $W$ less than 1, the effect of more distant drillhole data is correspondingly greater.

For $W = 0$, the derived value will be the mean arithmetic average of that parameter for all drillhole data within the search distance specified in model generation parameters. This has the same effect as the linear average algorithm.

The value of $W$ should never be greater than 3. When $W$ is set at 3 the algorithm approaches that of the Polygonal algorithm method covered in MODEL BUILDING 4.1. Higher values of $W$ will produce targeting on the resultant isoline of the parameter, thereby isolating cell values to the value of the closest drillhole.
Figure 7.3 displays diagrammatically the methodology used to determine a cell grade from assay grades \((G = \text{grade})\) at varying distances \((d = \text{distance})\) within a search distance restriction.

IDS Weighting Method

\[
\text{cell grade} = \frac{G_2 \cdot \frac{1}{(d_2)^2} + G_1 \cdot \frac{1}{(d_1)^2} + G_3 \cdot \frac{1}{(d_3)^2} + G_5 \cdot \frac{1}{(d_5)^2} + G_6 \cdot \frac{1}{(d_6)^2} + G_7 \cdot \frac{1}{(d_7)^2}}{\frac{1}{(d_2)^2} + \frac{1}{(d_1)^2} + \frac{1}{(d_3)^2} + \frac{1}{(d_5)^2} + \frac{1}{(d_6)^2} + \frac{1}{(d_7)^2}}
\]

*Figure 7.3 Cell/Block Calculation From Neighbouring Samples Using Inverse Distance Squared Method.*

Weighting factors can be varied for each segment (as displayed in Figure 7.2) to reflect the directional nature of the deposit. e.g., For a deposit with a sharp cut-off line along one boundary, values in that direction can be given a higher weighting factor to reduce the effect of lower values outside the boundary in that direction.

The two-dimensional I.D.W. method may tend to produce a 'curtain hanging' effect if the values of data points vary excessively and a high weighting power is used. This is often the case with structure on a dipping (laminar) orebody, which will produce the effect illustrated in Fig 7.4.
2.4.4. Algorithm 4 - 3D Ellipsoidal Search

Selected from the main pull down menu thus:

Displays a form to set factors/search directions for this algorithm:

The minimum number of samples is as per the 2D Inverse Distance algorithm.

Weighting Factor

Within the ellipsoidal envelope, samples are weighted using inverse distance to a power. This single weighting factor (i.e. the power) is applied over all directions within the ellipsoid. By specifying 2.0 as the weighting factor, inverse distance squared will be used inside the ellipsoid.

Intercepts

The three intercepts define the size/shape of the ellipsoidal search envelope. This size determines the search distance and direction for the inclusion of sample data in a given direction. The X, Y plane is always with respect to the modelling plane.

If you are modelling in plan view the X, Y and Z directions are as used
in the mathematical sense (i.e. $X = \text{east}$, $Y = \text{north}$ and $Z = \text{elevation}$). However, if modelling in section view, since the $X$, $Y$ plane is the modelling plane, then $X = \text{east}$, $Y = \text{elevation}$ and $Z = \text{north}$ when referring to the ellipsoidal intercepts.

The diagram below indicates the search directions used in the ellipsoidal algorithm.

Note: If the $X$ intercept was specified as 10.0 units then the ellipsoid would be 20.0 units wide in the $X$ direction. This is because the intercept in the $X$ direction refers to the radius from the ellipsoid centre.

Rotation

The ellipsoid may be rotated to allow for the strike, dip and plunge of the orebody. All rotations are in degrees, clockwise when looking towards the origin from the positive axis. The $Z$ rotation then would represent the strike, $Y$ the dip and the $X$ rotation the plunge. For example, if an orebody was plunging at 10 degrees to the north (i.e. deeper at the northern end of the orebody), the $X$ rotation would be $+10$ degrees.
APPENDIX 6
OTTER EXPLORATION CDJV

