



OLYMPIA  
RESOURCES LIMITED

## **ATURGA PROJECT AREA**

# **Review of the Bulk Sampling Programme, July-August, 2008**



Report OLY09/010

John Baxter  
Susan Stewart

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## **Executive Summary**

Digging of pits covering the length and breadth of the deposit was undertaken to provide bulk material for metallurgical testwork.

In the first programme (May, 2008) the samples were contaminated by calcrete necessitating a second programme (July, 2008).

This report presents the logging of the pits.

## Introduction

As part of the due diligence process it became necessary to obtain a bulk sample from the Aturga deposit in July-August, 2008. As a consequence two bulk sampling programmes were conducted; the first supervised by Susan Stewart and the second by John Baxter. The objectives of the sampling were:

- To obtain approximately 13 tonnes of sand representative of the likely feedstock to the plant including both the floodplain and paleochannel.
- To obtain one bag (approximately 1.5 tonnes) of material from dunal material.
- To log and photograph the pits for comparative purposes with previous work

It became clear after inspection of the first bulk sampling that there was more calcrete/clay encountered than was expected, consequently the second programme was completed.

This report brings together all of the information that has been obtained from pitting at Aturga and attempt to analyse the difference in sampling between the two bulk sampling events.

# GEOLOGY

The stratigraphy of the Aturga Project is well known from drilling and pitting that has been conducted over the past 6 years. It is summarized in Table 1.

**Table 1 Stratigraphy of Aturga Project Area**

Range		Lithology	Cement
From	To		
10cm	15m	Red fine-grained silty sand - windblown – dunes to east	Unconsolidated
1.5m	5m	Brown fine to medium grained sand-floodplain	Partly consolidated with iron coating on grains
0	7m	Calcretised grey-white sand and pebbles-paleochannel	Often hard well-cemented
1m	7m	White-grey sand and cobbles - paleochannel	Usually free flowing, but may be partly cemented by calcrete
40m	120m	Calcareous clay	Sticky and lithified

Garnet and hornblende are found in all units with an average heavy mineral content of about 35%, being made up of 7-10% garnet, 22-28% hornblende and 2-5% other heavies. The grain size of the heavy mineral fraction increases from dunes to floodplain to paleochannel.

It was planned to sample the material from the surface (having removed the topsoil) to the base of the paleochannel. In the first programme 5 pits were dug the site selection was targeted between drill sections (Table 2). In the second programme sites near drill holes were chosen (Table 3).

## Pitting Programmes

In the first programme a large digger hired from Danny Orr Earthmoving was used to dig the holes.

**Table 2 Bulk Sample Pits from the First Programme**

Pit Number	Easting	Northing	Depth
APBSP1	472362	7457590	4.9
APBSP2	472470	7457400	4.0
APBSP3	472083	7457224	3.9
APBSP4	472233	7457013	4.0
APBSP5	472320	7457020	4.1



**Figure 1 Danny Orr's digger at Aturga**

In the second programme an excavator and small back hoe hired from Gemtree and Bushy Park Station were used to dig the holes. The second pitting programme was limited in the depth it could reach by the equipment with pits JB1, JB3 and JB6 not reaching the base of the sampled unit.



**Table 3 Bulk Sample Pits from the Second Programme**

Pit Number	Near Hole	Easting	Northing	Depth
JB1	Bulk 2	472230	7457760	3.6m
JB2	AC211	472300	7457580	3.45m
JB3	AC434	472200	7457085	3.7m
JB4	AC335	472180	7458200	3.7m
JB5	AC259	472320	7456150	3.0m
JB6	HRD01	473500	7457370	3.0m



**Figure 2 Backhoe and Payloader used in 2nd programme showing floodplain**

## Logging First Programme

### Logging First Programme

From (m)	To(m)	Geol Environ	Colour	Grainsize	Lithology
<b>APBSP1</b>					
0	0.5	Dune	Red	Fine	Sand
0.5	1.7	Floodplain	Red	Medium	Sand
1.7	4.9		Grey	medium-coarse	Sandy clay
<b>APBSP2</b>					
0	2.5	Floodplain	Red	Medium	Sand
2.5	4.0		Grey	Coarse to gravel	Sandy clay
<b>APBSP3</b>					
0	2	Floodplain	Red	Medium	Sand
2	2.3		Red	Coarse Sand	
2.3	3.9		Grey	Coarse to gravel	Sandy clay
<b>APBSP4</b>					
0	1.7	Floodplain	Red	Medium	Sand
1.7	2.1	Palaeochannel	Red	Coarse to gravel	Sand
2.1	2.9	Floodplain	Red	Medium	Sand
2.9	4.0		Grey	Coarse to gravel	Sandy clay
<b>APBSP5</b>					
0	1.8	Floodplain	Red	Medium	Sand
1.8	2	Palaeochannel	Red	Coarse to gravel	Sand
2.0	2.6	Floodplain	Red	Medium	Sand
2.6	4.1		Grey	Coarse to gravel	Sandy clay



**Figure 3 Photograph of Pit APBSP4 showing the calcrete at the base**

On arrival in Perth the samples were dominated by calcrete and deemed unrepresentative of the deposit.

## Logging Second Programme

From (m)	To (m)	Unit	Sample
<b>JB1</b>			
0	2.1	Floodplain	JB1-2
2.1	3.6	Palaeochannel	JB1-1
Base not reached			
<b>JB2</b>			
0	1.6	Floodplain	JB2-2
1.6	3.4	Palaeochannel	JB2-1
3.4	3.45	Calcrete	
<b>JB3</b>			
0	1.4	Floodplain	JB3-1
1.4	2.5	Calcreted paleochannel	JB3-2
2.5	3.7	Paleochannel	JB3-3
Base not reached			
<b>JB4</b>			
0	2.1	Floodplain	JB4-2
2.1	3.3	Palaeochannel	JB4-1
3.3	3.7	Calcrete Paleochannel	No Sample
<b>JB5</b>			
0	1.5	Floodplain	JB5-1
1.5	3.0	Floodplain	JB5-2
<b>JB6</b>			
0	2.9	Dune	JB-D
Base not reached			

All samples other than JB6 were used to prepared the metallurgical test sample with description in the metallurgical report.