BILLITON AUSTRALIA
THE METALS DIVISION OF
THE SHELL COMPANY OF AUSTRALIA LIMITED

ANNUAL REPORT FOR EXPLORATION ON
E.L. 7206 — THOMPSON CREEK

AUTHOR: D J KOERBER
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SUMMARY

During 1990 an aeromagnetic survey was flown over the Thompson Creek area as part of a larger regional programme conducted in the Pine Creek Geosyncline. The results of this survey showed a significant magnetic high occurring in the northern portion of the tenement which prompted the application for tenure of the exploration licence.

Tenure of Exploration Licence (EL) 7206 - Thompson Creek was granted to The Shell Company of Australia Ltd for a period of three (3) years, on the 30th January 1991. In accordance with statutory requirements, this report documents all work conducted in the tenement up to the first anniversary and proposed exploration within EL 7206 in the second year of tenure.

Exploration Licence 7206 covers an area of thirteen (13) square kilometres and is located approximately 55 kms due north of Katherine, NT.

Early Proterozoic, geosynclinal, turbiditic metasediments of the Burrell Creek Formation are exposed in the licence area although are largely concealed by Quaternary silt and sand. Deformation and regional greenschist facies metamorphism of the geosynclinal sediments occurred subsequent to intrusion by syn to post-orogenic granitoids of the Cullen Batholith. An isolated cupola, designated part of the Wolfram Hill Granite, is considered to belong to the Cullen Batholith and is exposed approximately 3km due east of the tenement area.

Work conducted within Exploration Licence 7206 up to the first anniversary consisted of airborne geophysical surveying, ground reconnaissance and rock chip sample geochemistry. In the second year of tenure work will focus on the area of magnetic anomalousism and will consist of soil sample exploration geochemistry, detailed geological mapping and rock chip sampling.
1.0 INTRODUCTION

Tenure of Exploration Licence (E.L.) 7206 - Thompson Creek was granted to The Shell Company of Australia Limited for a period of three (3) years, on the 30th January 1991. In accordance with statutory requirements, this report documents all work conducted in the tenement up to the first anniversary and proposed exploration within EL 7206 in the second year of tenure.

Exploration Licence 7206 is comprised of four (4) graticular blocks which cover an area of 13 square kilometres. The tenement is located approximately 55 kms due north of Katherine, Northern Territory (Figure 1).

Access is gained via a vehicle track which turns off the Edith Falls Road, approximately 7km due east from the Edith Falls Road - Stuart Highway turn-off.

Topography within the tenement is generally of low relief and although the area is approximately trisected by both the Fergusson River and Wolfram Creek, the bedrock terrain is generally poorly incised. The majority of the area is covered by Quaternary silt and sand.

2.0 MINING AND EXPLORATION HISTORY

No significant mineralization is documented to occur within EL 7206, however adjacent tenements do host small deposits of tin, tungsten, copper, gold, silver and lead. A series of small mines, collectively referred to as the Hidden Valley field, are situated approximately 6km south-east of the tenement. These deposits characteristically comprise of disseminated cassiterite which occurs in shallowly dipping breccia zones hosted by slate. The total recorded production since 1905 is approximately 50 tonnes of tin concentrate.

The Last Hope gold workings are located approximately 3.0km to the northeast of the licence area. Narrow, east-west trending quartz reefs were worked via a series of shallow shafts, for which recorded production is approximately 30 ounces.
RGC Exploration Pty Ltd conducted a RC percussion drilling programme at the workings in 1989 which failed to intersect significant gold mineralisation.

3.0 GEOLOGY

3.1 Regional Geology

Exploration Licence 7206 is situated in the southern portion of the Pine Creek Geosyncline. The Burrell Creek Formation, which is the youngest unit of the Early Proterozoic geosynclinal sequence, is the most extensive unit exposed in the licence area apart from unconsolidated Quaternary alluvium and humic soils (Figure 2).

The unit represents a turbiditic sequence, predominantly comprising of greywacke, siltstone and minor conglomerate. Deformation and regional greenschist facies metamorphism of the geosynclinal sediments occurred subsequent to intrusion by syn to post-orogenic granitoids of the Cullen Batholith. An isolated cupola, designated part of the Wolfram Hill Granite, is considered to belong to the Cullen Batholith and is exposed approximately 3km due east of the tenement area. The granite is described as being a pink, coarse, equigranular biotite leucogranite.

Upon intrusion of the granitic phases the adjacent metasediments were contact metamorphosed to hornblende hornfels facies.