DOBGLITE MAIN PROSPECT 400RL 0.3G/T MODEL
SHOWING 0.5, 0.8g/t Au FOD INTERPRETATION

DRAWN: 400RL     SCALE: 1:1500
DATE: 15 MAY 1995    CHECKED:
OTTER EXPLORATION CDJY

DOGRELTER MAIN PROSPECT 390RL 0.6G/T MODEL
SHOWING 0.5, 0.6G/t Au PCD INTERPRETATION

DRAWN: DOHERL SCALE: 1:1500
DATE: 15 MAY 1996 CHECKED:
OTTER EXPLORATION CDJV

DOGBOLTER MAIN PROSPECT 370RL 0.8G/T MODEL
SHOWING 0.5, 0.8G/t Au POB INTERPRETATION

DRAWN: STOEL  SCALE: 1:5000
DATE: 15 MAY 1988  CHECKED:
OTTER EXPLORATION CDJV

DOGBOITER MAIN PROSPECT 350RL 0.8G/T MODEL
SHOWING 0.5, 0.8g/t Au POD INTERPRETATION

DRAWN: 050RL  SCALE: 1:1500
DATE: 13 MAY 1995  CHECKED:
OTTER EXPLORATION CDJV

DOGSOLTER MAIN PROSPECT 340RL 0.8g/t MODEL
SHOWING 0.5, 0.8g/t Au Pod INTERPRETATION

DRAWN: 340RL  SCALE: 1 : 1500
DATE: 13 MAY 1996  CHECKED:
OTTER EXPLORATION CDJV

DUGHELTHER MAIN PROSPECT 320RL 0.8G/T MODEL
SHOWING 0.5, 0.8G/t Au POD INTERPRETATION

DRAWN: DZGR
SCALE: 1 : 1500
DATE: 19 MAY 1995
CHECKED:
OTTER EXPLORATION CDJV

DOGBOLTER MAIN PROSPECT 290EIL 0.9G/T MODEL
SHOWNING 0.5, 0.8g/t Au POD INTERPRETATION

DRAWN: 290EIL  SCALE: 1:1000
DATE: 13 MAY 1996  CHECKED:
OTTER EXPLORATION
CENTRAL DESERT JOINT VENTURE
RESOURCE ESTIMATE
HARLEY’S

AUTHOR: Bill Makar
DATE: February 95

REPORT No: 002 - 31/01:jsf
COPY No: 5 of 5

DISTRIBUTION:
1. Otter Sydney
2. Otter Darwin
3. Otter Tanami Camp
4. Acacia Melbourne (x2)
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<th>Page</th>
</tr>
</thead>
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4.3 Histogram: 0.8g/t lens Assay Data
4.4 Histogram: All Assay Data
4.5 Lognormal Cumulative Plot: 0.8g/t lens Assay Data
4.6 Lognormal Cumulative Plot All Assay Data

APPENDIX

1  Harleys Prospect Resource Table
2  MineMap Modelling Algorithms
3  Harley’s Cross Sections: intervals from 20160N to 20320N)
4  Harley’s Level Plans from 410RL to 350RL at 10m intervals
1. **INTRODUCTION**

This is the first resource evaluation for Harley's prospect and is being reported by Otter Exploration. Harley's lies at the northern end of the Redback Rise area approximately 1km north of the Redback SE and Redback SW prospects.

The following resource evaluation includes all RC and diamond core drilling carried out to the end of 1994 on the Harley's prospect. Drilling is on five 40m spaced sections.

2. **GEOLOGY**

The bedrock geology comprises a 150m thick sequence of pelitic and psammitic sediments with a central basalt lens approximately 30m thick. The stratigraphy strikes ~020° and dips ~50°W. Gold mineralisation is hosted in quartz-haematite lodes within the basalt and psammitic sediments, along a south-plunging shallow, east-dipping structure.

The mineralisation occurs in a single structure between 20320N and 20240N but bifurcates into two sub-parallel structures between 20200N and 20160N. The mineralisation surfaces at 20320N and 20280N and is approximately 60m below the surface at 20160N.

3. **DATA PREPARATION**

Drilling and assay data was received from Acacia Resources, Darwin in Micromine format; and was converted to Microsoft Access Database format from which MineMap binary files were created.

Only RC and Diamond Drillhole on the "Old Grid" coordinates were extracted for resource evaluation on Harley's. The computer software used for all interpretive work and modelling is "MineMap".

25 RC and 6 RC/diamond core holes comprising a total of 2296 gold assays of 1m internal form the data set.

4. **DATA ANALYSIS**

4.1 **Gold Distribution and Cut-Off Grade Consideration**

Resource interpretations for Harley’s were carried out at 0.5g/t Au and 0.8g/t Au cut offs. The 0.5g/t Au interpretation was to provide structural control and identify the mineralised envelope. Resource interpretation and block modelling was carried out at 0.8g/t Au. Resource block models were built using both uncut results and with 30g/t Au top cut applied. The high grade cut of 30g/t Au effectively cut one significant outlier being 85.35g/t Au. Using the 0.8g/t Au model the contained gold above 30g/t Au is approximately 2%. Within the 0.5g/t Au pod outlines 5.4% of the gold assays are greater than 10g/t Au.

4.2 **Specific Gravity (SG)**

Limited data was made available, estimations used were as applied for Redback SE and Redback SW in GRE3.
OTTER EXPLORATION

REDBACK RISE PROSPECT LOCATION
SHOWING RC & DIAMOND DRILLHOLES (OLD GRID)

DRAWN: BM  SCALE: 1:10000
DATE: 3 FEB 1996  CHECKED:

FIGURE 1.2
OTTER EXPLORATION

HARLEY'S PROSPECT (OLD GRD)
RC AND DDH LOCATION PLAN

DRAWN: BM  SCALE: 1:1000
DATE: 3 FEB 1985  CHECKED:

Figure 3.1
OTTER EXPLORATION

HARLEY'S PROSPECT LONG SECTION

CONTOURED GOLD WITHIN 0.8G/T ENVELOPE

COLOUR KEY

Column Shaded by Au
< 0.49
0.49 - 0.79
0.79 - 1.49
1.49 - 2.99
> 2.99
= 999.00

METRES

MINEMAP MINE PLANNING SOFTWARE

DRAWN: BILL Scale: 1:1000
DATE: 7 FEB 1995 CHECKED:

Figure 3.2
SG applied for Harley's are tabulated below:

<table>
<thead>
<tr>
<th>Material Type</th>
<th>SG Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laterite</td>
<td>2.3</td>
</tr>
<tr>
<td>Hardcap</td>
<td>2.2</td>
</tr>
<tr>
<td>Mottled Zone</td>
<td>2.2</td>
</tr>
<tr>
<td>Clay Zone</td>
<td>2.0</td>
</tr>
<tr>
<td>Weathered Zone</td>
<td>2.4</td>
</tr>
<tr>
<td>Transitional Zone</td>
<td>2.65</td>
</tr>
<tr>
<td>Fresh Rock</td>
<td>2.75</td>
</tr>
</tbody>
</table>

Detailed analysis of the SG within the interpreted mineralised zone should be carried out as against applying an average SG of the material type the ore pod lies within.

4.3 Regolith and Geological Interpretation

Acacia Resources regolith interpretations were used for sectional analysis along with the limited geographical data available.

Initial cross-section and plan interpretations were carried out using 0.5g/t Au for structural control in identifying the main mineralising trends, from which the 0.8g/t Au interpretation were completed for resource block modelling.

Continuity of the main mineralised zone at 0.5g/t Au is well defined in both section and level plan. The mineralised zone strikes ~30°gN (old grid) and dip ~25 to 30°E with a shallow southern plunge. Continuity at 0.8g/t Au shows similar trends as at 0.5g/t Au except in 20200gN and 20240gN where it develops into a series of lenses.

5. COMPUTER BLOCK MODEL-RESOURCE ESTIMATE

5.1 Resources Parameters

Listed below are the main parameters used in defining the Block Model.