3.2 Local Geology

From the limited outcrop observed it appears that stratigraphy generally strikes to the northeast and dips moderately (60°) to the southwest throughout the tenement area.

4.0 WORK COMPLETED

Work completed on EL 7206, prior to and during the first year of tenure, included airborne geophysical surveying, rock chip sample exploration geochemistry and reconnaissance geological mapping.
4.1 Airborne Geophysics

An airborne geophysical survey was completed over the Thompson Creek area, as part of a larger regional programme in April, 1990. Both aeromagnetic and radiometric data was acquired for which contoured plans at 1:50 000 scale are shown in Figures 3 & 4, respectively. The survey was conducted by Austirex for which the specifications are as follows:

- Flight line spacing 300 metres
- Survey height 80 metres
- Flight line directions EW NE
- Spectrometer 33.6 litres

Image processing was carried out by GeoImage, Brisbane and inhouse at Billiton, Melbourne.

4.1.1 Aeromagnetics

One main east-west trending aeromagnetic anomaly was defined from the survey which extends across the northern portion of the licence area, over a strike length of approximately 1.5km (see Figure 3). This anomaly is considered to be significant as it trends discordantly to interpreted stratigraphic trends within the licence area and hence may be related to a mineralized source.

4.1.2 Airborne Radiometrics

The total count contour plan, shown in Figure 4, clearly displays a prominent northeasterly trending anomaly in the northeastern portion of the tenement. The position of the anomaly closely correlates with drainage channels along Wolfram Creek which predominantly drain the Wolfram Hill Granite. Hence, this response is probably generated from the reported U and K rich nature of the granite and alluvium derived from it.

4.1.3 Reconnaissance Mapping and Rockchip Sample Geochemistry

From the limited outcrop observed it appears that stratigraphy strikes discordantly to the overall strike of the aeromagnetic anomaly within the licence area. However, no source for the anomaly was apparent from the limited ground reconnaissance.
One rock chip sample was taken of what appeared to be a poorly exposed thin (2-3.0m), partly ferruginous and siliceous vesicular volcanic which occurred in the northern portion of the tenement (Figure 5). This sample returned a negative result of <0.01 ppm Au.

5.0 CONCLUSION

Exploration involving airborne geophysics, reconnaissance geological mapping and rock chip sample geochemistry was conducted within Exploration Licence 7206 – Thompson Creek, during the first year of tenure. The above mentioned techniques have to-date failed to locate bulk tonnage, near surface gold mineralisation.

6.0 EXPENDITURE STATEMENT

EL 7206 – THOMPSON CREEK
TOTAL EXPENDITURE FOR PERIOD FROM 30.1.91 TO 30.1.92

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tr>
<td>Staffing – Regional office</td>
<td>3,054</td>
</tr>
<tr>
<td>Support – Regional office</td>
<td>2,318</td>
</tr>
<tr>
<td>Tenement Costs</td>
<td>155</td>
</tr>
<tr>
<td>Geophysical Surveys</td>
<td>1,500</td>
</tr>
<tr>
<td>Analyses</td>
<td>31</td>
</tr>
<tr>
<td>Geological Engineering, Drafting, &amp; Computer Costs</td>
<td>-</td>
</tr>
<tr>
<td>Overheads</td>
<td>705</td>
</tr>
</tbody>
</table>

TOTAL EXPENDITURE $ 7,763
7.0 PROPOSED EXPENDITURE & EXPLORATION

The exploration program proposed for the second year of tenure will focus on the area of magnetic anomalism in the northern portion of the tenement. The program will consist of:-

- soil sample exploration geochemistry
- detailed geological mapping and rock chip sampling

The budget proposed for these activities is:-

<table>
<thead>
<tr>
<th>Staffing</th>
<th>Regional office</th>
<th>$3,500</th>
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<tbody>
<tr>
<td>Support</td>
<td>Regional office</td>
<td>$2,000</td>
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<tr>
<td>Analyses</td>
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<td>Overheads</td>
<td></td>
<td>$600</td>
</tr>
</tbody>
</table>

**TOTAL EXPENDITURE**  
$6,600
CHAPTER

NAME: 

(Office use only)

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TITLE: Annual Report for Exploration on Exploration Licence 7206 - Thompson Creek

DATE: February 1992

AUTHOR: Damien Koberb

SOURCE: N.A.

(If Non-SCOA)

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SCRIPTOR: N.A.