Main Parameters

<table>
<thead>
<tr>
<th>Base Point</th>
<th>Cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easting</td>
<td>10220</td>
</tr>
<tr>
<td>Northing</td>
<td>20080</td>
</tr>
<tr>
<td>Datum Elev</td>
<td>1000M</td>
</tr>
<tr>
<td>Rotation</td>
<td>0°</td>
</tr>
<tr>
<td>Size in X Direction</td>
<td>5 (M)</td>
</tr>
<tr>
<td>Size in Y Direction</td>
<td>10 (M)</td>
</tr>
<tr>
<td>No. Cells in X</td>
<td>48</td>
</tr>
<tr>
<td>No. Cells in Y</td>
<td>30</td>
</tr>
</tbody>
</table>

Number of benches/flitches: 18 (@5m heights)
Number of assays/qualities: 2 (Gold (Au), Relative Density (Rel_Den)).

Algorithms (Appendix 2)
(Gold) - Ellipsoidal 3D IDW (inverse distance weighting)
(Relative Density) - Triangulation

Parameters Ellipsoidal Search Algorithm
Minimum number samples within ellipsoidal envelope before cell value is calculated 1
Weighting factor: 2.5
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 7.14
Mean of Plot = 4.62
Number of observations in Plot = 202
Plot/Total Statistics are equal

OTTER EXPLORATION

HARLEY'S PROSPECT CUMULATIVE PLOT
ASSAY DATA CONSTRAINED WITHIN 0.8 PODS

DRAWN: bm  SCALE: 1: 566
DATE: 4 FEB 1995  CHECKED:  FIGURE 4.1
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 7.14
Mean of Plot = 4.62
Number of observations in Plot = 202
Plot/Total Statistics are equal

OTTER EXPLORATION
HARLEY'S PROSPECT HISTOGRAM
ASSAY DATA CONSTRAINED WITHIN 0.8 PODS

FIGURE 4.2
CUMULATIVE PLOT OF DRILL DATA

Population Std. Deviation of Plot = 2.49
Mean of Plot = 0.4746
Number of observations in Plot = 2296
Plot/Total Statistics are equal

OTTER EXPLORATION
HARLEY'S PROSPECT CUMULATIVE PLOT
ALL ASSAY DATA

DRAWN: bm  SCALE: 1:666
DATE: 4 FEB 1995  CHECKED:

FIGURE 4.3
HISTOGRAM OF DRILL DATA

Population Std. Deviation of Plot = 2.49
Mean of Plot = 0.4746
Number of observations in Plot = 2296
Plot/Total Statistics are equal

OTTER EXPLORATION
HARLEY'S PROSPECT HISTOGRAM
ALL ASSAY DATA

FIGURE 4.4
LOGNORMAL CUMULATIVE PLOT

Population Std. Deviation of Plot = 0.4382
Mean of Plot = 0.4425
Number of observations in Plot = 202
Plot/Total Statistics are equal

OTTER EXPLORATION
HARLEY'S PROSPECT LOGNORMAL CUMUL PLOT
ASSAY DATA CONSTRAINED WITHIN 0.8 PODS

FIGURE 4.5
LOGNORMAL CUMULATIVE PLOT

Population Std. Deviation of Plot  = 0.8121
Mean of Plot                   = -1.0331
Number of observations in Plot  = 1396
Population Std. Deviation of total = 0.8890
Mean of total                  = -1.5329
Number observations in total   = 2296

OTTER EXPLORATION

HARLEY'S PROSPECT LOGNORMAL CUMUL PLOT
ALL ASSAY DATA

DRAWN : bm  SCALE 1 : 566
DATE : 4 FEB 1995  CHECKED :

FIGURE 4.6
Size
X = Radius (E)  15m (across the dip)
Y = Radius (N)  70m (horizontal strike plane)
Z = Radius RL  30m (down dip plane)

Rotation about the:
Z axis (strike) 35°
Y axis (dip) 70°
X axis (plunge) 20° south

18 flitches or benches were defined in the model with the top flitch being at the 420 RL.

Two assays/qualities were selected for modelling. Both the flitch heights (bench thickness) and the background values for the assay/qualities are injected into each cell when an empty Block Model is generated.

The search distance and direction for the triangulation algorithm selected for Relative Density is set during the model building phase.

The grade interpolation parameters for the Ellipsodial Search Algorithm selected were set to take into account the width of the drill hole spacing along strike, a shallow easterly dip, and a southerly plunge of the orebody.

A weighting power of 2.5 was selected to prevent smearing of high grade values across wide lenses and not to constrain the search of the high grade values along the strike and dip.

5.2 Resource Calculation Method

"MineMap" a mining based software was used for block modelling of Harley's.

The general methodology was to model in plan using the selected grade interpolation algorithm injecting gold values within the cells where cell centres are constrained within the interpreted ore string. One pass using the selected drill assay data was run. For the relative density (SG) the block model was re-run injecting the constrained cells with the string value. Again only cells whose centre lie within the selected strings are assigned the SG value.

A series of block models were generated at the lower cut-offs of 0.5g/t Au and 0.8g/t Au with separate block models generated for uncut gold values and for high grade gold assays cut to 30g/t Au.

Due to the coarse cell size used for modelling a percentage of an ore pod may not be injected with a gold value. This occurs where the interpreted mineralised zone becomes narrow or is pinch ing out with the cell centre falling outside the interpreted string.
5.3 Geological Computer Resource

Tabulated below is the computer generated resource estimated for Harley’s at the given cut-offs showing the comparison between the grades of the uncut resource and with a top cut of 30g/t Au applied.

<table>
<thead>
<tr>
<th>Lower Cut (Au)</th>
<th>Top Cut Applied (Au)</th>
<th>Total Tonnes</th>
<th>Grade g/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5g/t</td>
<td>30g/t</td>
<td>342 102</td>
<td>3.51</td>
</tr>
<tr>
<td>0.5g/t</td>
<td>uncut</td>
<td>342 102</td>
<td>3.60</td>
</tr>
<tr>
<td>0.8g/t</td>
<td>30g/t</td>
<td>223 480</td>
<td>4.51</td>
</tr>
<tr>
<td>0.5g/t</td>
<td>uncut</td>
<td>223 480</td>
<td>4.60</td>
</tr>
</tbody>
</table>

In applying a top cut of 30g/t Au the gold grade is decreased by approximately 2% for the 0.8g/t Au block model. The difference in ounces is 647oz.

6. CONCLUSION

A geological resource estimate based on block modelling techniques using MineMap software at a cut-off grade of 0.8g/t Au applying a 30g/t Au top cut, has been defined here as:

**AN INDICATED RESOURCE** of: 0.22Mt @ 4.5g/t Au

(As required by the Australian Institute of Geoscientists (AIG and AusIMM) to meet the Australian Guidelines for the statement of resources)

Continuity of gold mineralisation at the 0.8g/t Au has been demonstrated to exist. Additional infill drilling is required to upgrade the mineralised zone to a measured category and upgrade the block model for future mine planning.

From the cross-section and level interpretation potential exists for additional resources both along strike and at depth.

7. RECOMMENDATION

The priority for further work at Harley’s Propsect is to raise the current resource category from indicated to measured status, and to provide block models for detailed pit optimisation for pit design and planning.

Recommendations for further resource work includes:

1. Additional RC drilling to test along strike extensions.

2. Additional RC and diamond core drilling to test for further depth extensions on present 40m spaced sections.

3. Selected infill drilling on 20m spaced sections.
4. Preliminary mining studies to identify the limits of a open pit to assist in targeting drill holes.

5. SG analysis to confirm the applied SG’s within the interpreted ore zones.

6. 3D geological modelling to assist in ore body interpretation.