(Not indexed)

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PROSPECT/PROJECT: Thompson Creek - Exploration Licence 7206

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KEYWORDS: Airborne magnetics & radiometrics, Early Proterozoic, Quaternary cover, Rock Chip Sample Geochemistry.

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LOCATION: NORTHERN TERRITORY

SHEET NAME: (1:250,000) Mt Evelyn (SG 53/)}

REPORT NO.: (Not Indexed) 08.5921

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RANFORD HILL
AIRBORNE GEOPHYSICAL SURVEY
BILLITON AUSTRALIA

Surveyed and compiled by AUSTREX INTERNATIONAL LIMITED
MARCH - MAY 1990
Job No. 5005

Scale 1:50 000

AUSTRALIAN MAP GRID

1 0 1 2 3 4 5 km

AIRCRAFT
VH-MEH ROCKWELL SHARK COMMANDER 500S

MAGNETOMETER
SPLIT BEAM CSQ4U SONTREX V20
RESOLUTION 0.01 nT/scales
CYCLE RATE 0.2 seconds
SAMPLE INTERVAL 13 metres

SPECTROMETER
256 channel SIEGMETERS GRS200
VOLUME 33.56 litres
CYCLE RATE 1.0 seconds
SAMPLE INTERVAL 65 metres

DATA ACQUISITION
8 CHANNEL WATANABE MS 8700 CHART RECORDER
HEWLETT PACKARD COMPUTER
AUSTREX DIGITAL ACQUISITION SYSTEM

FLIGHT LINE SPACING
TRAVERS LINE 300 metres
TIE LINES 3000 metres
FLIGHT LINE DIRECTION
TRAVERS LINE 050 - 270 050 - 220 degrees
TIE LINES 180 - 360 140 - 320 degrees
SURVEY HEIGHT
80 metres - Mean Terrain Clearance

NAVIGATION
VISUAL FROM PLANNED FLIGHT STRIPS
FLIGHT PATH RECOVERY
ONTO R.M.G. CONTROLLED PHOTOGRAPHS

TOTAL MAGNETIC INTENSITY

DATA PROCESSING
REGIONAL FIELD 1985 REMOVED
GRID CELL SIZE 60 metres
CONTOUR INTERVAL 10 nT/scales
PARALLAX CORRECTION 9.98 nT/scale
BASE VALUE ADDED 47480 nT/scale

Billiton Australia

THOMPSON CREEK EL7206
NORTHERN TERRITORY

AIRBORNE MAGNETICS
CONTOUR PLAN

Figure No. 3
RANFORD HILL
AIRBORNE GEOPHYSICAL SURVEY
BILLITON AUSTRALIA

Surveyed and compiled by AUSTREX INTERNATIONAL LIMITED
MAY 1992

Scale 1:50 000

AUSTRALIAN MAP GRID

ARCIACFT
GREAT WHITE ROCKWELL SHARPE COMMANDER 500S
MAGNETOMETER
SPLIT SEGNI CESAM CONTIXE Y201
RESOLUTION 0.01 nT
CYCLE RATE 0.2 seconds
SAMPLE INTERVAL 13 metres
SPECTROMETER
256 channel GEOMETRICS GR800B
VOLUME 33.55 litres
CYCLE RATE 1.0 seconds
SAMPLE INTERVAL 65 metres
DATA ACQUISITION
8 CHANNEL WATARIAE MC 6760 CHART RECORDER
HEWLETT PACKARD COMPUTER
AUSTREX DIGITAL ACQUISITION SYSTEM
FLIGHT LINE SPACING:
TRAVERSE LINES 300 metres
TIE LINES 3000 metres
FLIGHT LINE DIRECTION
TRAVERSE LINES 080 - 270 050 - 230 degrees
TIE LINES 140 - 350 140 - 320 degrees
SURVEY HEIGHT
60 metres - MORA ETIATRAN CLEARANCE
NAVIGATION
VISUAL FROM PLANNED FLIGHT STRIPS
FLIGHT PATH RECOVERY
ONTO R.U.C. CONTROLLED PHOTOGRAPHS

TOTAL COUNT

DATA PROCESSING
GRID CELL SIZE 80 metres
CONTOUR INTERVAL 250 counts
PARALLAX CORRECTION 0.98
The total count data have been corrected for aircraft background, atmospheric background, altitude variation and micro levelling.

THOMPSON CREEK EL7206
NORTHERN TERRITORY

TOTAL COUNT CONTOURS

Author D.K. Date 2/82
Scale 1:50 000

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The World's Oldest of the Gold Companies of Western Australia