8. REFERENCES

- J A Horton 1994, Resource Estimate 3 (GRE3)
APPENDIX 1
## HARLEY'S PROSPECT

### RESOURCE TABULATION BY CATAGORY AND BENCH

MODEL: HAR08_30.mdl (0.8g/t ore interpretation with a 30g/t TOP CUT applied)

<table>
<thead>
<tr>
<th>BENCH</th>
<th>INDICATED</th>
<th>INFERRED</th>
<th>TOTAL</th>
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</thead>
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<tr>
<td></td>
<td>TONNES</td>
<td>GRADE</td>
<td>TONNES</td>
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<tr>
<td>420</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>223480</strong></td>
</tr>
</tbody>
</table>

## HARLEY'S PROSPECT

### RESOURCE TABULATION BY CATAGORY AND GRADE

MODEL: HAR08_30.mdl (0.8g/t ore interpretation with a 30g/t TOP CUT applied)

<table>
<thead>
<tr>
<th>GRADE RANGE</th>
<th>INDICATED</th>
<th>INFERRED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TONNES</td>
<td>GRADE</td>
<td>TONNES</td>
<td>GRADE</td>
</tr>
<tr>
<td>0.8 - 3.00</td>
<td>0</td>
<td>0.00</td>
<td>8200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>151220</td>
</tr>
<tr>
<td>3.00-10.00</td>
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<td>MOTTLED: 2.2</td>
<td>CLAY: 2.0</td>
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<td>1.96</td>
<td>26400</td>
</tr>
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</table>
7.2. Triangulation

The triangulation algorithm is normally only used in laminar deposits for modelling from a plan view perspective. It is illustrated in Fig. 7.1. and operates as follows:

1) Samples are scanned for valid values (a sample is discarded if it does not have a value for the parameter that is being analysed). The samples are also scanned for proximity to each other with subsequent samples discarded if they are within 0.5 m (or feet) from an already validated sample.

2) A unique triangulation is assigned to samples within the model area and search frame, for each seam/stratigraphic unit.

3) Structure or quality values are calculated cell by cell for each seam. The centroid of a cell is first determined and then the triangulation is scanned to find a triangle that bounds the centroid.

4) The particular parameter value is then derived from the plane of the triangle. The plane is defined by the values of the parameter which make the vertices of the triangle.

Triangulation preserves the integrity of data by interpolating linearly between known data points. It is particularly appropriate for structure in laminar models, where the data points provide a good coverage of the deposit area. An extrapolation option is provided but this should be used with caution and only to extend data for short distances.

Sometimes the triangulation resulting from the raw drillhole data may not be satisfactory. Long, narrow triangles often produce a distorted surface in the resultant model (such as rapid changes in elevation). Always check that the triangulation is satisfactory before proceeding with a model build. This is achieved by producing a triangulated drillhole plan using the GEOPLAN module which will display the
triangulation of each seam to be modelled.

If the triangulation is unsatisfactory, use TRIEDIT to edit the triangulation so that it follows the structure/profile required.

![Diagram](image)

*Figure 7.1 Triangulation Interpolation Method*

7.3. **Inverse Distance to a Power and Weighting Factors**

This interpolation method uses an averaging algorithm which is a function of the distance between drillholes within a given search radius. There is a choice of four different approaches to the use of this algorithm. They are:

- Linear Average
- Two-Dimensional Inverse Distance weighted to a power
- Three-Dimensional Inverse Distance weighted to a power using a spherical search distance
- Three-Dimensional Inverse Distance weighted to a power using an ellipsoidal search distance

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To specify that you wish to use the inverse distance to a power interpolation method (I.D.W.), run DEFINE and select the algorithm and parameters. The parameters include the maximum search distance, weighting and shape of the search envelope.

If you do not want weighting in any direction, then choose the linear average algorithm. This still uses a 2D maximum search distance but uses a very simple formula, expressed as:

\[
\text{Quality of a Cell} = \frac{\sum_{i=1}^{n} \text{Quality of Sample } i}{n}
\]

If the deposit characteristics are such that weighting is justified, the theory and use of weighting factors is briefly described hereunder.

Weighting can be applied as a function of the distance between the cell centre and corresponding sample qualities and/or according to a direction in relation to the deposit (e.g. strike and dip). The weighting factor specified for a direction alters the effect of the drillhole data on the derived results in that direction according to the distance from the point/cell being considered.

For the 2D and 3D Spherical methods, 16 sectors (directions) have been allotted for which weighting factors can be defined, as shown in Fig 7.2. Specify the weighting required for each segment in the weighting factor table included in the DEFINE algorithm parameter specification.
The actual weighting factor used will depend on the nature of the ore body, the density and variability of data and the level of averaging you wish to obtain. The formula in which the weightings are applied is expressed as:

\[
\text{Quality of a Cell} = \frac{\sum_{i=1}^{n} \left( \frac{\text{Quality of Sample}_i}{(\text{Distance to Sample}_i)^W} \right)}{\sum_{i=1}^{n} \left( \frac{1}{(\text{Distance to Sample}_i)^W} \right)}
\]

Where \( W \) is the "weighting factor" (in actual fact, it is the power for the distance) and \( n \) is the number of drillholes within the set search distance.

When \( W = 1 \), an inverse linear relationship is implied and this will

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normally be the case for drillhole data which is reasonably uniform in its coverage of the deposit and adequately reflects the degree of variation in values.

For values of W greater than 1, the effect of more distant drillhole data on the derived value for the point considered (i.e. cell centre) is relatively less than for W = 1.

For values of W less than 1, the effect of more distant drillhole data is correspondingly greater.

For W = 0, the derived value will be the mean arithmetic average of that parameter for all drillhole data within the search distance specified in model generation parameters. This has the same effect as the linear average algorithm.

The value of W should never be greater than 3. When W is set at 3 the algorithm approaches that of the Polygonal algorithm method covered in MODEL BUILDING 4.1. Higher values of W will produce targeting on the resultant isoline of the parameter, thereby isolating cell values to the value of the closest drillhole.
Figure 7.3 displays diagrammatically the methodology used to determine a cell grade from assay grades (G = grade) at varying distances (d = distance) within a search distance restriction.

**IDS Weighting Method**

\[
\text{cell grade} = \frac{G_2 \times \frac{1}{(d_2)^2} + G_1 \times \frac{1}{(d_1)^2} + G_3 \times \frac{1}{(d_3)^2} + G_5 \times \frac{1}{(d_5)^2} + G_6 \times \frac{1}{(d_6)^2} + G_7 \times \frac{1}{(d_7)^2}}{\frac{1}{(d_2)^2} + \frac{1}{(d_1)^2} + \frac{1}{(d_3)^2} + \frac{1}{(d_5)^2} + \frac{1}{(d_6)^2} + \frac{1}{(d_7)^2}}
\]

**Figure 7.3 Cell/Block Calculation From Neighbouring Samples Using Inverse Distance Squared Method.**

Weighting factors can be varied for each segment (as displayed in Figure 7.2) to reflect the directional nature of the deposit. e.g., For a deposit with a sharp cut-off line along one boundary, values in that direction can be given a higher weighting factor to reduce the effect of lower values outside the boundary in that direction.

The two-dimensional I.D.W. method may tend to produce a 'curtain hanging' effect if the values of data points vary excessively and a high weighting power is used. This is often the case with structure on a dipping (laminar) orebody, which will produce the effect illustrated in Fig 7.4.
APPENDIX 3
HARLEY'S PROSPECT 410RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE
OTTER EXPLORATION

HARLEY'S PROSPECT 400RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE

DRAWN : BM  SCALE  1 : 1500
DATE :  3 FEB 1995  CHECKED :
OTTER EXPLORATION

HARLEY'S PROSPECT 390RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE

DRAWN : BM
SCALE : 1 : 1500
DATE : 3 FEB 1995
CHECKED :
OTTER EXPLORATION

HARLEY'S PROSPECT 380RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE

DRAWN : EM  SCALE  1 : 1500
DATE :  3 FEB 1995  CHECKED :
OTTER EXPLORATION

HARLEY'S PROSPECT 370RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE

DRAWN: DM  SCALE: 1:1500
DATE: 3 FEB 1995  CHECKED:
OTTER EXPLORATION

HARLEY’S PROSPECT 360RL FLITCH showing
0.5, 0.8 Au PODS, 0.8 MODEL Au CELL VALUE

DRAWN: DM  SCALE: 1:1500
DATE: 3 FEB 1995  CHECKED: